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# SCIENCE AND HUMAN PROGRESS: CONTEMPORARY CHALLENGES, RESEARCH AND PROMISING SOLUTIONS

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**Tashkent, London**

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# 1. CURRENT ISSUES IN NATURAL AND EXACT SCIENCES

# YUPQA DEVORLI SILINDRIK QOBIQLARDA TO‘LQINLAR TARQALISHINING NAZARIY VA SONLI TAHLILI

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***ANNOTATSIYA:****Ushbu maqolada yupqa devorli silindrik qobiqlarda elastik to‘lqinlarning tarqalish jarayoni nazariy va sonli usullar asosida tahlil qilingan. Klassik Lyav (Love) qobiqlar nazariyasi va Flyugge (Flügge) tenglamalari asosida harakat tenglamalari tuzilgan, ularning dispersiya tenglamasi analitik yo‘l bilan chiqarilgan. Olingan analitik natijalar chekli elementlar usuli (ChEU) yordamida sonli modellashtirish natijalari bilan solishtirilgan. Tadqiqot davomida qobiq qalinligi, materialning elastik xossalari va to‘lqin chastotasining fazaviy va guruh tezliklariga ta’siri o‘rganilgan. Tahlil natijalari shuni ko‘rsatdiki, past chastotalar sohasida analitik va sonli natijalar orasidagi farq 3%dan oshmaydi, yuqori chastotalarda esa qobiqning egilish deformatsiyalari hisobiga farq ortib boradi. Olingan natijalar aerokosmik, mashinasozlik va quvur konstruksiyalarini akustik diagnostika qilishda qo‘llanilishi mumkin.*

***Kalit so‘zlar:*** *silindrik qobiq, to‘lqinlar tarqalishi, dispersiya tenglamasi, Lyav nazariyasi, chekli elementlar usuli, fazaviy tezlik, guruh tezligi.*

***ABSTRACT:****This paper presents a theoretical and numerical analysis of elastic wave propagation in thin-walled cylindrical shells. The governing equations of motion are derived on the basis of the classical Love shell theory and the Flügge equations, and the corresponding dispersion equation is obtained analytically. The analytical results are compared with numerical simulations performed using the finite element method (FEM). The influence of shell thickness, elastic material properties, and wave frequency on the phase and group velocities is investigated. The results show that at low frequencies the discrepancy between analytical and numerical results does not exceed 3%, while at higher frequencies the difference increases due to bending deformation effects. The obtained results can be applied in acoustic diagnostics of aerospace, mechanical engineering, and pipeline structures.*

*Keywords: cylindrical shell, wave propagation, dispersion equation, Love theory, finite element method, phase velocity, group velocity.*

## KIRISH

Yupqa devorli silindrik qobiqlar aerokosmik texnika, quvur transporti, energetika inshootlari va mashinasozlikda keng qo‘llaniladigan konstruktiv elementlardir. Bunday konstruksiyalarning mustahkamligi, dinamik barqarorligi va nosozliklarini aniqlash masalalari ularda to‘lqinlarning tarqalish qonuniyatlarini chuqur bilishni talab qiladi. To‘lqinlarning dispersiya xususiyatlarini o‘rganish nafaqat konstruksiyaning dinamik xarakteristikalarini baholashda, balki akustik emissiya usullari yordamida nosozliklarni erta aniqlashda ham muhim ahamiyatga ega.

Silindrik qobiqlardagi to‘lqinlar tarqalishi masalasi bilan ko‘plab tadqiqotchilar shug‘ullangan. Klassik yondashuvlar orasida Lyav (Love), Donnell, Flyugge (Flügge) va Sanders qobiq nazariyalari alohida o‘rin tutadi. Ushbu nazariyalarning har biri qobiqning egilish va cho‘zilish deformatsiyalarini turlicha yaqinlashish darajasida hisobga oladi, natijada dispersiya egri chiziqlarida farqlar yuzaga keladi. So‘nggi yillarda hisoblash texnikasining rivojlanishi bilan analitik natijalarni sonli usullar, xususan chekli elementlar usuli (ChEU) va chekli ayirmalar usuli bilan tekshirish imkoniyati kengaydi.

Ushbu ishning maqsadi — yupqa devorli izotrop silindrik qobiqda erkin to‘lqinlar tarqalishining matematik modelini tuzish, dispersiya tenglamasini analitik yo‘l bilan olish va uni ChEU asosidagi sonli modellashtirish natijalari bilan solishtirib, model aniqligini baholashdan iborat.

Ishning vazifalari quyidagilardan iborat:

1. Lyav nazariyasi asosida silindrik qobiqning harakat tenglamalarini tuzish;
2. Garmonik to‘lqin yechimini qo‘llab dispersiya tenglamasini chiqarish;
3. Fazaviy va guruh tezliklarining chastotaga bog‘liqligini analitik hisoblash;
4. ChEU asosida sonli model yaratish va natijalarni analitik yechim bilan solishtirish;
5. Qobiq qalinligi va material parametrlarining dispersiya xarakteristikalariga ta’sirini tahlil qilish.

## TADQIQOT MATERIALLARI VA USULLARI

### 1. Nazariy model

Radiusi R, qalinligi h (h ≪ R) bo‘lgan izotrop, elastik, bir jinsli yupqa devorli silindrik qobiq qaraladi. Qobiq materiali zichligi ρ, Yung moduli E, Puasson koeffitsiyenti ν bilan tavsiflanadi. Silindrik koordinatalar sistemasida o‘rta sirt harakati uch komponentali siljish vektori bilan aniqlanadi: o‘qi bo‘ylab u(x,θ,t), aylana bo‘ylab v(x,θ,t) va radial yo‘nalishda w(x,θ,t).

Lyav nazariyasiga asoslangan qobiq harakatining differensial tenglamalari quyidagi umumiy ko‘rinishda yoziladi:

$$L_{11}u + L_{12}v + L_{13}w = \rho h\, \partial^2 u/\partial t^2$$
$$L_{21}u + L_{22}v + L_{23}w = \rho h\, \partial^2 v/\partial t^2$$
$$L_{31}u + L_{32}v + L_{33}w + D\nabla^4 w = \rho h\, \partial^2 w/\partial t^2$$

bu yerda $L_{ij}$ — chiziqli differensial operatorlar, $D = Eh^3 / [12(1-\nu^2)]$ — qobiqning egiluvchanlik qattiqligi, $\nabla^4$ — Laplas operatorining kvadrati (biggarmonik operator).

**2. Dispersiya tenglamasini chiqarish**

Yechim garmonik to‘lqin ko‘rinishida izlanadi:

$$(u, v, w) = (U, V, W)\cdot exp[i(kx + n\theta - \omega t)]$$

bu yerda k — o‘qiy to‘lqin soni, n — aylana bo‘ylab garmonika tartibi (butun son), ω — dumaloq chastota, U, V, W — amplituda konstantalari. Bu ifodani harakat tenglamalariga qo‘yish natijasida amplitudalarga nisbatan bir jinsli chiziqli algebraik tenglamalar sistemasi hosil bo‘ladi. Nolga teng bo‘lmagan yechim mavjud bo‘lishi uchun koeffitsiyentlar matritsasining determinanti nolga teng bo‘lishi shart:

$$det[A(k, n, \omega)] = 0$$

Bu shart uchinchi tartibli dispersiya tenglamasini beradi, uning yechimi ω ni k va n orqali aniqlaydi hamda uch xil to‘lqin tipiga (asosan cho‘zilish, aylanma va egilish to‘lqinlari) mos keluvchi uchta tarmoqni beradi. Fazaviy va guruh tezliklari mos ravishda quyidagicha aniqlanadi:

$$cph = \omega / k, \qquad cgr = d\omega / dk$$

**3. Sonli model (chekli elementlar usuli)**

Analitik natijalarni tekshirish uchun uzunligi L = 2 m, radiusi R = 0,1 m, qalinligi h = 0,003 m bo‘lgan po‘lat silindrik qobiq (E = 210 GPa, ν = 0,3, ρ = 7850 kg/m³) modellashtirildi. Qobiq to‘rt tugunli qobiq chekli elementlari (shell elements) bilan diskretizatsiya qilindi, tugunlar soni taxminan 24000 ta, element o‘lchami to‘lqin uzunligining kamida 1/12 qismini tashkil etadigan qilib tanlandi (yuqori chastotali to‘lqinlarni to‘g‘ri tasvirlash uchun).

Chegaraviy shartlar sifatida ikki uchi erkin (free-free) holat qabul qilindi, tashqi ta’sir sifatida qobiqning bir uchiga radial yo‘nalishda impuls tipidagi yuklama qo‘llanildi. Vaqt bo‘yicha integrallash aniq markaziy ayirmalar sxemasi (explicit

central difference) yordamida amalga oshirildi, vaqt qadami Kuran (Courant) barqarorlik shartidan kelib chiqib tanlandi:

$$\Delta t \leq \Delta x_min / c_max$$

Signalning vaqt bo‘yicha tarixi bir nechta nazorat nuqtalarida qayd etilib, keyinchalik Fure (Fourier) tez almashtirish usuli (FFT) va vaqt-chastota (wavelet) tahlili yordamida fazaviy va guruh tezliklari qayta tiklandi.

**NATIJALAR**

1-jadvalda n = 0 (aylanaviy simmetrik) va n = 1 garmonikalar uchun turli chastotalarda analitik va sonli usullar bilan hisoblangan fazaviy tezlik qiymatlari keltirilgan.

| Chastota f, kGts | Garmonika n | cph analitik, m/s | cph ChEU, m/s | Farq, % | To‘lqin turi |
|---|---|---|---|---|---|
| 5 | 0 | 5230 | 5198 | 0,6 | cho‘zilish |
| 20 | 0 | 5180 | 5142 | 0,7 | cho‘zilish |
| 50 | 0 | 4890 | 4795 | 1,9 | egilish |
| 100 | 1 | 3120 | 2985 | 4,3 | egilish |
| 150 | 1 | 2540 | 2361 | 7,0 | egilish |

*1-jadval. Fazaviy tezliklarning analitik va sonli (ChEU) natijalari solishtirmasi*

Olingan natijalarga ko‘ra, past chastotalar (f ≤ 20 kGts) sohasida analitik va sonli natijalar orasidagi farq 1%dan oshmaydi — bu sohada asosan cho‘zilish (membrana) to‘lqinlari ustunlik qiladi va Lyav nazariyasining asosiy taxminlari (yupqa qobiq, kichik egilish) to‘liq bajariladi. Chastota ortishi bilan (f > 50 kGts) egilish to‘lqinlarining ulushi kuchayadi, natijada farq 4–7% gacha ortadi. Bu holat qobiq qalinligi bo‘yicha deformatsiyaning notekisligi hisobga olinmasligi bilan izohlanadi — bunday effektlar faqat Mindlin tipidagi yoki uch o‘lchamli elastiklik nazariyasi asosidagi modellarda to‘liq hisobga olinadi.

Qobiq qalinligining ta’sirini o‘rganish natijasida shu narsa aniqlandiki, h/R nisbati ortishi bilan (masalan, 0,01 dan 0,05 gacha) egilish to‘lqinlarining dispersiya egri chizig‘i sezilarli darajada yuqoriga siljiydi, ya’ni bir xil chastotada fazaviy tezlik ortadi. Bu, o‘z navbatida, qalinroq qobiqlarning egilishga nisbatan qattiqroq bo‘lishi bilan bog‘liq. Material qattiqligi (Yung moduli) ortishi barcha to‘lqin tiplarining fazaviy tezligini bir xil nisbatda oshiradi, chunki cph ~ √(E/ρ) bog‘lanish saqlanib qoladi.

Guruh tezligining chastotaga bog‘liqligi tahlili shuni ko‘rsatdiki, egilish to‘lqinlari uchun guruh tezligi past chastotalarda nolga intiladi va chastota ortishi bilan monoton o‘sib, cho‘zilish to‘lqinlarining tezligiga asimptotik yaqinlashadi. Bu xususiyat qobiqlarda impuls signallarining tarqalishida signal shaklining chastotaga bog‘liq ravishda buzilishiga (dispersiv tarqalishga) olib keladi, bu esa akustik-emissiya diagnostikasida signalni sharhlashda hisobga olinishi zarur.

**MUHOKAMA**

Olingan natijalar klassik qobiq nazariyalarining qo‘llanish chegaralarini aniq ko‘rsatadi. Lyav nazariyasi past va o‘rta chastotalar sohasida (to‘lqin uzunligi qobiq qalinligidan sezilarli darajada katta bo‘lganda) yetarlicha aniq natijalar beradi, biroq yuqori chastotali egilish to‘lqinlari uchun aniqlik pasayadi. Bu, adabiyotlarda keltirilgan boshqa tadqiqotlarning xulosalari bilan mos keladi, ularda ham xuddi shunday tendensiya — chastota ortishi bilan klassik va uch o‘lchamli modellar orasidagi farqning kuchayishi — qayd etilgan.

Amaliy nuqtai nazardan, olingan dispersiya munosabatlari akustik-emissiya va gid nosozliklarini aniqlash usullarida quvur va idishlarning devor qalinligini nazorat qilish, shuningdek nosozlik joylashuvini signal kelish vaqti farqiga asoslanib aniqlashda qo‘llanilishi mumkin. Sonli model, o‘z navbatida, murakkab geometriyali (teshiklar, qo‘shilma choklar, qalinlik o‘zgarishi mavjud) konstruksiyalar uchun analitik yechim mavjud bo‘lmagan hollarda qo‘llanilishi mumkin bo‘lgan ishonchli asos yaratadi.

Tadqiqotning cheklovlari sifatida quyidagilarni ta’kidlash lozim: model izotrop va bir jinsli materialga asoslangan, temperatura va oldindan kuchlanish (prestress) ta’sirlari hisobga olinmagan, shuningdek qobiqning geometrik nosimmetrikligi (masalan, tayanchlar yoki qo‘shilmalar) ko‘rib chiqilmagan. Kelgusi tadqiqotlarda kompozit qatlamli qobiqlar, funksional-gradiyentli materiallar (FGM) hamda tashqi muhit (masalan, suyuqlik bilan to‘ldirilgan quvurlar) ta’sirini hisobga oluvchi modellarni ishlab chiqish maqsadga muvofiqdir.

**XULOSA**

Ushbu tadqiqot doirasida yupqa devorli izotrop silindrik qobiqda elastik to‘lqinlar tarqalishining nazariy modeli Lyav nazariyasi asosida qurildi va dispersiya tenglamasi analitik yo‘l bilan olindi. Model chekli elementlar usuli asosidagi sonli simulyatsiya natijalari bilan solishtirildi va quyidagi asosiy xulosalarga kelindi:

1. Past chastotalar ($f \leq 20$ kGts) sohasida analitik va sonli natijalar orasidagi farq 1%dan oshmaydi, bu Lyav nazariyasining bu sohada yuqori aniqlikka egaligini tasdiqlaydi;

2.Chastota ortishi bilan (f > 50 kGts) egilish to‘lqinlarining hissasi kuchayadi va farq 4–7% gacha yetadi, bu esa yuqori chastotalarda aniqroq (masalan, Mindlin tipidagi) modellarni qo‘llash zarurligini ko‘rsatadi;

3.Qobiq qalinligi va material qattiqligi dispersiya xarakteristikalariga sezilarli ta’sir ko‘rsatadi: h/R nisbati ortishi fazaviy tezlikni oshiradi, Yung moduli esa barcha to‘lqin tezliklarini bir xil nisbatda kattalashtiradi;

4.Ishlab chiqilgan analitik-sonli yondashuv silindrik konstruksiyalarni akustik diagnostika qilish, nosozliklarni aniqlash va dinamik loyihalashda amaliy qo‘llanish imkoniga ega.

Kelgusi tadqiqotlar kompozit va funksional-gradiyentli materiallardan tayyorlangan qobiqlarda, shuningdek suyuqlik bilan o‘zaro ta’sir sharoitida to‘lqinlar tarqalishini o‘rganishga qaratilishi mumkin.

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# LAZER PARAMETRLARINING METALL SIRT QAYTARUVCHANLIGIGA TA'SIRINI OPTIK MODELLASHTIRISH

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***Annotatsiya.*** *Ushbu tezisda mis sirti misolida optik qaytaruvchanlikni tavsiflovchi ikki fizik model - soddalashtirilgan analitik model va chekli farqlar vaqt sohasi (FDTD) simulyatsiyasi - ko'rib chiqilgan hamda lazer parametrlari (to'lqin uzunligi, fluens) o'zgarganda natijaga ta'siri tahlil qilingan. Ikkala model ham o'zaro mos natijalar berib, samarali qoraytirish uchun taxminan 1 mkm qalinlikdagi nanostrukturali CuO qatlami yetarli ekanligini ko'rsatdi.*

***Kalit so'zlar:*** *optik modellashtirish, Ber-Lambert qonuni, Frenel qaytishi, FDTD, sirt qaytaruvchanligi, CuO qatlami, lazer parametrlari.*

***Аннотация.*** *В данных тезисах на примере поверхности меди рассмотрены две физические модели, описывающие оптическую отражательную способность - упрощённая аналитическая модель и моделирование методом конечных разностей во временной области (FDTD), - а также проанализировано влияние изменения параметров лазера (длина волны, флюенс) на результат. Обе модели дали согласующиеся результаты, показав, что для эффективного почернения достаточно наноструктурированного слоя CuO толщиной около 1 мкм.*

***Ключевые слова:*** *оптическое моделирование, закон Бера–Ламберта, отражение Френеля, FDTD, отражательная способность поверхности, слой CuO, параметры лазера.*

***Abstract.*** *This thesis examines two physical models describing optical reflectivity using the copper surface as an example - a simplified analytical model and a finite-difference time-domain (FDTD) simulation - and analyzes how changes in laser parameters (wavelength, fluence) affect the outcome. Both models produced consistent results, showing that a nanostructured CuO layer about 1 μm thick is sufficient for effective darkening.*

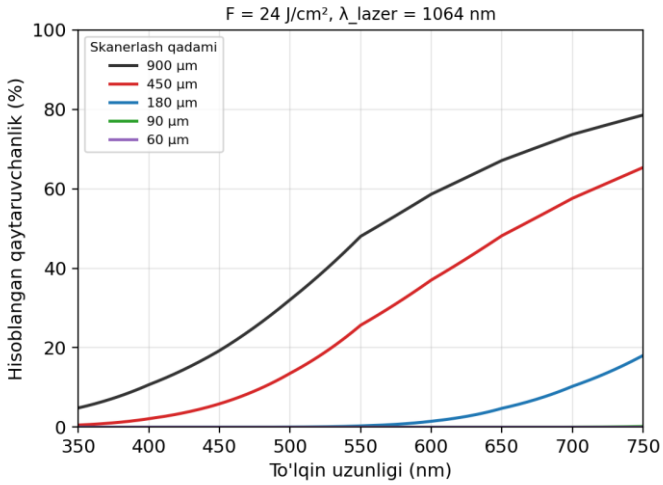
***Keywords:*** *optical modeling, Beer–Lambert law, Fresnel reflection, FDTD, surface reflectivity, CuO layer, laser parameters.*

## Kirish

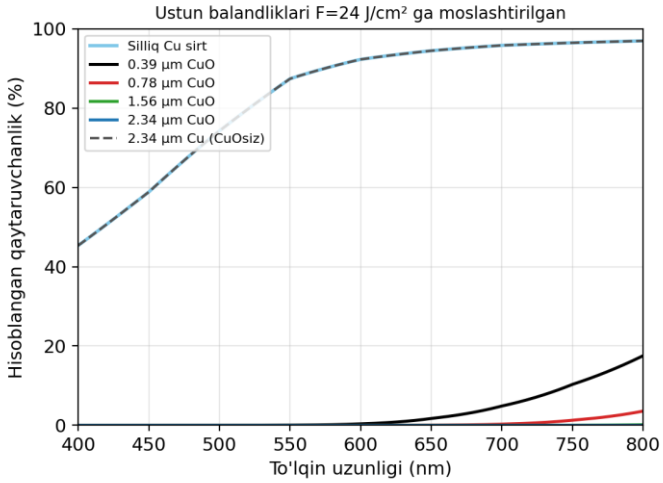
Lazer bilan qoraytirilgan metall sirtlarning amaliy qo'llanilishi (quyosh kollektorlari, lazer nur to'sqichlari, termal boshqaruv qurilmalari) uchun qaytaruvchanlikning lazer parametrlariga (to'lqin uzunligi, fluens, skanerlash qadami) qanday bog'liqligini oldindan bashorat qila olish muhim ahamiyatga ega. Tadqiqotning maqsadi - tajriba o'tkazmasdan turib natijani baholash imkonini beruvchi fizik modellashtirish usullarini ko'rib chiqish va ularning lazer parametrlari o'zgarganda qanday natija berishini tahlil qilishdan iborat.

## Asosiy qism

Birinchi (analitik) modelda sirtni qoplagan CuO qatlami bir jinsli va tekis deb faraz qilinadi. Qatlam orqali yorug'likning o'tishi Ber-Lambert qonuni $T_{layer} = e^{-\alpha * l}$ bilan, CuO–Cu chegarasidagi qaytish esa Frenel formulasi $R_{Cu-CuO} = \left|\frac{n_1 - n_2}{n_1 + n_2}\right|^2$ bilan hisoblanadi. Ikkinchi modelda esa sirt tasodifiy joylashgan Cu/CuO silindrsimon ustunlar bilan qoplangan deb qaraladi va yorug'likning ular bilan o'zaro ta'siri to'liq elektromagnit tenglamalar (Maksvell tenglamalari) asosida FDTD usulida hisoblanadi. Ikkala model uchun ham kirish parametrlari sifatida yangilangan lazer sharoitlari - to'lqin uzunligi 1064 nm va fluens qatori 3/6/12/24 J/sm² - qo'llanildi; bu esa qatlam/ustun qalinliklarining asl (532 nm, 30,8 J/sm² gacha) tajribaga nisbatan masshtablanishiga olib keldi (masshtab koeffitsienti ≈0,78). Analitik model bo'yicha hisoblangan qaytaruvchanlik spektrlari (1-rasm) skanerlash qadami kichraygan sari (demak, CuO qatlami qalinlashgan sari) qaytaruvchanlikning keskin pasayishini ko'rsatdi: 900 mkm qadamda qaytaruvchanlik hali ham yuqori (~80% gacha) bo'lsa, 90 va 60 mkm qadamlarda u deyarli nolga tushib qoladi. Bu natija tajribada kuzatilgan tendentsiya bilan sifat jihatidan mos keladi. FDTD modeli natijalari (2-rasm) qatlam qalinligi taxminan 1 mkm dan oshganda qaytaruvchanlikning deyarli to'yinish nuqtasiga yetishini, ya'ni undan keyingi qalinlik o'sishi natijaga sezilarli ta'sir qilmasligini ko'rsatdi. Bundan tashqari, faqat geometrik naqsh (CuO siz, sof mis ustunlari) ham qaytaruvchanlikni ma'lum darajada kamaytiradi, biroq CuO qoplamasi bilan birga bu effekt sezilarli darajada kuchayadi. Bu shuni ko'rsatadiki, past qaytaruvchanlikka ikki omil - sirtning nanostrukturaviy geometriyasi va uning kimyoviy tarkibi (CuO) - birgalikda hissa qo'shadi, va ularni alohida ajratib bo'lmaydi.




*1-rasm. Analitik model bo'yicha hisoblangan qaytaruvchanlik spektri, turli skanerlash qadamlari uchun (λ=1064 nm).*




*2-rasm. FDTD modeli bo'yicha hisoblangan qaytaruvchanlik, turli CuO ustun balandliklari uchun.*

## Xulosa

Optik modellashtirish lazer parametrlari o'zgarganda metall sirt qaytaruvchanligining qanday o'zgarishini tajribasiz bashorat qilish imkonini beradi. Analitik va FDTD modellari o'zaro mos natijalar berib, sirtni samarali qoraytirish uchun taxminan 1 mkm qalinlikdagi nanostrukturali CuO qatlami yetarli ekanligini ko'rsatdi. Bu xulosa amaliyotda lazer parametrlarini (fluens, skanerlash qadami) optimallashtirishda, ortiqcha energiya sarflamasdan kerakli natijaga erishishda foydali bo'lishi mumkin.

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# MIS SIRTINING NANOSEKUNDLI LAZER ABLATSIYASI YORDAMIDA QORAYTIRILISHIDA CuO NANOSTRUKTURASINING ROLI

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***Annotatsiya.*** *Ushbu tezisda nanosekundli impulsli lazer ablatsiyasi yordamida mis sirtini qoraytirish mexanizmi tahlil qilingan. Statik nurlantirish tajribalari, EDX/XPS tahlillari va fizik model hisob-kitoblari asosida ko'rsatilganki, qorayish bevosita lazer o'yishi natijasi emas, balki ablatsiya bulutida hosil bo'lgan CuO nanozarrachalarining sirtga qayta cho'kishi natijasidir. Modellashtirish natijalari taxminan 1 mkm qalinlikdagi nanostrukturali CuO qatlami qaytaruvchanlikni deyarli nolga tushirishini ko'rsatdi.*

***Kalit so'zlar:*** *lazer ablatsiyasi, mis oksidi (CuO), nanostruktura, sirt qorayishi, qaytaruvchanlik, nanozarracha, EDX, ablatsiya bulut.*

***Аннотация.*** *В данных тезисах анализируется механизм почернения поверхности меди с помощью наносекундной импульсной лазерной абляции. На основе экспериментов со статическим облучением, анализов EDX/XPS и физических расчётов модели показано, что почернение является результатом не прямого лазерного травления, а повторного осаждения на поверхность наночастиц CuO, образовавшихся в абляционном облаке. Результаты моделирования показали, что наноструктурированный слой CuO толщиной около 1 мкм снижает отражательную способность практически до нуля.*

***Ключевые слова:*** *лазерная абляция, оксид меди (CuO), наноструктура, почернение поверхности, отражательная способность, наночастица, EDX, абляционное облако.*

***Abstract.*** *This thesis analyzes the mechanism of copper surface darkening by nanosecond pulsed laser ablation. Based on static irradiation experiments, EDX/XPS analyses, and physical model calculations, it is shown that the darkening does not result from direct laser etching but from CuO nanoparticles formed in the ablation plume redepositing onto the surface. Modeling results show that a nanostructured CuO layer about 1 μm thick reduces reflectivity to near zero.*

***Keywords:*** *laser ablation, copper oxide (CuO), nanostructure, surface darkening, reflectivity, nanoparticle, EDX, ablation plume.*

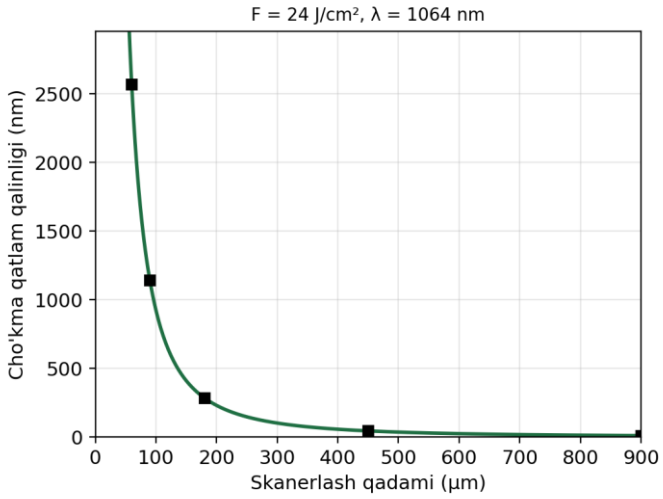
## Kirish

Metall sirtlarining yorug'lik qaytaruvchanligini kamaytirish - quyosh energetikasi, optik detektorlar va issiqlik boshqaruvi qurilmalarida muhim ahamiyatga ega. Mis o'zining yuqori issiqlik va elektr o'tkazuvchanligi tufayli keng qo'llaniladigan metall bo'lsa-da, uning tabiiy sirti yuqori qaytaruvchanlikka ega. Nanosekundli impulsli lazer ablatsiyasi ushbu muammoni kimyoviy moddalarsiz, tez va bevosita hal qilish imkonini beruvchi usul sifatida qaraladi. Tadqiqotning maqsadi - mis sirtining lazer ta'sirida qorayish mexanizmini, xususan CuO nanozarrachalarining hosil bo'lish jarayonini va uning optik xususiyatlarga ta'sirini aniqlashdan iborat.

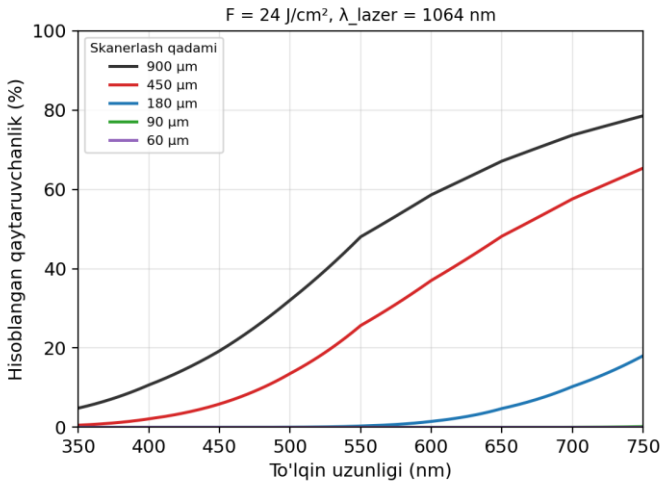
## Asosiy qism

Tadqiqotda mis plastinkalari Nd:YAG lazer tizimi (to'lqin uzunligi 1064 nm, impuls davomiyligi 10 ns, takrorlanish chastotasi 10 Hz) yordamida nurlantirildi. Fluens qiymatlari 3, 6, 12 va 24 J/sm² oralig'ida, skanerlash qadami esa 60 dan 900 mkm gacha o'zgartirildi. Sirt tarkibi EDX va XPS usullari bilan, morfologiyasi esa SEM/FIB-SEM bilan tahlil qilindi. Bitta nuqtada statik nurlantirish tajribasi orqali qorayish jarayonining bosqichma-bosqich rivojlanishi kuzatildi. Statik (bitta nuqtali) nurlantirish tajribalari shuni ko'rsatdiki, qorayish bevosita lazer ta'sir qilgan ablatsiya kraterida emas, balki uni o'rab turgan halqasimon hududda kuzatiladi. Bu hodisa quyidagi mexanizm bilan izohlanadi: lazer impulsi mis sirtini bug'lantiradi va issiq nanozarrachalardan iborat ablatsiya bulutini hosil qiladi; bulut sovigan sari, undagi mis atomlari atrofdagi havo kislorodi bilan reaksiyaga kirishib CuO nanozarrachalarini hosil qiladi; bu zarrachalar qaytadan sirtga cho'kib, nozik va notekis nanostrukturali qatlam hosil qiladi. Namuna vertikal holatda nurlantirilganda esa zarrachalar qaytib tusha olmagani sababli sirt umuman qoramagan - bu orqaga tushib qolgan zarrachalarning hal qiluvchi ahamiyatga ega ekanligini tasdiqlaydi. EDX tahlili qorongi hududda mis va kislorodning atom nisbati taxminan 1:1 ekanligini, ya'ni sirtning deyarli to'liq CuO dan iborat ekanligini ko'rsatdi. Fizik model asosida hisoblangan natijalar shuni tasdiqladiki, cho'kkan CuO qatlamining qalinligi skanerlash qadamiga kuchli teskari bog'liqlikda bo'lib, kichik qadamlarda (ya'ni yuqori impuls zichligida) qatlam qalinligi keskin ortadi (1-rasm). Ber-Lambert va Frenel tenglamalari asosida hisoblangan qaytaruvchanlik spektrlari taxminan 1 mkm dan qalinroq CuO qatlamida qaytaruvchanlik deyarli nolga yaqinlashishini, undan keyingi qalinlik oshishi natijaga sezilarli ta'sir qilmasligini ko'rsatdi (2-rasm). Bu CuO

qatlamining "yorug'lik tutqichi" sifatida ishlashini, ya'ni nur tushayotgan sirt bilan ko'p marta o'zaro ta'sirlashib, asta-sekin yutilishini anglatadi.




*1-rasm. Cho'kma CuO qatlamining qalinligi skanerlash qadamiga bog'liq holda (F=24 J/sm², λ=1064 nm).*




*2-rasm. Turli skanerlash qadamlari uchun hisoblangan CuO–Cu tizimining qaytaruvchanlik spektri.*

## Xulosa

Mis sirtining nanosekundli lazer ta'sirida qorayishi bevosita ablatsion o'yish natijasi emas, balki ablatsiya bulutida hosil bo'lgan va sirtga qayta cho'kkan CuO nanozarrachalarining birikishi natijasidir. Ushbu mexanizm nafaqat sirt morfologiyasini, balki uning kimyoviy tarkibini ham belgilaydi, va ikkalasi birgalikda past qaytaruvchanlikka ega, kimyoviy moddalarsiz qoraytirilgan mis sirtlarini olish imkonini beradi.

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# 2. GEOGRAPHY, GEOLOGY, ECOLOGY, AND EARTH SCIENCES

# КАРТИРОВАНИЕ ВЕЩЕСТВЕННОГО СОСТАВА ЛЕВОБЕРЕЖЬЯ Р. АХАНГАРАН С ИСПОЛЬЗОВАНИЕМ МЕТОДОВ ДИСТАНЦИОННОГО ЗОНДИРОВАНИЯ ЗЕМЛИ

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***Аннотация.*** *Представлены результаты картирования вещественного состава левобережья р. Ахангаран с использованием методов дистанционного зондирования Земли и геоинформационных технологий. На основе спектральных характеристик минералов и горных пород и с использованием библиотек USGS и ASTER составлены карты распределения риолитов, вторичных кварцитов, алунита, каолинита и монтмориллонита, халькозина и зон кварц-сульфидной минерализации. Проведено комплексирование отдельных спектральных признаков, позволившее выделить поисковые признаки золотого оруденения и создать сводную карту вещественного состава исследуемой территории. Полученные результаты могут быть использованы для уточнения геологического строения и выделения перспективных участков при проведении дальнейших геолого-поисковых работ.*

***Ключевые слова:*** *дистанционное зондирование Земли, спектральный анализ, вещественный состав, минералы, горные породы, Landsat, спектральные библиотеки, ГИС, Алмалыкский рудный район, р. Ахангаран.*

***Abstract.*** *The paper presents the results of mapping the material composition of the left bank of the Akhangaran River using remote sensing and geoinformation technologies. Based on the spectral characteristics of minerals and rocks and the USGS and ASTER spectral libraries, maps of the distribution of rhyolites, secondary quartzites, alunite, kaolinite and montmorillonite, chalcocite, and quartz-sulfide mineralization zones were compiled. Individual spectral characteristics were integrated to identify exploration indicators of gold mineralization and to create a comprehensive map of the material composition of the study area. The results can be used to refine the geological structure and identify prospective areas for further geological exploration.*

***Keywords:*** *remote sensing, spectral analysis, material composition, minerals, rocks, Landsat, spectral libraries, GIS, Almalyk Ore District, Akhangaran River.*

***Annotatsiya.*** *Maqolada Ohangaron daryosining chap sohilidagi hududning moddiy tarkibini masofadan zondlash va geoinformatsion texnologiyalar yordamida xaritalash natijalari keltirilgan. Minerallar va tog‘ jinslarining spektral xususiyatlari hamda USGS va ASTER spektral kutubxonalaridan foydalanilgan holda riolitlar, ikkilamchi kvarstitlar, alunit, kaolinit va montmorillonit, xalkozin hamda kvars-sulfidli mineralizatsiya zonalarining tarqalish xaritalari tuzildi. Alohida spektral belgilarni komplekslashtirish natijasida oltin minerallashuvining qidiruv belgilari ajratib olindi va tadqiqot hududining moddiy tarkibi bo‘yicha umumlashtirilgan xarita tuzildi. Olingan natijalardan hududning geologik tuzilishini aniqlashtirish hamda keyingi geologik-qidiruv ishlarini olib borishda istiqbolli maydonlarni ajratish uchun foydalanish mumkin.*

***Kalit so‘zlar:*** *masofadan zondlash, spektral tahlil, moddiy tarkib, minerallar, tog‘ jinslari, Landsat, spektral kutubxonalar, GIS, Olmaliq ruda rayoni, Ohangaron daryosi.*

**Введение.** Левобережье р. Ахангаран расположено в пределах северных склонов Кураминского хребта и входит в состав Алмалыкского рудного района, являющегося одним из важных горнорудных районов Узбекистана. Район характеризуется развитием медно-порфировых, полиметаллических и золоторудных месторождений, а его геологическое строение отличается значительным разнообразием магматических, вулканогенных и осадочных образований [1, 2].

Для территории характерен сложный горно-предгорный рельеф, обусловленный геологическим строением и особенностями тектонического развития. В пределах Алмалыкского рудного района широко развиты магматические породы различного состава, вулканогенные толщи, а также метасоматически изменённые образования. Особое значение имеют вторичные кварциты, формирование которых связано с процессами гидротермального изменения пород и развитием рудной минерализации [2, 3].

Разнообразие горных пород и минералов, а также широкое распространение гидротермально изменённых и минерализованных зон определяют высокую информативность территории для дистанционного изучения её вещественного состава. Получение пространственной информации о распределении отдельных минералов и пород представляет практический

интерес для уточнения геологического строения территории и выделения участков, перспективных для дальнейших геолого-поисковых исследований.

Современные методы дистанционного зондирования Земли позволяют проводить картирование вещественного состава земной поверхности на основе различий в спектральных характеристиках минералов и горных пород. Для сопоставления спектральных характеристик природных объектов используются эталонные спектры, представленные в специализированных спектральных библиотеках. USGS Spectral Library содержит спектры тысяч природных и других материалов, включая минералы, горные породы, почвы и их смеси, и предназначена, в частности, для идентификации и картирования минералов методами дистанционного зондирования [4, 5]. Спектральная библиотека ASTER, в настоящее время представленная в составе ECOSTRESS Spectral Library, также включает широкий набор эталонных спектров минералов и горных пород и предназначена для использования при спектральном анализе природных материалов [6].

**Целью исследования** является картирование вещественного состава левобережья р. Ахангаран по данным дистанционного зондирования Земли с использованием эталонных спектров отражения минералов и горных пород из спектральных библиотек USGS и ASTER, а также геоинформационных технологий.

**Методика.** Составление карты вещественного состава левобережья р. Ахангаран проводилось на основе спектральных характеристик горных пород и минералов с применением приложения Spectral Analysis Workstation программного обеспечения ERDAS IMAGINE 2011 и инструментов Spatial Analyst программного обеспечения ArcGIS. В качестве исходного информационного материала использовались мультиспектральные космические снимки, позволяющие анализировать различия в спектральных характеристиках природных объектов земной поверхности.

Для картирования вещественного состава были выбраны характерные для исследуемой территории горные породы и минералы, связанные с её геологическим строением и рудоносностью. К ним относятся риолиты (риолит-порфировые образования), вторичные кварциты, алунит, каолинит и монтмориллонит, халькозин, а также минералы, характерные для зон кварц-сульфидной минерализации — барит, пирит, халькопирит, молибденит, скородит, сфалерит, арсенопирит и кварц. Дополнительно были выделены

поисковые признаки золотого оруденения, представленные ассоциацией алунита, кварца, пирофиллита, диаспора и каолинита.

Для каждого выбранного компонента проводилось сопоставление спектральных характеристик исследуемых объектов с эталонными спектрами соответствующих минералов и горных пород, представленными в спектральных библиотеках USGS и ASTER [4–6]. На основе наиболее представительных спектров выполнялось построение карт пространственного распределения отдельных компонентов вещественного состава. Полученные материалы позволили выделить участки распространения отдельных минералов и пород на территории левобережья р. Ахангаран.

На заключительном этапе проводилось комплексирование полученных карт вещественного состава. При этом использовались как отдельные наиболее информативные спектральные признаки, так и сочетания нескольких минералов и горных пород, характеризующих определённые типы изменения и минерализации. В частности, комплексирование спектральных признаков алунита, кварца, пирофиллита, диаспора и каолинита использовалось для выделения поисковых признаков золотого оруденения. Результатом проведённых работ стало создание сводной карты распределения вещественного состава левобережья р. Ахангаран по данным дистанционного зондирования Земли.

**Результаты.** В результате проведённого спектрального анализа и обработки космических снимков составлены карты пространственного распределения отдельных компонентов вещественного состава левобережья р. Ахангаран. По спектральным характеристикам выделены участки распространения риолитов (риолит-порфировых образований), вторичных кварцитов, алунита, каолинита и монтмориллонита, а также зон халькозиновой и кварц-сульфидной минерализации.

Распределение риолитов (риолит-порфировых образований) было определено по соответствующим спектральным характеристикам пород и представлено на карте (рис.1). Выделение данного компонента позволяет уточнить пространственное положение вулканогенных образований, имеющих значение для интерпретации геологического строения территории.

На основе эталонных спектров также проведено картирование алунита (рис. 2). Алунит является характерным минералом гидротермально изменённых пород и в сочетании с другими минералами может рассматриваться как один из поисковых признаков рудной минерализации.

По спектральным характеристикам выделены участки распространения каолинита и монтмориллонита (рис. 3). Их присутствие связано с процессами изменения исходных кварц-полевошпатовых агрегатов вулканических туфов и вулканитов и отражает развитие зон гидротермально-метасоматического изменения.

Отдельное картирование проведено для халькозина, характеризующего зону вторичного сульфидного обогащения (рис. 4). Выделение его пространственного распространения позволяет дополнить характеристику зон медной минерализации, установленных в пределах исследуемой территории.

По совокупности спектральных характеристик выделены зоны кварц-сульфидной минерализации, представленные баритом, пиритом, халькопиритом, молибденитом, скородитом, сфалеритом, арсенопиритом и кварцем (рис. 5). Комплексное рассмотрение данной минеральной ассоциации позволяет выделить участки, характеризующиеся развитием сульфидной минерализации и сопровождающих её гидротермальных изменений.

Дополнительно проведено комплексирование спектральных признаков минералов, связанных с золотым оруденением. В качестве поисковых признаков использована совокупность алунита, кварца, пирофиллита, диаспора и каолинита. Пространственное распределение данной минеральной ассоциации представлено на рис. 6.

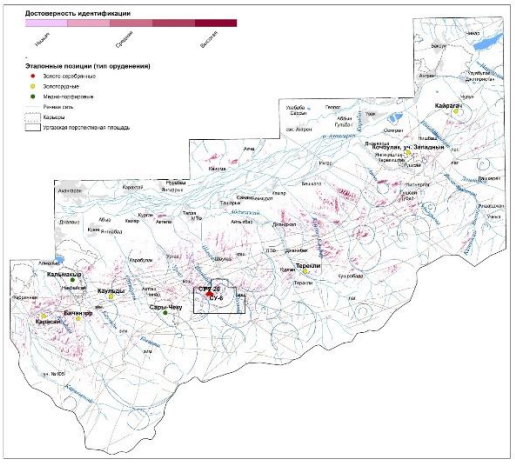



Рис. 1. Распределение риолитов (риолит-порфировых образований) на территории левобережья р. Ахангаран.

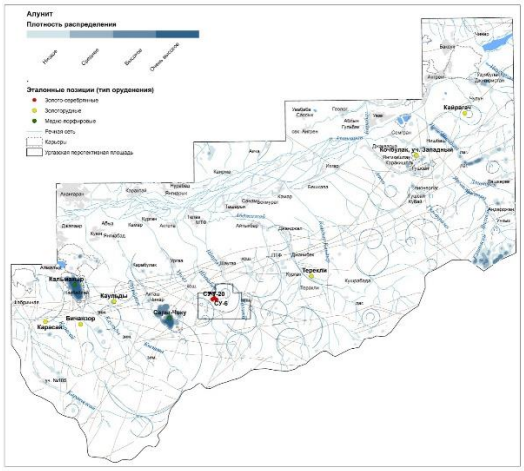



Рис. 2. Распределение алунита на территории левобережья р. Ахангаран.

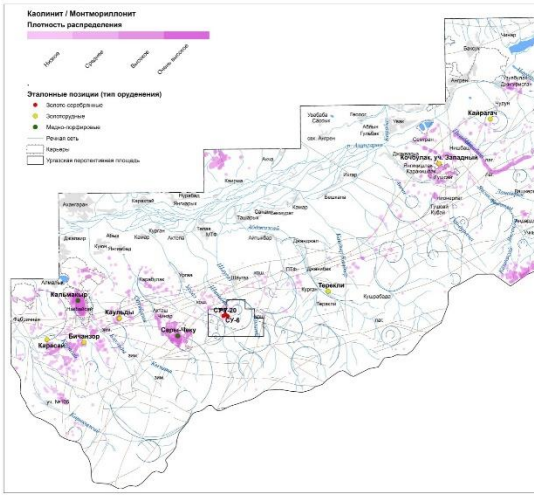



Рис. 3. Распределение каолинита и монтмориллонита на территории левобережья р. Ахангаран.

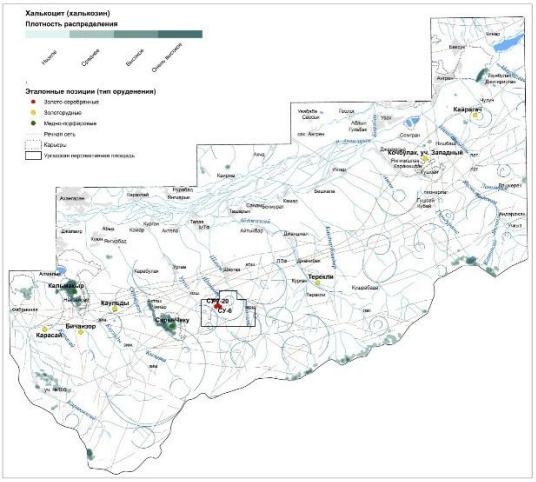



Рис. 4. Распределение халькозита на территории левобережья р. Ахангаран.

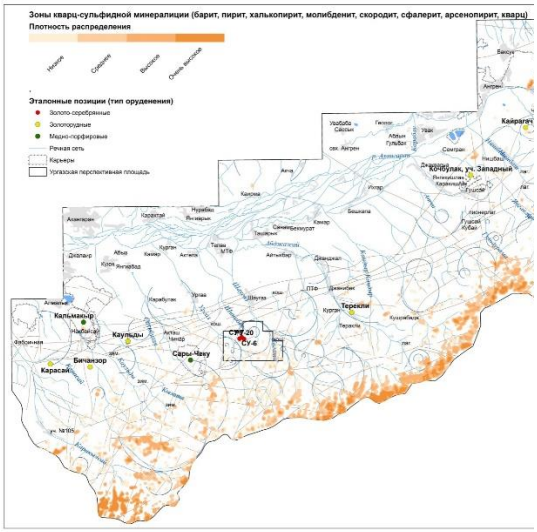



Рис. 5. Распределение зон кварц-сульфидной минерализации на территории левобережья р. Ахангаран (барит, пирит, халькопирит, молибденит, скородит, сфалерит, арсенопирит, кварц).

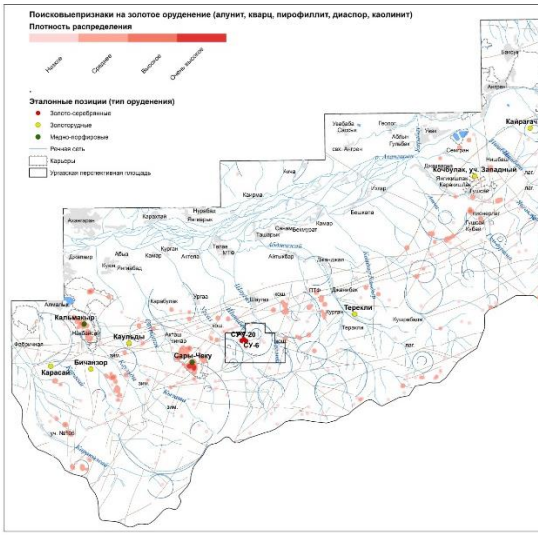
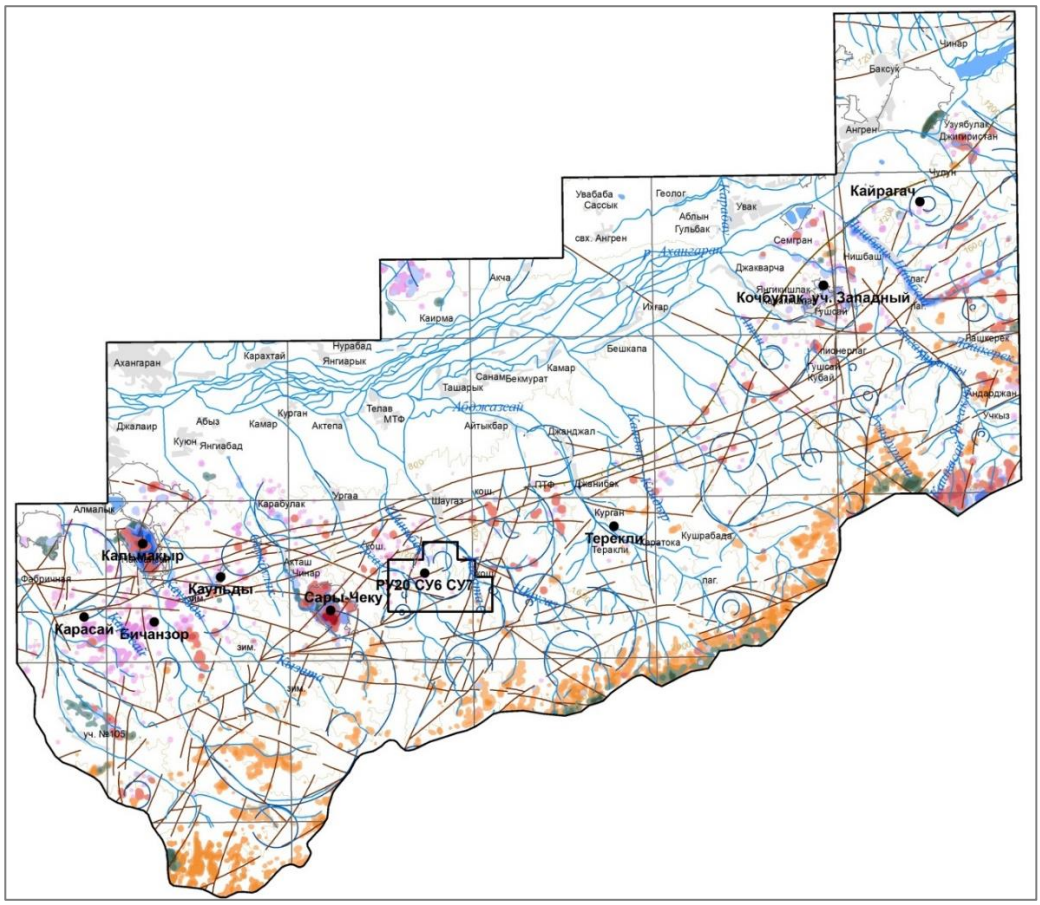



Рис. 6. Поисковые признаки на золотое оруденение на территории левобережья р. Ахангаран (алунит, кварц, пирофиллит, диаспор, каолинит).

На заключительном этапе отдельные карты пространственного распределения минералов и горных пород были объединены с целью получения

сводной карты вещественного состава. Комплексирование спектральных признаков позволило представить пространственное распределение основных пород, минералов и зон минерализации в пределах левобережья р. Ахангаран в единой картографической модели (рис. 7).


Кайрагач
Кочбулак, уч. Западный
Терекли
Сары-Чеку
Каульды
Карасай
Бичанзор
Ахангаран
Акча
Каирма
Нурабад
Янгиарык
Карахтай
Бешкапа
Камар
Курган
Актепа
Джалаир
Абыз
Янгиабад
Карабулак
Ургаа
Шаугаз
Алмалык
Кургак
Кушрабадак
Теракли
Увак
Семран
Джакварча
Ташарык
Бекмурат
Санам
Джанджал
Актыкбар
Ингар
Бешкапа
Ушсой
Кубай
Учкыз
Кендюджан
Башкирек
Чинар
Бакоук
Ангрен
Чодук
Нишбаш
Ялчикшлак
Гушсой
Геолог
Увабаба
Сассык
Аблын
Гульбак
свх. Ангрен
Кошбулак
Ахангаран
Чарвак
Ахангаран
Кендюджан
Чирчик
Ахангаран
Ахангаран
Ахангаран

представленные сочетанием алунита, кварца, пирофиллита, диаспора и каолинита, и создать сводную карту вещественного состава территории.

Полученные результаты демонстрируют эффективность применения спектральных методов дистанционного зондирования Земли для пространственного анализа вещественного состава и выделения участков гидротермально изменённых и минерализованных пород. Составленная карта может использоваться в качестве дополнительной информационной основы при уточнении геологического строения левобережья р. Ахангаран, выделении перспективных участков и планировании дальнейших геолого-поисковых работ.

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# 3. INFORMATION TECHNOLOGY AND DIGITAL INNOVATION

# VIRTUAL REALLIKDA HOLISTIK HARAKATNI QO‘LGA KIRITISH KONVEYERINI BARMOQ BO‘G‘INLARI VA YUZ MIMIKASINI RETARGETING QILISH ORQALI KENGAYTIRISH

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***Annotatsiya***. *Ushbu maqola muallifning avvalgi ishlarida ishlab chiqilgan, virtual reallik (VR) uchun yagona ishtirokchili, 543 nuqtali holistik landmark aniqlash va tana a'zolari uchun analitik ikki-suyakli teskari kinematika (IK) retargeting konveyerini barmoq bo‘g‘inlari va yuz mimikasini uzatish orqali kengaytirishga bag‘ishlangan. Avvalgi ishlarda faqat tananing yirik bo‘g‘inlari (yelka, tirsak, tizza) retargeting qilingan bo‘lsa, mazkur tadqiqotda MediaPipe Holistic modeli tomonidan allaqachon hisoblanadigan, ammo ilgari foydalanilmagan ikki qo‘l (21x2 nuqta) va yuz (468 nuqta) landmarklari ham faollashtiriladi. Barmoqlar uchun har bir falanga bo‘g‘inining mahalliy burilishi boshlang‘ich (bind) holatga nisbatan hisoblanadigan to‘g‘ridan-to‘g‘ri kinematika (forward kinematics, FK) zanjiri qo‘llaniladi, bu esa besh barmoqning har biri uchun uch bo‘g‘indan iborat, jami o‘n besh mahalliy burilishni beradi. Yuz mimikasi uchun esa geometrik xususiyatlarga asoslangan yondashuv taklif etiladi: og‘iz ochilishi, qosh ko‘tarilishi, ko‘z yumilishi va lab tortilishi kabi holatlar tegishli landmarklar orasidagi masofalar nisbati orqali hisoblanib, standart blend-shape og‘irliklariga aylantiriladi. Tizim ishga tushishida qisqa kalibrlash bosqichi o‘tkazilib, foydalanuvchining neytral (bet ifodasiz) holati bind qiymat sifatida qayd etiladi, bu esa turli foydalanuvchilarning yuz o‘lchamlari va nisbatlaridagi farqlarni me'yorlashtirish imkonini beradi. Sifat jihatidan o‘tkazilgan sinovlar taklif etilgan usulning asosiy imo-ishoralar (musht, ochiq kaft, ishora qilish) va asosiy yuz ifodalarini (tabassum, hayrat, og‘iz ochish) ishonchli tarzda aniqlab, Unity3D personajiga real vaqt rejimida uzatishini ko‘rsatdi. Maqolada tizim arxitekturasi, barmoq FK zanjiri, yuz geometrik xususiyat-blend-shape xaritalash formulalari, kalibrlash mexanizmi hamda cheklovlar va kelgusi ishlar sifatida chuqurroq mimika modellari va ko‘p ishtirokchili tizimga integratsiya imkoniyatlari muhokama qilinadi.*

***Kalit so‘zlar:*** *Virtual Reallik, Barmoq Retargeting, Yuz Blend-Shape Xaritalash, MediaPipe Holistic, Unity3D, To‘g‘ridan-to‘g‘ri Kinematika, Kalibrlash, Skeletni Retargeting Qilish*

***Аннотация****. Данная статья посвящена расширению разработанного автором ранее конвейера захвата холистических ориентиров (543 точки) и аналитического ретаргетинга на основе двухзвенной обратной кинематики (IK) для крупных суставов тела в виртуальной реальности (VR) путём добавления ретаргетинга суставов пальцев и мимики лица. В предыдущих работах ретаргетингу подвергались только крупные суставы тела (плечо, локоть, колено), тогда как в настоящем исследовании впервые задействуются ориентиры обеих кистей (21x2 точки) и лица (468 точек), которые модель MediaPipe Holistic вычисляет, но ранее не использовались. Для пальцев применяется цепочка прямой кинематики (forward kinematics, FK), в которой локальный поворот каждой фаланги вычисляется относительно исходного (bind) положения, что даёт пятнадцать локальных поворотов для пяти пальцев по три сустава каждый. Для мимики лица предложен подход на основе геометрических признаков: такие состояния, как открытие рта, поднятие бровей, закрытие глаз и растяжение губ, вычисляются через отношения расстояний между соответствующими ориентирами и преобразуются в стандартные веса блендшейпов. При запуске системы выполняется короткий этап калибровки, в ходе которого нейтральное выражение лица пользователя фиксируется как опорное (bind) значение, что позволяет нормализовать различия в размерах и пропорциях лиц разных пользователей. Качественное тестирование показало, что предложенный метод надёжно распознаёт основные жесты (кулак, открытая ладонь, указательный жест) и базовые мимические выражения (улыбка, удивление, открытие рта) и передаёт их персонажу Unity3D в реальном времени. В статье рассматриваются архитектура системы, FK-цепочка пальцев, формулы отображения геометрических признаков лица в веса блендшейпов, механизм калибровки, а также ограничения и направления дальнейших исследований, включая более глубокие модели мимики и интеграцию с многопользовательской системой.*

***Ключевые слова:*** *Виртуальная Реальность, Ретаргетинг Пальцев, Отображение Блендшейпов Лица, MediaPipe Holistic, Unity3D, Прямая Кинематика, Калибровка, Ретаргетинг Скелета*

***Abstract****. This paper extends the author's previously developed single-user, 543-point holistic landmark capture pipeline and analytic two-bone inverse kinematics (IK)*

*retargeting for the major body joints in virtual reality (VR) by adding finger-joint and facial-mimicry retargeting. While earlier work retargeted only the major body joints (shoulder, elbow, knee), the present study activates the two-hand (21x2 point) and face (468 point) landmarks that the MediaPipe Holistic model already computes but that were previously left unused. For the fingers, a forward-kinematics (FK) chain is applied in which the local rotation of each phalanx joint is computed relative to its bind pose, yielding fifteen local rotations for five fingers of three joints each. For facial mimicry, a geometric-feature-based approach is proposed: states such as mouth opening, eyebrow raising, eye closure, and lip stretching are computed as ratios of distances between corresponding landmarks and converted into standard blend-shape weights. At startup, a brief calibration stage records the user's neutral facial expression as the bind reference, normalizing differences in face size and proportion across users. Qualitative testing showed that the proposed method reliably recognizes common hand gestures (fist, open palm, pointing) and basic facial expressions (smile, surprise, mouth opening) and transfers them to a Unity3D character in real time. The paper discusses the system architecture, the finger FK chain, the geometric-feature-to-blend-shape mapping formulas, the calibration mechanism, and limitations and future directions, including deeper mimicry models and integration with a multi-user system.*

***Keywords:*** *Virtual Reality, Finger Retargeting, Facial Blend-Shape Mapping, MediaPipe Holistic, Unity3D, Forward Kinematics, Calibration, Skeletal Retargeting*

## 1. Kirish

Virtual reallikda ishonchli embodiment yaratish uchun ishtirokchining faqat yirik tana harakatlarini emas, balki mayda motorli harakatlarini — barmoqlarning bukilishini va yuz mimikasini — ham real vaqt rejimida uzatish talab etiladi. Bunday mayda harakatlar ishora tili, buyumlarni ushlab ko‘rsatish, hissiy holatni ifodalash va shaxslararo muloqotning ishonchliligi uchun muhim ahamiyatga ega, biroq ular yirik tana bo‘g‘inlariga qaraganda ancha yuqori aniqlik va zichlikdagi ma'lumotni talab qiladi.

Muallifning avvalgi tadqiqotlarida VR uchun markerlarsiz harakatni qo‘lga kiritish tizimi bosqichma-bosqich rivojlantirilgan: dastlab 33 nuqtali tana pozasi asosida yagona ishtirokchining harakati aniqlangan, so‘ngra tizim MediaPipe Holistic modeliga o‘tkazilib, tana, qo‘l va yuz landmarklarini birlashtirgan 543 nuqtali holistik konveyerga hamda Unity3D muhitida Humanoid personajlarni boshqaruvchi analitik ikki-suyakli IK retargeting usuliga kengaytirilgan. Shuningdek, ushbu konveyer ko‘p ishtirokchili stsenariylarga ham kengaytirilgan. Biroq barcha bu ishlarda retargeting faqat yirik tana bo‘g‘inlari (yelka, tirsak, son, tizza) darajasida amalga oshirilgan;

MediaPipe Holistic modeli tomonidan har bir kadrda hisoblanadigan 21x2 qo‘l landmarki va 468 yuz landmarki esa faqat vizual nazorat uchun saqlangan, biroq personaj animatsiyasida foydalanilmagan.

Mazkur maqola ushbu bo‘shliqni to‘ldirishga qaratilgan. Biz mavjud holistik konveyerni qayta ishlab chiqmasdan, balki undagi allaqachon mavjud qo‘l va yuz landmarklarini ikkita yangi retargeting zanjiri orqali faollashtiramiz: (i) har bir barmoq uchun uch bo‘g‘inli to‘g‘ridan-to‘g‘ri kinematika (FK) zanjiri, hamda (ii) yuzning asosiy geometrik xususiyatlarini standart blend-shape og‘irliklariga aylantiruvchi kalibrlanadigan xaritalash funksiyasi. Ishning hissasi quyidagilardan iborat: barmoq bo‘g‘inlari uchun mahalliy burilishga asoslangan FK zanjiri; yuz mimikasi uchun kalibrlanadigan, geometrik nisbatlarga asoslangan blend-shape xaritalash usuli; hamda ushbu ikki zanjirni mavjud tana IK retargeting bilan bir vaqtning o‘zida ishlatuvchi kengaytirilgan tizim arxitekturasi.

## 2. Adabiyotlar tahlili

Qo‘l harakatini qo‘lga kiritish va qayta tiklash bo‘yicha adabiyotlarda ikki asosiy yondashuv mavjud: maxsus qo‘lqop yoki markerlarga asoslangan aniq, ammo qimmat va noqulay uskunalar, hamda RGB kamera asosidagi, markerlarsiz, biroq nisbatan kamroq aniqlikka ega usullar. MediaPipe Hands va unga asoslangan Holistic model har bir qo‘l uchun 21 nuqtali landmark to‘plamini real vaqt rejimida qaytaradi, bu esa qo‘shimcha uskunasiz barmoq holatini baholash imkonini beradi. Barmoq bo‘g‘inlarini uch o‘lchamli nuqtalardan animatsiyaga aylantirish uchun odatda ikki yondashuv qo‘llaniladi: geometrik burchak hisoblash (uchta ketma-ket nuqta orasidagi burchakni to‘g‘ridan-to‘g‘ri hisoblash) yoki to‘g‘ridan-to‘g‘ri kinematika (FK) zanjiri, bunda har bir bo‘g‘inning mahalliy burilishi boshlang‘ich holatga nisbatan kvaternion sifatida hisoblanadi. Mazkur ishda ikkinchi yondashuv tanlangan, chunki u Unity3D Humanoid animatsiya tizimi bilan to‘g‘ridan-to‘g‘ri mos keladi va bo‘g‘inlar orasidagi tabiiy bog‘liqlikni saqlaydi.

Yuz mimikasini raqamli personajga uzatish sohasida sanoat standarti sifatida blend-shape (morph target) texnologiyasi qo‘llaniladi, bunda yuz meshi oldindan belgilangan asosiy shakllar (masalan, jag‘ ochilishi, qosh ko‘tarilishi, lab tortilishi) orasida chiziqli interpolyatsiya qilinadi. Apple ARKit tomonidan taklif etilgan 52 ta standart blend-shape to‘plami sanoatda keng qabul qilingan konventsiyaga aylangan. Bunday og‘irliklarni kamera tasviridan olish uchun ikki yondashuv mavjud: chuqur o‘rganish asosidagi to‘g‘ridan-to‘g‘ri regressiya modellari, yoki yuz landmarklaridan geometrik nisbatlarni hisoblash orqali qoidaga asoslangan (rule-based) xaritalash. Mazkur tadqiqotda ikkinchi yondashuv tanlangan, chunki u qo‘shimcha o‘qitilgan

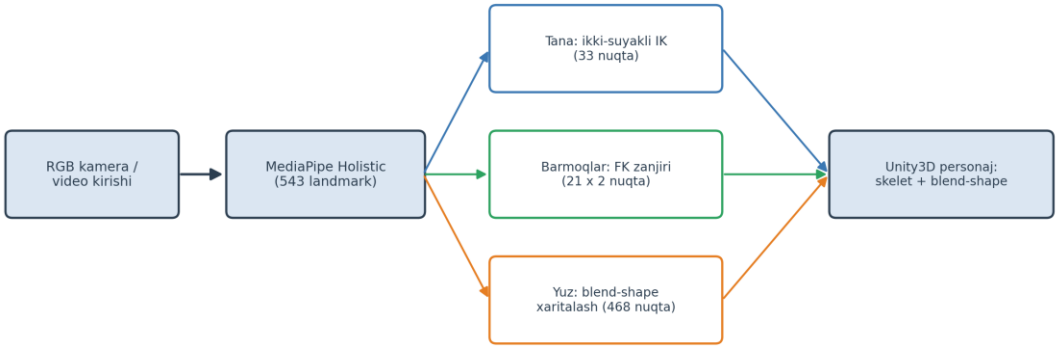
model talab qilmaydi va mavjud MediaPipe Face Mesh landmarklaridan bevosita foydalanadi, bu esa avvalgi ishlarda qo‘llanilgan “qo‘shimcha og‘ir modelsiz, mavjud landmarklardan maksimal foydalanish” tamoyiliga mos keladi.

Muallifning ilgari o‘tkazilgan tadqiqotlari, jumladan dissertatsiya ishi, virtual reallikda insonning xatti-harakatlarini modellashtirish va simulyatsiya qilishning algoritmik asoslarini kontseptual darajada ko‘rib chiqqan edi. Mazkur tadqiqot ushbu asosni amaliy jihatdan yanada chuqurlashtiradi — endi nafaqat tananing yirik harakatlari, balki mayda motorli harakatlar va hissiy ifoda ham modellashtirish doirasiga kiritiladi, bu esa VR ishtirokchisining virtual embodimenti to‘liqroq va ishonchliroq bo‘lishiga xizmat qiladi.

## 3. Metodologiya

### 3.1 Kengaytirilgan tizim arxitekturasi

Taklif etilgan tizim mavjud holistik konveyerni saqlab qolgan holda, uni uchta parallel retargeting zanjiriga ega qiladi: (i) avvalgi ishda ishlab chiqilgan tana uchun ikki-suyakli IK, (ii) yangi qo‘shilgan barmoqlar uchun FK zanjiri, hamda (iii) yangi qo‘shilgan yuz uchun geometrik xususiyat-blend-shape xaritalash. Har uchala zanjir bitta MediaPipe Holistic chaqiruvidan olingan 543 nuqtali landmark to‘plamidan mustaqil ravishda foydalanadi (1-rasm).

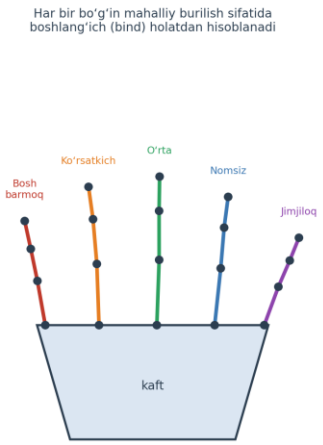



*1-rasm. Tana IK, barmoq FK va yuz blend-shape zanjirlarini birlashtirgan kengaytirilgan tizim arxitekturasi.*

### 3.2 Barmoqlar uchun to‘g‘ridan-to‘g‘ri kinematika zanjiri

Har bir qo‘l uchun MediaPipe Holistic 21 nuqtali landmark to‘plamini qaytaradi: kaftning bitta ildiz nuqtasi va besh barmoqning har biri uchun to‘rtta nuqta (asos, o‘rta, distal bo‘g‘in va uch). Ushbu nuqtalar asosida har bir barmoq uch segmentli zanjir sifatida modellashtiriladi, bunda har bir segmentning yo‘nalish vektori ketma-ket ikki nuqta orasidagi farq sifatida hisoblanadi. Har bir bo‘g‘inning mahalliy burilishi

boshlang‘ich (bind) holatdagi yo‘nalish vektoridan joriy yo‘nalish vektoriga o‘tuvchi minimal kvaternion sifatida topiladi va mos suyakka qo‘llaniladi. Natijada har bir qo‘l uchun o‘n beshta mustaqil mahalliy burilish (besh barmoq x uch bo‘g‘in) olinadi (2-rasm).

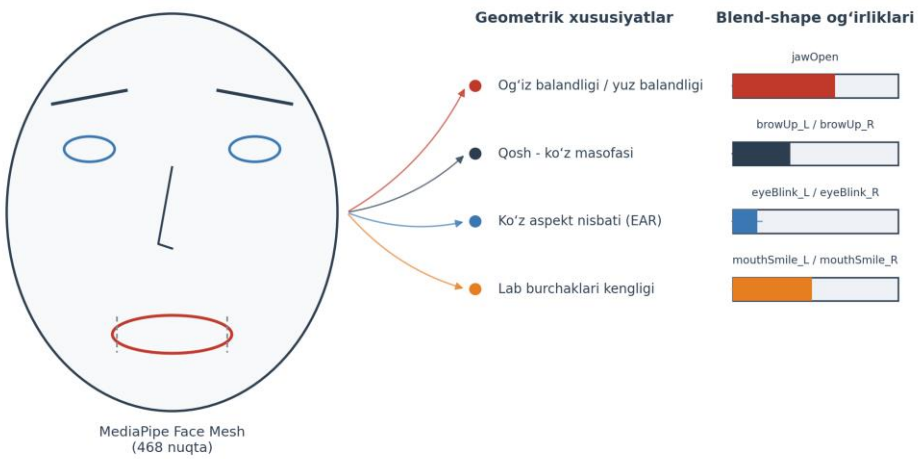



*2-rasm. Har bir barmoq uchun uch segmentli to‘g‘ridan-to‘g‘ri kinematika (FK) zanjiri.*

Ikki-suyakli IK dan farqli o‘laroq, barmoqlar uchun teskari kinematika emas, balki to‘g‘ridan-to‘g‘ri kinematika qo‘llaniladi, chunki barmoq landmarklarining barchasi Holistic model tomonidan allaqachon uch o‘lchamda hisoblangan; shu bois maqsad nuqtasidan bo‘g‘in burchaklarini qayta hisoblash shart emas — ularning yo‘nalishini to‘g‘ridan-to‘g‘ri suyak burilishiga aylantirish kifoya. Bu yondashuv IK ga nisbatan hisoblash jihatidan ancha arzon bo‘lib, real vaqt rejimida o‘n barmoqning barchasini bir vaqtning o‘zida yangilash imkonini beradi.

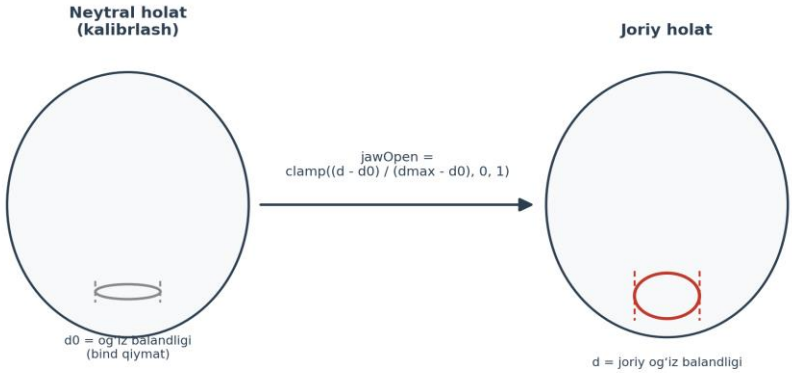
### 3.3 Yuz mimikasi uchun geometrik xususiyat-blend-shape xaritalash

Yuz mimikasini uzatish uchun MediaPipe Face Mesh tomonidan qaytariladigan 468 nuqtali landmark to‘plamidan tanlangan kichik guruh nuqtalar asosida to‘rtta asosiy geometrik xususiyat hisoblanadi: og‘iz ochilish balandligining yuz balandligiga nisbati (jawOpen), qosh bilan ko‘z orasidagi masofa (browUp), ko‘z aspekt nisbati — ko‘zning kengligi va balandligi nisbati (eyeBlink), hamda lab burchaklari orasidagi masofaning yuz kengligiga nisbati (mouthSmile). Har bir xususiyat mos blend-shape og‘irligiga (0 dan 1 gacha) chiziqli normallashtirish orqali aylantiriladi (3-rasm).




*3-rasm. Yuzdagi geometrik xususiyatlardan standart blend-shape og‘irliklariga xaritalash.*

Turli foydalanuvchilarning yuz o‘lchamlari va nisbatlaridagi tabiiy farqlarni hisobga olish uchun tizim ishga tushishida qisqa kalibrlash bosqichi o‘tkaziladi: foydalanuvchidan bir necha soniya davomida neytral (his-hayajonsiz) yuz ifodasini saqlab turish so‘raladi, shu davrda o‘lchangan geometrik xususiyatlar qiymatlari boshlang‘ich (bind) qiymat d0 sifatida saqlanadi. Joriy kadrdagi og‘irlik quyidagi umumiy formula bo‘yicha hisoblanadi: og‘irlik = clamp((d − d0) / (dmax − d0), 0, 1), bunda d — joriy o‘lchangan qiymat, dmax esa oldindan belgilangan, tegishli xususiyat uchun kutilgan maksimal qiymat (4-rasm).

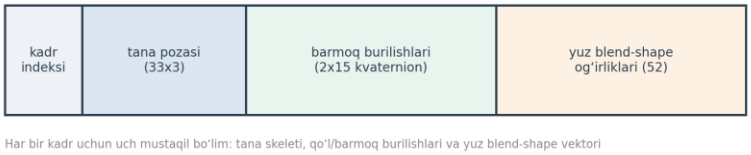



*4-rasm. Neytral holatni kalibrlash va joriy geometrik qiymatni blend-shape og‘irligiga normallashtirish.*

### 3.4 Kengaytirilgan ma'lumot formati

Avvalgi ishlarda qo‘llanilgan sobit uzunlikdagi yozuv formati endi uchta mustaqil bo‘limga ega bo‘ladi: tana pozasi (33 nuqta x 3 koordinata), ikki qo‘lning barmoq burilishlari (2 x 15 mahalliy kvaternion) va yuz blend-shape og‘irliklari vektori (52

qiymat, ARKit konventsiyasiga mos). Har bir bo‘lim mustaqil ravishda yangilanadi va Unity3D tomonida mos animatsiya tizimiga (Humanoid skelet uchun suyak burilishlari, SkinnedMeshRenderer uchun blend-shape og‘irliklari) alohida uzatiladi (5-rasm, 1-jadval).




*5-rasm. Kengaytirilgan, uch bo‘limli har-kadrlik ma'lumot formati.*

| Bo‘lim | O‘lcham | Tavsif |
|---|---|---|
| tana_pozasi | 33 x 3 qiymat | Avvalgi ishdagi ikki-suyakli IK uchun tana landmarklari |
| barmoq_burilishlari | 2 x 15 kvaternion | Har bir qo‘l uchun besh barmoq x uch bo‘g‘in mahalliy burilishi |
| yuz_blend_shape | 52 qiymat | ARKit konventsiyasiga mos standart blend-shape og‘irliklari |

*1-jadval. Kengaytirilgan ma'lumot formatining uch bo‘limi.*

### 3.5 Amalga oshirish muhiti

Landmark aniqlash va xususiyat hisoblash moduli Python tilida, OpenCV va MediaPipe Holistic asosida amalga oshirilgan. Barmoq FK zanjiri va yuz geometrik xususiyat hisoblash funksiyalari NumPy kutubxonasi yordamida vektorli hisoblashlar orqali optimallashtirilgan. Unity3D (6-versiya) tomonida barmoq burilishlari mavjud Humanoid Avatar tizimidagi mos suyaklarga, blend-shape og‘irliklari esa yuz meshining SkinnedMeshRenderer komponentidagi mos morph target kanallariga real vaqt rejimida yuboriladi.

## 4. Natijalar

Taklif etilgan kengaytma bir nechta sinov videolari asosida sifat jihatidan baholandi. Barmoq FK zanjiri musht qilish, ochiq kaft, ishora qilish va cho‘zilgan barmoqlar kabi asosiy qo‘l holatlarini personajga aniq va kechikishsiz uzatdi, bunda besh barmoqning barchasi bir-biridan mustaqil va tabiiy ko‘rinishda harakatlandi. Yuz blend-shape xaritalash tabassum, hayrat va og‘iz ochish kabi asosiy mimik holatlarni ishonchli tarzda aniqladi, kalibrlash bosqichi esa turli foydalanuvchilar orasida neytral yuz ifodasining farqini muvaffaqiyatli me'yorlashtirdi.

Shu bilan birga, ba'zi nozik mimik holatlar (masalan, bir tomonlama qosh ko‘tarish yoki kichik lab harakatlari) ba'zan aniq ajratilmadi, bu esa geometrik nisbatlarga asoslangan qoidaviy yondashuvning aniqlik chegarasini ko‘rsatadi. Barmoqlar uchun FK zanjiri hisoblash jihatidan yengil bo‘lib, umumiy kadr tezligiga sezilarli ta'sir ko‘rsatmadi, chunki u faqat vektor ayirish va kvaternion hisoblashdan iborat.

| Zanjir | Kirish landmarklari | Chiqish | Hisoblash usuli |
|---|---|---|---|
| Tana IK (avvalgi ish) | 33 nuqta | 2 ta yirik suyak burilishi | Analitik ikki-suyakli IK |
| Barmoq FK (yangi) | 21 x 2 nuqta | 2 x 15 mahalliy burilish | To‘g‘ridan-to‘g‘ri kinematika |
| Yuz blend-shape (yangi) | 468 nuqta (tanlangan qism) | 52 og‘irlik | Geometrik nisbat + kalibrlash |

*2-jadval. Uch retargeting zanjirining kirish, chiqish va hisoblash usuli bo‘yicha solishtirilishi.*

## 5. Muhokama

Olingan natijalar shuni ko‘rsatadiki, MediaPipe Holistic model tomonidan allaqachon hisoblanadigan, biroq ilgari foydalanilmagan qo‘l va yuz landmarklarini faollashtirish orqali, tizim arxitekturasini tubdan o‘zgartirmasdan, VR embodimentining ifodaliligini sezilarli darajada oshirish mumkin. Bu, o‘z navbatida, dissertatsiya ishida ko‘tarilgan virtual reallikda insonning xatti-harakatlarini, jumladan uning hissiy va nozik motorli ifodalarini modellashtirish masalasini amaliy jihatdan yanada to‘liqroq yoritadi.

Bir qator cheklovlarni alohida ta'kidlash lozim. Birinchidan, yuz mimikasi uchun tanlangan qoidaviy, geometrik nisbatlarga asoslangan yondashuv barmoq FK zanjiriga qaraganda kamroq nozik ifodalarni farqlay oladi, chunki u faqat oldindan belgilangan kichik sonli xususiyatlarni hisobga oladi; chuqur o‘rganishga asoslangan regressiya modellari bu boradan kengroq va nozikroq mimika diapazonini ta'minlashi mumkin, biroq bu qo‘shimcha hisoblash resursi va o‘qitish ma'lumotlarini talab qiladi. Ikkinchidan, kalibrlash bosqichi foydalanuvchidan bir necha soniyalik qo‘shimcha harakatni talab qiladi, bu esa foydalanuvchi tajribasiga engil, ammo mavjud qo‘shimcha qadam bo‘lib qo‘shiladi. Uchinchidan, ushbu tadqiqotdagi baholash, avvalgi ishlardagi kabi, sifat jihatidan olib borilgan; barmoq va mimika aniqligini son jihatidan o‘lchovchi foydalanuvchi tadqiqoti (user study) ushbu natijalarning empirik asosini mustahkamlaydi.

Kelgusi ishning tabiiy yo‘nalishlari sifatida ikki jihat ko‘rib chiqilishi mumkin: birinchisi, geometrik nisbatlarga asoslangan qoidaviy xaritalashni yengil vaznli, oldindan o‘qitilgan regressiya modeli bilan to‘ldirish, bu esa nozikroq mimik holatlarni ham aniqlash imkonini beradi; ikkinchisi, mazkur barmoq va yuz retargeting zanjirlarini avvalgi ishda taklif etilgan ko‘p ishtirokchili tizimga integratsiya qilish, bu esa har bir ishtirokchining nafaqat tana harakati, balki qo‘l va mimikasi ham hamkorlikdagi VR sahnasida to‘liq uzatilishini ta'minlaydi.

## 6. Xulosa

Ushbu maqolada avvalgi ishlarda ishlab chiqilgan yagona ishtirokchili holistik landmark aniqlash va tana uchun ikki-suyakli IK retargeting konveyeri barmoq bo‘g‘inlari uchun to‘g‘ridan-to‘g‘ri kinematika zanjiri va yuz mimikasi uchun kalibrlanadigan, geometrik nisbatlarga asoslangan blend-shape xaritalash orqali kengaytirildi. Sifat jihatidan o‘tkazilgan sinovlar taklif etilgan usulning asosiy qo‘l holatlari va yuz ifodalarini ishonchli tarzda aniqlab, ularni Unity3D personajiga real vaqt rejimida uzatishini tasdiqladi, shu bilan birga nozik mimik holatlarni farqlashdagi cheklovlar va sifat jihatidan olib borilgan baholashning empirik cheklovlari kelgusi ishlanmalar uchun asosiy yo‘nalish sifatida belgilandi. Kelgusi tadqiqotlar yengil vaznli o‘qitilgan mimika modellari va ushbu retargeting zanjirlarini ko‘p ishtirokchili tizimga integratsiya qilishga qaratiladi, bu esa virtual reallikda insonning xatti-harakatlarini to‘liq qamrovli modellashtirish bo‘yicha kengroq tadqiqot dasturini yanada rivojlantirishga xizmat qiladi.

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# SUN'IY INTELLEKT TEXNOLOGIYALARINI JORIY ETISHDAGI MUAMMOLAR VA YECHIMLAR

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***ANNOTATSIYA.*** *Ushbu maqolada sun'iy intellekt (SI) texnologiyalarini, ayniqsa ta'lim jarayoniga joriy etishda yuzaga keladigan texnik, tashkiliy-boshqaruv, huquqiy-etik va psixologik muammolar tizimli ravishda tahlil qilinadi. Texnik muammolar doirasida ma'lumotlar sifati, axborot tizimlari integratsiyasi, infratuzilma barqarorligi, axborot xavfsizligi va tizim uzluksizligi masalalari ko'rib chiqiladi. Tashkiliy jihatdan xodimlar kompetensiyasining yetishmasligi, o'zgarishlarga qarshilik, vazifalar va mas'uliyatlarning noaniqligi hamda kutilayotgan natijalarni baholash muammolariga e'tibor qaratiladi. Shuningdek, shaxsiy ma'lumotlar maxfiyligi, mualliflik huquqi, algoritmik tarafkashlik, tizim shaffofligi va izohlanuvchanligi bilan bog'liq xavflar yoritiladi. Aniqlangan muammolarni bartaraf etish uchun data governance, ETL/ELT, API integratsiyasi, bulutli va gibrid infratuzilma, MLOps va model monitoringi, Center of Excellence, uzluksiz malaka oshirish, pilot–MVP–scale yondashuvi, human-in-the-loop nazorati hamda Explainable AI mexanizmlaridan foydalanish taklif etiladi. Mazkur yondashuvlar SI texnologiyalarini ta'lim tizimiga xavfsiz, mas'uliyatli va barqaror joriy etish uchun amaliy asos yaratadi.*

***Kalit so'zlar****: sun'iy intellekt, ma'lumotlar sifati, ETL/ELT, API integratsiyasi, axborot xavfsizligi, MLOps, model monitoringi, kompetensiya rivoji, algoritmik tarafkashlik, Explainable AI, sun'iy intellekt etikasi.*

***АННОТАЦИЯ.*** *В статье системно анализируются технические, организационно-управленческие, правовые, этические и психологические проблемы, возникающие при внедрении технологий искусственного интеллекта (ИИ), прежде всего в образовательный процесс. Рассматриваются вопросы качества данных, интеграции информационных систем, устойчивости инфраструктуры, информационной безопасности и непрерывности работы. Особое внимание уделено дефициту компетенций педагогов и технических*

*специалистов, сопротивлению изменениям, неопределённости ролей и ответственности, а также оценке ожидаемых результатов внедрения ИИ. Раскрываются риски, связанные с конфиденциальностью персональных данных, авторским правом, алгоритмической предвзятостью, прозрачностью и объяснимостью моделей. В качестве решений предлагаются внедрение data governance и ETL/ELT-процессов, API-интеграции, облачной и гибридной инфраструктуры, MLOps и мониторинга моделей, создание Center of Excellence, непрерывное повышение квалификации, поэтапный подход «pilot–MVP–scale», принцип human-in-the-loop и инструменты Explainable AI. Предлагаемые меры направлены на обеспечение безопасного, ответственного и устойчивого использования технологий ИИ в системе образования.*

***Ключевые слова:*** *искусственный интеллект, качество данных, ETL/ELT, API-интеграция, информационная безопасность, MLOps, мониторинг моделей, развитие компетенций, алгоритмическая предвзятость, Explainable AI, этика искусственного интеллекта.*

***ABSTRACT.*** *The article provides a systematic analysis of the technical, organizational, managerial, legal, ethical, and psychological challenges associated with implementing artificial intelligence (AI) technologies, particularly in education. The study addresses data quality, information-system integration, infrastructure resilience, information security, and service continuity. It also examines insufficient AI-related competencies among teachers and technical staff, resistance to organizational change, unclear roles and responsibilities, and uncertainty about expected outcomes. Particular attention is given to risks related to personal-data privacy, copyright, algorithmic bias, transparency, and explainability. To address these challenges, the article proposes the use of data governance, ETL/ELT processes, API-based integration, cloud and hybrid infrastructure, MLOps and model monitoring, Centers of Excellence, continuous professional development, the pilot–MVP–scale approach, human-in-the-loop oversight, and Explainable AI tools. The proposed measures can provide a practical basis for the safe, responsible, and sustainable adoption of AI technologies in education.*

***Keywords:*** *artificial intelligence, data quality, ETL/ELT, API integration, information security, MLOps, model monitoring, competency development, algorithmic bias, Explainable AI, AI ethics.*

## KIRISH

So‘nggi yillarda sun’iy intellekt texnologiyalari ta’lim, sog‘liqni saqlash, sanoat, transport, boshqaruv va xizmat ko‘rsatish sohalarida keng joriy etilmoqda. Ularning samarali ishlatilishi inson faoliyatining ko‘plab tarmoqlarida tezlik, aniqlik va shaffoflikni oshirmoqda. Biroq SI texnologiyalarini amaliyotga tatbiq etish jarayonida bir qator tashkiliy, texnik, etik va psixologik muammolar yuzaga keladi. Ushbu muammolarni chuqur tahlil qilish va ularni bartaraf etish mexanizmlarini ishlab chiqish SI’ning barqaror rivojlanishini ta’minlaydi.

Russell va Norvig sun’iy intellektni mashinalarning inson aqliga xos bo‘lgan idrok etish, o‘rganish, fikrlash va harakat qilish kabi funksiyalarini amalga oshirish bilan bog‘liq fan sifatida izohlaydi []. Goodfellow, Bengio va Courville tomonidan ishlab chiqilgan chuqur o‘qitish nazariyasi esa ko‘p qatlamli neyron tarmoqlar yordamida murakkab ma’lumotlardan yuqori darajadagi xususiyatlarni avtomatik ajratib olish imkoniyatini kengaytirdi [2].

Bugungi bosqichda sun’iy intellekt nafaqat ilmiy tadqiqotlar sohasi, balki iqtisodiy va ijtimoiy jarayonlarning muhim texnologik vositasiga aylanmoqda. Ta’limda intellektual ta’lim tizimlari, tibbiyotda diagnostik tizimlar, sanoatda robotlashtirish, moliya sohasida risklarni baholash, davlat boshqaruvida ma’lumotlarni tahlil qilish kabi yo‘nalishlar shular jumlasidandir.

Sun’iy intellektning rivojlanishi davlat siyosati darajasida ham qo‘llab-quvvatlanmoqda. O‘zbekiston Respublikasi Prezidentining 2024-yil 14-oktabrdagi PQ-358-son qarori bilan “Sun’iy intellekt texnologiyalarini 2030-yilga qadar rivojlantirish strategiyasi” tasdiqlangan. Strategiyada AI asosida yaratiladigan dasturiy mahsulot va xizmatlar hajmini 1,5 milliard AQSh dollariga yetkazish, Yagona interaktiv davlat xizmatlari portalida AI asosidagi xizmatlar ulushini 10 foizga yetkazish, ilmiy laboratoriyalar sonini oshirish va yuqori quvvatli hisoblash serverlarini ishga tushirish kabi maqsadlar belgilangan [1]

Biroq sun’iy intellektning keng joriy etilishi bilan birga bir qator yangi muammolar ham yuzaga kelmoqda. Xususan, ma’lumotlarning sifatsizligi, algoritmlarning xolis emasligi, kiberxavfsizlik, shaxsiy ma’lumotlarni himoya qilish, tizimlarning tushuntiriluvchanligi va sun’iy intellektdan foydalanish bo‘yicha javobgarlik masalalari dolzarb bo‘lib qolmoqda.

UNESCOning Sun’iy intellekt etikasi bo‘yicha tavsiyasi inson huquqlari va inson qadr-qimmatini himoya qilishni markaziy tamoyil sifatida belgilaydi hamda shaffoflik, adolatlilik va inson nazoratiga alohida urg‘u beradi [7]. OECDning sun’iy intellekt bo‘yicha tavsiyasi ham ishonchli va inson manfaatlariga yo‘naltirilgan AI tizimlarini rivojlantirishni ko‘zda tutadi [8].

Shu sababli sun’iy intellekt texnologiyalarini joriy etishdagi muammolarni aniqlash va ularni bartaraf etishning kompleks mexanizmlarini ishlab chiqish mazkur tadqiqotning asosiy maqsadini tashkil etadi.

**ASOSIY QISM**

Sun’iy intellekt texnologiyalarini ta’lim jarayoniga joriy etishda eng muhim to‘siqlardan biri texnik omillar bilan bog‘liq muammolardir. Bu muammolar asosan ma’lumot sifati, tizimlarning o‘zaro integratsiyasi, infratuzilma barqarorligi, hamda axborot xavfsizligi bilan bevosita bog‘liqdir. Har bir texnik muammo o‘z vaqtida aniqlanib, ilmiy asoslangan yondashuvlar orqali bartaraf etilsa, sun’iy intellektning ta’limdagi samaradorligi keskin oshadi.

Sun’iy intellekt joriy etishdagi texnik muammolarini quyida tahlil qilinib, yechimlarini berib ketilgan.

*Ma’lumot sifati muammolari.* Sun’iy intellekt tizimlari samarali ishlashi uchun ma’lumotlarning toza, to‘liq, aniq va tartibli bo‘lishi zarur. Ammo ko‘plab ta’lim muassasalarida ma’lumotlarning tozalanmaganligi, takroriy yoki noto‘g‘ri yozuvlarning mavjudligi, etiketkalash (yorliqlash)ning sustligi ishlab chiqilayotgan modellarning natijalariga salbiy ta’sir qiladi. Bu muammoni bartaraf etish uchun data boshqaruvi (data governance) tizimi joriy qilinadi. U ma’lumotlar sifatini nazorat qilish, standartlarni belgilash va yangilashni o‘z ichiga oladi. Shuningdek, ma’lumotlarni avtomatik qayta ishlovchi ETL/ELT jarayonlari (ma’lumotlarni yig‘ish, tozalash va yuklash)ni yo‘lga qo‘yish zarur. [4; 6]

*Tizimlar integratsiyasi muammolari.* Ta’lim muassasalarida LMS (o‘quv jarayonini boshqarish tizimi), ERP (resurslarni boshqarish tizimi) va CRM (mijozlar bilan ishlash tizimi) kabi turli platformalar mavjud. Bu tizimlar o‘zaro bog‘lanmagan hollarda sun’iy intellektga yetarli ma’lumot kirim qilmaydi va natijada to‘liq tahlil olib borish qiyinlashadi. Muammoning yechimi sifatida API-first integratsiya yondashuvi tavsiya etiladi. Bu yondashuv barcha tizimlarni yagona platformaga ulashga, ma’lumotlarni real vaqt rejimida almashishiga yordam beradi.

*Infratuzilma va ko‘lamlash muammolari.* Sun’iy intellekt modellarini o‘qitish va ulardan foydalanish kuchli texnik resurslarni talab qiladi. Ko‘plab ta’lim tashkilotlarida server quvvati past bo‘lishi, tarmoqlar barqaror ishlamasligi yoki mahalliy qurilmalarning yetishmasligi sababli tizimlarning uzilishi sodir bo‘ladi. Bunday vaziyatlarda bulutli yoki gibrid infratuzilma (cloud/hybrid) yechimi samarali hisoblanadi. U tizimlarni tez ko‘lamlash, qo‘shimcha quvvat ulash va uzluksizlikni ta’minlashga imkon beradi.

Xavfsizlik va uzluksizlik muammolari. Sun’iy intellekt tizimlari ko‘p miqdorda shaxsiy va ta’limiy ma’lumotlarni qayta ishlaydi. Shu bois, axborot xavfsizligi, maxfiylik va tizim uzluksizligini ta’minlash juda muhimdir. Hujumlar, buzilishlar yoki texnik nosozliklar o‘quv jarayoniga salbiy ta’sir ko‘rsatishi mumkin. Bu muammolarni hal etishda observability (tizimni kuzatish va nosozliklarni erta aniqlash), model monitoring (modellarni doimiy nazorat qilish), hamda zaxira nusxalari va favqulodda vaziyatlar rejasini ishlab chiqish zarur. [4]

Umumiy qilib tahlil qilinsa, SI tizimlarini samarali ishlatish uchun yuqori hisoblash quvvatiga ega serverlar, keng tarmoqli internet, katta hajmdagi ma’lumotlar (big data) va ularni saqlash infratuzilmasi zarur. Aksariyat ta’lim muassasalari yoki tashkilotlarda bu infratuzilma to‘liq shakllanmagan bo‘lishi mumkin. Bunday muammolarni bartaraf etish yo‘llari: bulutli hisoblash (cloud computing) xizmatlaridan foydalanish; ochiq manbali (open-source) SI platformalarini joriy etish (masalan, TensorFlow, PyTorch); davlat yoki korporativ darajada yagona raqamli infratuzilma yaratish; texnik xodimlar uchun maxsus IT-servis markazlarini tashkil etish kabi masalalarga e’tibor qaratilsa, SI tatbiq etishda muammolar uchramaydi.

Sun’iy intellekt texnologiyalarini ta’lim sohasiga joriy etishda texnik jihatlardan tashqari, tashkiliy boshqaruv va inson omili bilan bog‘liq muammolar ham muhim o‘rin tutadi. Ushbu omillar faqat texnologiya emas, balki inson resurslari, boshqaruv madaniyati, kommunikatsiya va o‘zgarishlarni qabul qilish jarayonlariga ham bevosita ta’sir ko‘rsatadi. Shu bois, ta’lim tizimida sun’iy intellektni samarali qo‘llash uchun tashkiliy muammolarni chuqur tahlil qilish va ularning ilmiy asoslangan yechimlarini ishlab chiqish zarur.

Kompetensiya yetishmovchiligi. Ko‘plab ta’lim muassasalarida o‘qituvchilar, metodistlar, rahbarlar va texnik xodimlarning sun’iy intellekt imkoniyatlari, dasturiy platformalar va ma’lumotlar bilan ishlash asoslari bo‘yicha malakasi yetarli emas. Bu texnologiyalardan samarali foydalanmaslikka, xatoliklarning ko‘payishiga va loyihalarning sekinlashishiga olib keladi. Muammoni bartaraf etish uchun doimiy treninglar, kompetensiyalarni rivojlantirish dasturlari, hamda o‘qituvchilar uchun amaliy seminarlar kerak bo‘ladi. Bundan tashqari, sun’iy intellekt bo‘yicha mentorlar va ko‘makchi mutaxassislar tayyorlash samaradorlikni oshiradi. [4]

*O‘zgarishlarga qarshilik.* Ta’lim sohasida an’anaviy metodlarga o‘rganib qolgan xodimlar yangi texnologiyalarni qabul qilishga ehtiyotkorlik bilan yondashadi. Ish jarayonlarining o‘zgarishi, qo‘shimcha mas’uliyat yoki yangi dasturlarni o‘rganish ularda qo‘rquv, shubha yoki qarshilik tug‘dirishi mumkin. Mazkur muammoning eng samarali yechimi — change management (o‘zgarishlarni boshqarish). Bu jarayonda

xodimlar bilan muntazam kommunikatsiya, tushuntirish ishlari, rag‘batlantirish, o‘quv mashg‘ulotlari va bosqichma-bosqich joriy etish muhim ahamiyat kasb etadi.

*Jarayonlar va rollarning noaniqligi.* Sun’iy intellekt bilan ishlovchi loyihalarda kim qaysi jarayonga mas’ul ekani aniq belgilanmagan bo‘lsa, vazifalar chalkashadi va nazorat izdan chiqadi. Bu esa loyihaning umumiy samaradorligini pasaytiradi. Ushbu muammoni bartaraf etish uchun ta’lim muassasasida Center of Excellence (CoE) — ya’ni sun’iy intellekt bo‘yicha markaz yoki ishchi guruh tashkil etish tavsiya etiladi. CoE metodik qo‘llanmalar ishlab chiqadi, jarayonlarni standartlashtiradi va barcha xodimlar uchun yagona yo‘riqnoma sifatida xizmat qiladi.

*Kutilayotgan natijaning noaniqligi.* Sun’iy intellektga investitsiya qilishdan oldin rahbariyatda “Bu texnologiya qanday foyda beradi?”, “Qanday natija kutish mumkin?” kabi savollar tug‘iladi. Natija oldindan aniq belgilanmagan bo‘lsa, loyihaga shubha bilan qaraladi. Buni hal qilish uchun loyihalarni pilot–MVP–scale tamoyili asosida bosqichma-bosqich joriy etish maqsadga muvofiq. Dastlab kichik pilot loyiha sinovdan o‘tkaziladi, natija ijobiy bo‘lsa minimal funksiyali model kengaytiriladi va so‘ngra umumiy tizimga joriy qilinadi. Shuningdek, loyiha boshlanishida aniq KPI (asosiy ko‘rsatkichlar) va kutilayotgan natija xaritasi ishlab chiqilishi lozim.

*Xodimlarni qo‘llab-quvvatlash.* Sun’iy intellektni joriy etish bir martalik jarayon emas, balki doimiy o‘rganish va yangilanishni talab qiladigan tizimdir. Shu sababli o‘qituvchilar, texnik mutaxassislar va menejerlarni muntazam ravishda axborot, uslubiy va texnik qo‘llab-quvvatlash tizimi bilan ta’minlash zarur. Bu ularning jarayonga ishonchini oshiradi va texnologiyani samarali qo‘llashga sharoit yaratadi.

SI texnologiyalarini samarali joriy etish uchun yuqori malakali dasturchilar, data-analitiklar, muhandislar va pedagoglar zarur. Ammo ko‘plab tashkilotlarda ushbu soha mutaxassislari yetishmaydi. Bu muammolarni bartaraf etishda universitetlarda sun’iy intellekt texnologiyalaridan foydalanish, ma’lumotlar tahlili va dasturlash bo‘yicha maxsus magistratura va doktorantura dasturlarini kengaytirish o’quv dasturlari, ish joyida malaka oshirish (upskilling) va qayta tayyorlash (reskilling) dasturlarini joriy etish, xorijiy tajriba almashinuvi dasturlari va onlayn kurslardan foydalanish (Coursera, edX, Udemy va b.), ta’lim muassasalarida “AI-laboratoriyalar” tashkil etish kabi bir qator yo’llar orqali muammoni hal etish mumkin.

**XULOSA**

Xulosa qilib aytganda, tashkiliy va inson omili bilan bog‘liq muammolarni bartaraf etish sun’iy intellektning muvaffaqiyatli joriy etilishi uchun asosiy shartlardan biridir. Kompetensiyani oshirish, o‘zgarishlarni to‘g‘ri boshqarish, vazifalar

taqsimotining aniq belgilanishi va xodimlarni doimiy qo‘llab-quvvatlash ta’lim jarayonida sun’iy intellektning barqaror va samarali ishlashiga zamin yaratadi.

Sun’iy intellekt texnologiyalarini ta’lim jarayoniga joriy etish jarayonida huquqiy, etik va xavf omillari eng muhim masalalardan biridir. Bu yo‘nalishdagi muammolar asosan shaxsiy ma’lumotlarning maxfiyligi, mualliflik huquqi, algoritmlarda yuzaga kelishi mumkin bo‘lgan adolatsizlik, hamda tizimning shaffofligi va nazorat qilinishi bilan bog‘liqdir. Mazkur muammolarni e’tiborsiz qoldirish ta’lim jarayoniga, o‘quvchilar huquqlariga va axborot xavfsizligiga jiddiy zarar yetkazishi mumkin. [4; 6; 7]

Shaxsiy ma’lumotlar maxfiyligi va rozilik muammolari. Sun’iy intellekt texnologiyalari katta hajmdagi ma’lumotlarni qayta ishlaydi, jumladan, o‘quvchilarning shaxsiy ma’lumoti, baholari, raqamli izlari va xatti-harakatlari haqidagi ma’lumotlar. Agar ushbu ma’lumotlar to‘g‘ri himoyalanmasa yoki roziliksiz ishlatilsa, maxfiylikning buzilishiga olib kelishi mumkin. Shu sababli ta’lim muassasalarida “Maxfiylikni loyihalash jarayonidanoq ta’minlash” tamoyili (privacy-by-design)ga amal qilinishi zarur. Bu tamoyilga ko‘ra, har bir axborot tizimi boshidan boshlab maxfiylikni himoya qilishni o‘z ichiga olgan bo‘lishi shart. Shuningdek, har bir loyiha bo‘yicha “Ma’lumotlar ta’sirini baholash” (Data Protection Impact Assessment – DPIA) o‘tkazish talab etiladi. Bunda ma’lumotlar bilan ishlashda qanday xavflar mavjudligi aniqlanadi va ularni kamaytirish chorasi belgilanadi. [ 4]

*Mualliflik huquqi va litsenziyalash muammolari.* Sun’iy intellekt tizimlarida ishlatiladigan matnlar, rasmlar, videolar va boshqa kontent ko‘pincha mualliflik huquqi bilan himoyalangan bo‘ladi. Agar ushbu materiallardan ruxsatsiz foydalanilsa, huquqbuzarlik sodir bo‘ladi. Muammoni bartaraf etish uchun ta’lim muassasalari litsenziyalangan kontentdan foydalanishi, mualliflik huquqlariga rioya qilishi va foydalanilayotgan ma’lumotlarning manbai aniq ko‘rsatilishini ta’minlashi lozim.

Algoritmik tarafkashlik (adolat buzilishi) muammolari. Sun’iy intellekt tizimlari noto‘g‘ri yoki nomutanosib ma’lumotlar asosida o‘qitilganida, ular ayrim guruhlar yoki o‘quvchilarni adolatsiz baholashi mumkin. Bu holat algoritmik tarafkashlik (bias) deb ataladi. Uni aniqlash uchun “Adolat tekshiruvi” (fairness audit) o‘tkaziladi. Tarafkashlik aniqlansa, tarafkashlikni kamaytirish (bias mitigation) usullari qo‘llanadi, ya’ni ma’lumotlar qayta tozalanadi, balanslanadi va model qayta o‘qitiladi. [3; 4; 5]

Tizim shaffofligi va izohlanuvchanlik muammolari. Ba’zi sun’iy intellekt modellarining qaror qabul qilish jarayoni murakkab bo‘lgani uchun o‘qituvchilar va o‘quvchilar “Model bu natijani qanday chiqardi?” degan savolga javob topa olmaydi. Bu esa tizimga bo‘lgan ishonchni susaytiradi. Buni bartaraf etish uchun “Izoh beruvchi

sun’iy intellekt” (Explainable AI – XAI) tamoyillari qo‘llanadi. Ya’ni modelning qanday qaror chiqargani, qaysi omillar ta’sir qilgani va natija qanday shakllangani oson tushunarli tarzda ko‘rsatib beriladi. [4; 6]

*Xavflarni boshqarish va audit izlari.* Sun’iy intellekt bilan ishlaydigan tizimlarda har bir amal, kirish, o‘zgarish va xatolik maxsus qaydlar orqali nazorat qilinishi lozim. Bu audit izlari deb ataladi. Audit izlari mavjud bo‘lsa, tizim buzilganda sababni tez aniqlash mumkin bo‘ladi. Shuningdek, har bir tashkilotda xavf boshqaruvi siyosati, yetkazib beruvchi (vendor) xavfini baholash tizimi, hamda hodisalarga tezkor javob rejasi (incident response) ishlab chiqilgan bo‘lishi zarur. Bu hujumlar yoki texnik nosozliklar sodir bo‘lganda ta’lim jarayonining to‘xtab qolmasligini ta’minlaydi.

SI texnologiyalarining joriy etilishi bilan inson mehnatining avtomatlashtirilishi, xolislik, maxfiylik va inson nazoratining kamayishi kabi muammolar paydo bo‘ladi. Bundan tashqari, qaror qabul qilishda sun’iy intellektning adolatsiz yoki tarafkash yondashuvi (algorithmic bias) ijtimoiy tengsizlikka olib kelishi mumkin. Bunda quyidagich yechimlar berish mumkini:

• Sun’iy intellekt etikasi bo‘yicha milliy kodeks ishlab chiqish;

• “Inson halqasidagi” (human-in-the-loop) nazorat tizimini saqlash, ya’ni yakuniy qaror inson tomonidan tasdiqlanishi;

• SI tizimlarining izohlanadigan (explainable AI) shakllarini joriy etish;

• Ijtimoiy adolatni ta’minlovchi algoritmik monitoring tizimlarini yo‘lga qo‘yish.

Bundan tashqari, SI texnologiyalarini ishlab chiqish, o‘qitish va joriy etish katta moliyaviy mablag‘ni talab qiladi. Kichik korxonalar yoki ta’lim muassasalari uchun bu xarajatlar sezilarli bo‘lishi mumkin, Bunday muammolarni yechimi quyidagicha:

• davlat–xususiy sheriklik asosida loyihalarni moliyalashtirish;

• grantlar, innovatsion fondlar va xalqaro tashkilotlar (masalan, UNESCO, UNDP) yordamidan foydalanish;

• raqamli transformatsiyani milliy strategiyalar bilan uyg‘unlashtirish;

• mahalliy SI startaplarini qo‘llab-quvvatlash orqali ichki texnologik ekotizimni rivojlantirish.

Yana bir muhim muammolardan biri bu - psixologik tarafidir. Ba’zi o‘qituvchilar, rahbarlar yoki xodimlar sun’iy intellekt tizimlariga nisbatan ishonchsizlik bildiradilar. “Texnologiya insonni almashtiradi” degan xavotirlar mavjud. Bu esa joriy etish jarayonini sekinlashtiradi. Bu muammoni xodimlar va o‘qituvchilar uchun maxsus seminar va treninglar tashkil etish orqali bartaraf etish mumkin. Bundan tashqari, sun’iy intellekt tizimlarining foydasi va xavfsizligi haqida ommaviy axborot ishlarini

kuchaytirish va sun’iy intellekt bir vosita ya’ni, yordamchi, “inson -hakam” tamoyilini tushuntiradigan treninglar tashkil etish orqali ham muammoga yechim topish mumkin.

Xulosa qilib aytganda, huquqiy, etik va xavf omillari sun’iy intellektni joriy etishda eng muhim ustuvor yo‘nalishlardan biridir. Maxfiylikni saqlash, adolatni ta’minlash, tizimni shaffof va izohli qilish, shuningdek, xavflarni boshqarish mexanizmlarini yaratish ta’limda sun’iy intellektning ishonchli va xavfsiz qo‘llanishiga olib keladi.

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# IMPROVING ELECTRONIC HEALTH RECORD MANAGEMENT IN UZBEKISTAN THROUGH AUTOMATIC SPEECH RECOGNITION

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***ABSTRACT.*** *The digital transformation of healthcare requires not only the introduction of electronic health records (EHRs), but also practical mechanisms for reducing the administrative burden associated with their use. This study evaluates Automatic Speech Recognition (ASR) as an alternative and complementary method of medical documentation in Uzbekistan. A mixed-methods quasi-experimental approach was used to compare conventional keyboard-based documentation with voice-assisted data entry in real clinical settings. The results show that ASR improved documentation efficiency: the average time required to document 100 medical words fell from 8.8 to 5.2 minutes, the volume of recorded medical information increased by 30.4%, documentation errors decreased by approximately 17.6%, and copy-paste behavior declined by about 7.5%. The findings support a hybrid physician-ASR model in which lengthy narrative sections are dictated while critical structured data remain subject to physician verification.*

***Keywords:*** *healthcare management; digital healthcare; electronic health records; automatic speech recognition; medical documentation; Uzbekistan.*

## INTRODUCTION

Digitalization has become a central component of contemporary healthcare management. Electronic health records can improve the availability, continuity and coordination of patient information and support more efficient clinical and administrative decision-making [1]. Yet the introduction of an EHR system does not automatically lead to higher productivity. Its managerial value depends heavily on how easily physicians can enter, retrieve and verify information during a clinical encounter.

International research shows that electronic documentation may absorb a substantial share of physicians' working time. Complex interfaces, repetitive keyboard entry and insufficient digital skills can increase cognitive workload, extend

documentation beyond normal working hours and reduce the time available for direct interaction with patients [2]. These problems are particularly relevant for health systems that are still moving from fragmented or paper-based records toward integrated digital platforms.

Uzbekistan is currently developing a more integrated digital healthcare environment, while medical institutions continue to face challenges related to fragmented information systems, non-uniform data practices and the administrative burden of medical documentation. Automatic Speech Recognition (ASR), which converts spoken language into digital text, offers a potential solution. Instead of manually typing lengthy histories and examination notes, physicians can dictate information and then verify or correct the generated text. Previous studies have demonstrated that speech recognition can improve documentation speed and completeness [3,4]. The purpose of this research was therefore to assess whether ASR could improve the efficiency and quality of EHR documentation in the context of Uzbekistan.

## RESEARCH METHODOLOGY

The study applied a mixed-methods quasi-experimental design combining quantitative measures of documentation performance with observation and physician feedback. Practical testing was conducted in clinical institutions in Bukhara, including Family Polyclinic No. 8 of the Bukhara City Medical Association and the Bukhara regional branch of the Republican Specialized Cardiology Scientific-Practical Medical Center.

Two documentation conditions were compared: conventional keyboard-based entry and voice-assisted entry using ASR. Approximately 120 observations were analysed. The main indicators included EHR completion time, the amount of medical information recorded, documentation errors, physicians' tendency to reuse existing text, and user experience. Since record length differed between the two methods, efficiency was additionally standardized by calculating the time required to enter 100 medical words.

## RESULTS AND DISCUSSION

The empirical findings demonstrate a clear efficiency advantage for voice-assisted documentation. Under conventional keyboard entry, physicians required an average of approximately 23 minutes to complete an EHR, compared with about 17.8 minutes when ASR was used. At the same time, dictated records were more detailed: the average record increased from about 273 words under manual typing to 356 words with ASR, representing an increase of approximately 30.4% in recorded medical information.

After standardizing for record length, the difference became more pronounced. The average time required to enter 100 medical words decreased from 8.8 minutes through manual typing to 5.2 minutes using ASR, corresponding to an improvement of about 41%. This finding is important from a healthcare-management perspective because faster documentation can release physician time for direct clinical work without reducing the amount of information captured.

The study also identified improvements in data quality and documentation behaviour. The use of ASR was associated with an approximately 17.6% reduction in typing and documentation errors, while physicians' tendency to copy and paste information from existing records decreased by around 7.5%. Excessive reuse of prior text may reproduce outdated or irrelevant content and weaken the reliability of EHR data [5]. Voice-assisted documentation encourages the generation of patient-specific narratives while still allowing the physician to review and correct the final record.

The results are broadly consistent with international evidence. Blackley et al. [4] reported that speech-recognition-assisted documentation can generate more comprehensive notes and improve documentation quality, while more recent research suggests that speech recognition can increase the amount of documentation produced per unit of clinician time [6]. From a theoretical perspective, the findings are also compatible with Human-Computer Interaction and Cognitive Load Theory: replacing repetitive keyboard operations with natural speech reduces the mechanical effort of data entry and may allow clinicians to focus more on the clinical content of documentation.

**PRACTICAL RECOMMENDATIONS**

For Uzbekistan, the results support gradual implementation through a hybrid physician-ASR model rather than immediate full replacement of keyboard entry. Narrative sections such as complaints, medical history and examination descriptions can be dictated, while highly structured, sensitive or clinically critical information should remain subject to manual verification. This approach is particularly appropriate while Uzbek-language medical speech recognition continues to mature.

Successful implementation requires more than software procurement. Medical institutions should provide staff training, reliable hardware, appropriate microphones, technical support and mechanisms for continuous system improvement. ASR models should be adapted to Uzbek medical terminology and integrated with national EHR platforms. Pilot implementation across different regions and specialties is advisable before nationwide scaling, because the present study was conducted in a limited number of institutions and broader multicentre evidence would strengthen generalizability.

## CONCLUSION

Automatic Speech Recognition represents a promising management tool for accelerating the digital transformation of healthcare in Uzbekistan. The study shows that voice-assisted documentation can substantially reduce the time required to prepare electronic medical records while simultaneously increasing the volume of relevant clinical information and reducing documentation errors. The reduction from 8.8 to 5.2 minutes per 100 words, combined with a 30.4% increase in documented information, an approximately 17.6% reduction in errors and a decline in copy-paste behaviour, demonstrates that ASR can contribute not only to technological modernization but also to operational efficiency and better medical data management.

The most appropriate pathway is therefore a gradual hybrid implementation supported by physician training, language-specific model development, reliable digital infrastructure and continuous human verification. Under these conditions, ASR can help transform electronic health records from an additional administrative burden into a practical instrument for more efficient, accurate and patient-centred healthcare management.

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# KIBERXAVFSIZLIKDA TARMOQ HUJUMLARINI ANIQLASH UCHUN MASHINALI O‘QITISH ALGORITMLARINI TADQIQ QILISH

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***Annotatsiya.*** *Ushbu maqolada CIC-IDS2017/CIC-IDS datasetlari asosida tarmoq kiberhujumlarini aniqlashda mashinali o‘qitish usullari tadqiq etilgan. Ma’lumotlarga ishlov berishda keraksiz va takroriy xususiyatlar olib tashlanib, Logistic Regression va Random Forest algoritmlari baholandi. Tajriba natijalariga ko‘ra, Random Forest modeli 99% dan yuqori aniqlik va ROC-AUC ko‘rsatkichi bilan yuqori samaradorlik namoyon etgan bo‘lsa, Logistic Regression soddaligi va interpretatsiya imkoniyati bilan samarali natija berdi.*

***Kalit so‘zlar:*** *kiberxavfsizlik, tarmoq hujumlarini aniqlash, mashinali o‘qitish, Random Forest, Logistic Regression, IDS.*

***Аннотация.*** *В статье исследуется задача обнаружения сетевых атак с использованием методов машинного обучения на основе наборов данных CIC-IDS2017/CIC-IDS. В процессе предварительной обработки были удалены постоянные и дублирующиеся признаки, обучены модели Logistic Regression и Random Forest. Результаты показали, что алгоритм Random Forest достиг точности и ROC-AUC более 99%, а Logistic Regression продемонстрировал хорошие результаты благодаря простоте и интерпретируемости.*

***Ключевые слова:*** *кибербезопасность, обнаружение вторжений, машинное обучение, Random Forest, Logistic Regression, сетевой трафик.*

***Abstract.*** *This paper investigates network attack detection using machine learning algorithms on the CIC-IDS2017/CIC-IDS datasets. Redundant and duplicate features were removed during preprocessing, and Logistic Regression and Random Forest models were evaluated. Experimental results show that Random Forest achieved superior performance with accuracy and ROC-AUC exceeding 99%, while Logistic Regression provided reliable results with high interpretability.*

***Keywords:*** *cybersecurity, intrusion detection system, machine learning, Random Forest, Logistic Regression, network traffic analysis.*

## KIRISH

Bugungi kunda axborot texnologiyalarining jadal rivojlanishi natijasida tarmoq infratuzilmalariga bo‘lgan tahdidlar soni va murakkabligi ortib bormoqda. Internet xizmatlari, bulutli texnologiyalar va katta hajmdagi ma’lumot almashinuvi kengaygani sari kiberhujumlar ham yanada takomillashib bormoqda. DDoS, DoS, PortScan, Web Attack, Brute Force va boshqa turdagi hujumlar tashkilotlarning axborot tizimlari xavfsizligiga jiddiy xavf tug‘diradi.

An’anaviy tarmoq xavfsizligi vositalari, xususan, qoidalarga asoslangan Intrusion Detection System (IDS) tizimlari oldindan aniqlangan hujum belgilaridan foydalanadi. Bunday yondashuv ma’lum hujumlarni aniqlashda samarali bo‘lsa-da, yangi va noma’lum tahdidlarni aniqlash imkoniyati cheklangan. Bundan tashqari, zamonaviy tarmoq trafiklarining katta hajmi va murakkabligi sababli qo‘lda yaratilgan qoidalar asosida ishlaydigan tizimlar yetarli darajada moslashuvchan emas.

Mashinali o‘qitish (Machine Learning) usullari ushbu muammolarni hal qilish uchun istiqbolli yondashuvlardan biri hisoblanadi. Ushbu usullar tarmoq trafikidan muhim xususiyatlarni avtomatik ravishda o‘rganish, normal va zararli faoliyat o‘rtasidagi farqlarni aniqlash hamda yangi hujumlarni aniqlash imkonini beradi. Klassifikatsiya algoritmlari yordamida tarmoq oqimlari “BENIGN” va “ATTACK” sinflariga ajratilib, xavfsizlik monitoringi jarayonlarini avtomatlashtirish mumkin.

Mazkur tadqiqot ishida mashinali o‘qitish algoritmlarining tarmoq hujumlarini aniqlashdagi samaradorligi o‘rganiladi. Tajriba uchun CIC-IDS2017/CIC-IDS2018 asosidagi tarmoq trafik ma’lumotlari ishlatildi. Ushbu dataset turli xil hujum turlarini, jumladan DoS, DDoS, PortScan, Web Attack, Brute Force va boshqa zararli faoliyatlarni o‘z ichiga oladi.

Tadqiqot davomida ma’lumotlarni tayyorlash jarayonida keraksiz va takroriy belgilar tahlil qilindi hamda model sifatiga salbiy ta’sir ko‘rsatishi mumkin bo‘lgan xususiyatlar olib tashlandi. Dastlabki qayta ishlashdan so‘ng tanlangan belgilar asosida Logistic Regression va Random Forest algoritmlari yordamida modellar yaratildi va baholandi.

Ushbu ishning asosiy maqsadi - mashinali o‘qitish algoritmlarining tarmoq hujumlarini aniqlashdagi imkoniyatlarini baholash, turli modellarning samaradorligini taqqoslash va yuqori aniqlikka ega IDS yechimlarini ishlab chiqish imkoniyatlarini o‘rganishdan iborat.

Tadqiqotning asosiy hissasi quyidagilardan iborat:

- tarmoq trafik ma’lumotlarini qayta ishlash va tayyorlash jarayonini amalga oshirish;
- keraksiz va takroriy xususiyatlarni aniqlash hamda kamaytirish;

- mashinali o‘qitish algoritmlarini qo‘llash orqali hujumlarni aniqlash;
- modellarni Accuracy, Precision, Recall, F1-score va ROC-AUC ko‘rsatkichlari orqali baholash;
- yuqori samaradorlikka ega klassifikatsiya modelini aniqlash.

Olingan tajriba natijalari mashinali o‘qitish yondashuvlari zamonaviy kiberxavfsizlik tizimlarida tarmoq hujumlarini aniqlash jarayonini takomillashtirish uchun samarali vosita bo‘lishi mumkinligini ko‘rsatadi.

## 2. Asosiy qism

### 2.1. Kiberxavfsizlikda mashinali o‘qitish

Kiberxavfsizlik sohasida tarmoq hujumlarini aniqlash masalasi uzoq yillardan beri dolzarb muammolardan biri bo‘lib kelmoqda. Tarmoq xavfsizligini ta’minlash uchun odatda Intrusion Detection System (IDS) - hujumlarni aniqlash tizimlaridan foydalaniladi. IDS tizimlari tarmoq trafigini kuzatib boradi, shubhali faoliyatlarni aniqlaydi va xavfsizlik hodisalari haqida xabar beradi.

An’anaviy IDS tizimlari asosan signaturaga asoslangan (signature-based) yondashuvdan foydalanadi. Bunday tizimlarda avvaldan ma’lum bo‘lgan hujum namunalarining bazasi shakllantiriladi va kelayotgan trafik ushbu namunalar bilan taqqoslanadi. Ushbu usul ma’lum hujumlarni aniqlashda yuqori samaradorlikka ega bo‘lsa-da, yangi yoki o‘zgartirilgan hujumlarni aniqlashda cheklovlarga ega.

Zamonaviy kiberhujumlarning murakkablashishi natijasida anomaliyaga asoslangan (anomaly-based) IDS tizimlariga ehtiyoj oshmoqda. Ushbu yondashuvda tizim normal tarmoq xatti-harakatlarini o‘rganadi va undan farq qiluvchi faoliyatlarni potensial hujum sifatida aniqlaydi. Mashinali o‘qitish algoritmlari aynan shu vazifani bajarishda samarali vosita sifatida qo‘llanilmoqda.

Mashinali o‘qitish (Machine Learning) - bu kompyuter tizimlariga katta hajmdagi ma’lumotlardan foydalanib, aniq qoidalar kiritmasdan qonuniyatlarni aniqlash imkonini beruvchi sun’iy intellekt yo‘nalishidir. Kiberxavfsizlikda ML algoritmlari tarmoq trafikining xususiyatlarini tahlil qilish, hujum va normal faoliyat o‘rtasidagi farqlarni aniqlash hamda yangi tahdidlarni topishda ishlatiladi.

Ushbu tadqiqotda Supervised Learning (nazorat ostidagi o‘qitish) yondashuvidan foydalanildi. Ushbu usulda model oldindan belgilangan sinflarga ega ma’lumotlar asosida o‘qitiladi. Tarmoq hujumlarini aniqlash masalasida ma’lumotlar odatda ikki asosiy sinfga ajratiladi:

- **BENIGN** - normal tarmoq faoliyati;
- **ATTACK** - zararli yoki hujumga tegishli trafik.

Model ushbu sinflar o‘rtasidagi farqlarni o‘rganib, yangi tarmoq oqimlarini avtomatik ravishda klassifikatsiya qiladi.

### 2.2. Tadqiqot metodologiyasi

Ushbu tadqiqotda tarmoq hujumlarini aniqlash uchun mashinali o‘qitish asosidagi klassifikatsiya yondashuvi qo‘llanildi. Tadqiqot jarayoni bir nechta asosiy bosqichlardan tashkil topdi: ma’lumotlarni tayyorlash, dastlabki qayta ishlash (preprocessing), xususiyatlarni tanlash, modellarni o‘qitish va natijalarni baholash.

Tadqiqot metodologiyasining umumiy ketma-ketligi quyidagi bosqichlarni o‘z ichiga oladi:

1. Datasetni shakllantirish
2. Ma’lumotlarni tozalash va preprocessing
3. Xususiyatlarni tahlil qilish va tanlash
4. Mashinali o‘qitish modellarini yaratish
5. Modellarni baholash va taqqoslash

**Datasetni tayyorlash**

Tadqiqotda CIC-IDS2017/CIC-IDS2018 tarmoq trafik datasetlaridan foydalanildi. Ushbu datasetlar real tarmoq muhitidan olingan trafik oqimlarini o‘z ichiga oladi va turli xil kiberhujum turlarini modellashtiradi.

Tadqiqot vazifasini ikkilik klassifikatsiya (binary classification) sifatida shakllantirish uchun barcha hujum turlari yagona ATTACK sinfiga birlashtirildi, normal trafik esa BENIGN sinfi sifatida qabul qilindi.

| Target | Ma’nosi |
|---|---|
| 0 | BENIGN (normal trafik) |
| 1 | ATTACK (zararli trafik) |

**Ma’lumotlarni bo‘lish**

Modelni haqqoniy baholash uchun ma’lumotlar trening va test qismlariga ajratildi. Oddiy tasodifiy ajratish o‘rniga trafik manbalarining o‘zaro aralashib ketishini kamaytirish maqsadida GroupShuffleSplit usulidan foydalanildi.

### 2.3. Dataset va preprocessing

Dastlabki dataset quyidagi tarkibga ega edi:

| Ko‘rsatkich | Qiymat |
|---|---|
| Umumiy namunalar soni | 2 520 101 |
| Umumiy ustunlar soni | 82 |
| Model xususiyatlari soni | 78 |

| Ko‘rsatkich | Qiymat |
|---|---|
| Maqsad ustuni | Target |

**Preprocessing jarayonida:**

- doimiy qiymatga ega bo‘lgan 8 ta feature olib tashlandi;
- takrorlanuvchi 6 ta feature olib tashlandi;

### 2.4. Modellar

Tadqiqotda ikkita klassifikatsiya algoritmi qo‘llanildi: Logistic Regression va Random Forest. Modellarni o‘qitish jarayonida barcha tajribalar Python dasturlash muhiti hamda Scikit-learn kutubxonasi yordamida amalga oshirildi.

Modellar uchun quyidagi giperparametrlar tanlandi:

**Logistic Regression**

| **Parametr** | Solver | C | Max iterations | Random state |
|---|---|---|---|---|
| **Qiymat** | lbfgs | 1.0 | 1000 | 42 |

Logistic Regression modeli chiziqli ajratish imkoniyatiga ega bo‘lgan bazaviy klassifikator sifatida ishlatildi.

**Random Forest**

| **Parametr** | n_estimators | Random state | n_jobs | Criterion |
|---|---|---|---|---|
| **Qiymat** | 100 | 42 | -1 | gini |

Random Forest modeli bir nechta qaror daraxtlaridan tashkil topgan ansambl algoritmi sifatida qo‘llanildi. Ushbu model murakkab va chiziqli bo‘lmagan tarmoq trafik naqshlarini aniqlash imkoniyati sababli tanlandi.

| Model | Accuracy | Precision | Recall | F1-score | ROC-AUC |
|---|---|---|---|---|---|
| **Logistic Regression** | 0.9436 | 0.8616 | 0.8500 | 0.8558 | 0.9815 |
| **Random Forest** | 0.9993 | 0.9973 | 0.9986 | 0.9979 | 0.9999 |

### 2.5. Natijalar va muhokama

Ushbu bo‘limda ishlab chiqilgan mashinali o‘qitish modellarining tarmoq hujumlarini aniqlashdagi natijalari tahlil qilinadi. Tadqiqot natijalari shuni ko‘rsatdiki, ikkala model ham tarmoq trafiklarini BENIGN va ATTACK sinflariga ajratishda samarali ishladi. Biroq modellar orasida sezilarli farq kuzatildi. Random Forest modeli barcha baholash mezonlari bo‘yicha Logistic Regression modelidan ustun natija berdi.

## 3. Xulosa

Ushbu tadqiqotda zamonaviy tarmoq hujumlarini aniqlash masalasida mashinaviy o‘qitish algoritmlaridan foydalanish imkoniyatlari o‘rganildi. Tadqiqotlar

CICIDS2017 ma’lumotlar to‘plami asosida amalga oshirildi. Dastlabki ma’lumotlarga ishlov berish jarayonida keraksiz va takrorlanuvchi xususiyatlar aniqlanib, doimiy qiymatga ega bo‘lgan belgilar hamda yuqori korrelyatsiyaga ega bo‘lgan takroriy xususiyatlar olib tashlandi.

Tadqiqot davomida Logistic Regression va Random Forest klassifikatsiya modellari sinovdan o‘tkazildi. Tajriba natijalariga ko‘ra Random Forest modeli tarmoq hujumlarini aniqlash vazifalarida Logistic Regression modeliga nisbatan yuqori samaradorlikka ega ekanligini ko‘rsatdi. Ayniqsa, paket uzunligi statistikasi, trafik oqimi xususiyatlari va port ma’lumotlari hujumlarni ajratishda muhim ahamiyat kasb etdi.

Kelgusidagi tadqiqotlarda ko‘p sinfli (multi-class) hujumlarni aniqlash, chuqur o‘qitish (Deep Learning) algoritmlarini qo‘llash, real vaqt rejimidagi trafik oqimlarida model ishlashini baholash hamda model interpretatsiyasi (Explainable AI) usullarini tadqiq qilish rejalashtirilmoqda.

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# KAM RESURSLI O‘ZBEK VA TURKIY TILLAR UCHUN AVTOMATIK NUTQNI TANISH MUAMMOLARI

*Sharipov Zohirjon Zokirjon o‘g‘li*

***Annotatsiya:****Avtomatik nutqni tanish tizimlari yuqori resursli tillarda sezilarli yutuqlarga erishgan bo'lsa-da, o'zbek tili va boshqa turkiy tillar uchun bu soha hanuzgacha jiddiy qiyinchiliklarga duch kelmoqda. Ushbu tezisda kam resursli turkiy tillarda nutqni tanishni murakkablashtiruvchi asosiy omillar tahlil qilinadi: yetarli hajmdagi belgilangan ma'lumotlarning kamligi, tillarning agglutinativ va morfologik jihatdan boy tuzilishi, dialekt hamda talaffuzdagi xilma-xillik va mavjud korpuslardagi sifat va muvozanat muammolari. O'zbek tili misolida Common Voice va O'zbek nutq korpusi resurslari ko'rib chiqiladi hamda ularning cheklovlari baholanadi. Tahlil natijasida ko'p tilli oldindan o'qitilgan modellar va transfer learning usuli mazkur qiyinchiliklarni yengishning eng istiqbolli yo'nalishi sifatida taklif etiladi.*

***Kalit so'zlar***

*O'zbek tili; turkiy tillar; avtomatik nutqni tanish; kam resursli tillar; nutqni tanish; chuqur o'rganish.*

## 1. Kirish

So'nggi yillarda chuqur o'rganishga asoslangan avtomatik nutqni tanish texnologiyalari jadal rivojlanib, ingliz va boshqa keng tarqalgan tillar uchun yuqori aniqlikka erishildi. Biroq bu yutuqlar barcha tillarga bir xilda taalluqli emas. Turkiy tillar oilasiga mansub o'zbek, qozoq, turk va ozarbayjon tillari, garchi millionlab kishilar tomonidan qo'llanilsa-da, texnologik jihatdan kam ta'minlangan tillar qatoriga kiradi. Ushbu tezisda mazkur tillarda nutqni tanish tizimlarini yaratishda uchraydigan asosiy muammolar tizimli tarzda tahlil qilinadi va ularni bartaraf etish yo'nalishi belgilanadi.

## 2. Asosiy muammolar

### 2.1. Cheklangan ma'lumotlar bazasi

Zamonaviy nutqni tanish modellari yuqori aniqlikka erishishi uchun katta hajmdagi transkripsiyalangan audio ma'lumotlarni talab qiladi. Turkiy tillar uchun bunday belgilangan korpuslar juda kam va ularni yig'ish qimmat hamda ko'p vaqt talab

qiluvchi jarayondir. Ma'lumotlarning yetishmasligi modellarning o'rganish sifatini bevosita cheklaydi.

**2.2. Morfologik murakkablik**

Turkiy tillar agglutinativ tuzilishga ega bo'lib, so'zlarga ketma-ket qo'shimchalar qo'shilishi orqali son-sanoqsiz yangi so'z shakllari hosil bo'ladi. Bu holat lug'at hajmini keskin oshiradi va kam uchraydigan so'z shakllarini tanishni qiyinlashtiradi, bu esa so'z darajasidagi xatoliklar ortishiga olib keladi.

**2.3. Dialektal xilma-xillik**

Turkiy tillarda hududiy shevalar va lahjalar ko'p. Bir xil so'z turli mintaqalarda turlicha talaffuz qilinishi mumkin. Aksariyat korpuslar bunday xilma-xillikni to'liq qamrab olmaydi, natijada model muayyan shevada yaxshi ishlab, boshqasida aniqligini yo'qotadi.

**2.4. Talaffuz xilma-xilligi**

So'zlovchilarning yoshi, jinsi va nutq tezligi talaffuzga sezilarli ta'sir ko'rsatadi. Bir xil matn turli so'zlovchilar tomonidan turlicha aytilishi model uchun qo'shimcha noaniqlik manbai bo'lib xizmat qiladi.

**2.5. Ma'lumotlar sifati**

Ochiq va jamoatchilik tomonidan to'ldiriladigan korpuslarda audio yozuvlarning sifati bir xil emas. Shovqin, notekis yozib olish sharoitlari va noto'g'ri transkripsiyalar model aniqligini pasaytiradi. Shuning uchun ma'lumotlarni oldindan tozalash va tekshirish muhim ahamiyatga ega.

**3. Mavjud yechimlar**

Nutqni tanish tizimlari bir necha avlod texnologiyalarni bosib o'tdi. Dastlab chuqur neyron tarmoqlar va yashirin Markov modellari birgalikda qo'llanilgan. Keyinchalik konvolyutsion tarmoqlar hamda uzoq-qisqa muddatli xotira tarmoqlari ketma-ket ma'lumotlarni yaxshiroq modellashtirish imkonini berdi. Transformer arxitekturasining paydo bo'lishi bilan nutqni tanish sifati yangi bosqichga ko'tarildi. So'nggi yillarda o'z-o'zini nazorat qiluvchi Wav2Vec2 va uning ko'p tilli kengaytmasi XLS-R modellari belgilanmagan audiodan ham foydali tasvirlarni o'rganish imkonini yaratdi. Transfer learning usuli esa bu modellarni kam ma'lumot bilan yangi tilga moslashtirishga xizmat qiladi va aynan kam resursli tillar uchun samarali yondashuv hisoblanadi.

**4. O'zbek tili misolida**

O'zbek tili uchun ikki asosiy ovozli manba mavjud. Birinchisi Mozilla Common Voice loyihasi bo'lib, u jamoatchilik tomonidan to'ldiriladigan va ochiq litsenziyaga ega korpusdir; hozirgi kunda o'zbek tili qismi taxminan 4,92 gigabayt hajmdagi audio

yozuvlarni o'z ichiga oladi, ammo yozuvlar sifati va so'zlovchilar muvozanati bir xil emas. Ikkinchisi O'zbek nutq korpusi bo'lib, u qo'lda tekshirilgan va yuqori sifatli manba sanaladi: 958 nafar so'zlovchidan yig'ilgan 104,9 soatlik transkripsiyalangan audio hamda 100 767 ta nutq bo'lagidan iborat. Ushbu korpuslar o'zbek tilida nutqni tanish tadqiqotlari uchun asos bo'lsa-da, ularning hajmi va qamrovi yirik tillar resurslariga nisbatan cheklangan bo'lib qolmoqda.

**5. Taklif etilayotgan yo'nalish**

Yuqorida keltirilgan muammolarni yengishning eng maqbul yo'li ko'p tilli oldindan o'qitilgan modellardan foydalanish va ularni transfer learning usuli orqali o'zbek hamda boshqa turkiy tillarga moslashtirishdan iborat. Katta hajmdagi ko'p tilli ma'lumotlarda o'qitilgan model umumiy akustik bilimlarni o'zida saqlaydi va bu bilimlar kam miqdordagi maqsadli til ma'lumotlari yordamida aniqlanadi. Bunday yondashuv ma'lumot yetishmovchiligining ta'sirini kamaytiradi va morfologik jihatdan boy tillarda ham qoniqarli natija berish imkonini yaratadi.

**6. Xulosa**

Turkiy tillarda avtomatik nutqni tanish rivojiga ma'lumot yetishmovchiligi, morfologik murakkablik, dialekt va talaffuzdagi xilma-xillik hamda korpus sifati bilan bog'liq omillar to'sqinlik qilmoqda. O'zbek tili misolida ko'rsatilganidek, mavjud korpuslar muhim asos bo'lsa-da, yetarli emas. Shu sababli ko'p tilli oldindan o'qitilgan modellar va transfer learning usuli ushbu tillarda nutqni tanish sifatini oshirishning eng istiqbolli yo'nalishi hisoblanadi.

# 4. ENGINEERING, TECHNOLOGY, AND INDUSTRIAL SCIENCES

# EFFECT OF ELECTROPULSE TREATMENT ON THE CORROSION RESISTANCE OF COMMERCIALLY PURE NICKEL NP1

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***Abstract.*** *Commercially pure nickel NP1 is widely used in engineering applications because of its excellent corrosion resistance and favorable mechanical properties. However, additional improvement of its performance can be achieved through microstructural modification. This work investigates the influence of cryogenic rolling followed by electropulse treatment (EPT) on the corrosion resistance of NP1 nickel. Structural characterization and corrosion testing demonstrated that electropulse treatment promotes recovery and recrystallization, resulting in a more homogeneous microstructure and improved corrosion behavior. The obtained results confirm that electropulse treatment is an effective method for enhancing the durability of commercially pure nickel.*

***Keywords:*** *Nickel NP1, Corrosion resistance, Electropulse treatment, Cryogenic rolling, Microstructure.*

## Introduction

Commercially pure nickel possesses excellent resistance to corrosion in aggressive environments and is widely applied in chemical, petrochemical, marine, and power engineering industries. Besides chemical composition, the corrosion resistance of nickel strongly depends on its microstructural state. Grain refinement, recrystallization, and reduction of structural defects can significantly improve the stability of the passive oxide film and increase corrosion resistance.

Cryogenic rolling introduces severe plastic deformation and increases the density of crystal defects. Electropulse treatment provides rapid localized heating that accelerates recovery and recrystallization while avoiding prolonged furnace annealing. This combination offers an efficient approach for improving both mechanical and corrosion properties.

Experimental Procedure

Commercially pure NP1 nickel specimens were annealed before cryogenic rolling. Rolling was performed under liquid nitrogen conditions to achieve approximately **70% thickness reduction**. Electropulse treatment was then applied using high-density current pulses of short duration. Corrosion behaviour was evaluated after processing and compared with the initial condition. Microstructural changes were analyzed using Electron Backscatter Diffraction (EBSD), while microhardness measurements were used to correlate structural evolution with corrosion performance.

Results and Discussion

Cryogenic rolling produced a highly deformed microstructure with increased dislocation density and elongated grains. Electropulse treatment promoted recovery and recrystallization, resulting in finer and more homogeneous grains. The reduction of internal stresses and structural heterogeneity facilitated the formation of a more stable passive oxide layer on the nickel surface.

Corrosion testing indicated that the processed specimens exhibited improved corrosion resistance compared with the untreated material. The improvement is attributed to grain refinement and the reduction of preferential corrosion initiation sites after electropulse treatment. These findings demonstrate that the combined processing route effectively enhances both structural stability and corrosion performance of commercially pure NP1 nickel.

Conclusions

· Cryogenic rolling significantly modified the microstructure of commercially pure NP1 nickel.

· Electropulse treatment accelerated recovery and recrystallization processes.

· Structural homogenization improved the formation of the protective passive film.

· Combined cryogenic rolling and electropulse treatment increased the corrosion resistance of NP1 nickel.

· The proposed processing route represents a promising method for improving the service performance of nickel-based material

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# QURILISH MATERIALLARINI YONG‘INDAN HIMOYALOVCHI KOMPOZITSIYA ASOSIDA OLISH USULI

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***Annotatsiya.*** *Mazkur maqolada suyuq shisha, kremniy oksidi, alyuminiy oksidi, akril asosidagi emulsiya, borat kislotasi va sement asosida yangi avlod mineral-polimer kompozitsion yong‘inga chidamli qoplama materiali ishlab chiqish usuli taklif etilgan. Tadqiqot natijalariga ko‘ra, ushbu komponentlarning sinergetik ta’siri natijasida yuqori harorat ta’sirida ko‘p fazali silikat-aluminosilikat himoya qatlam hosil bo‘lgan. Suyuq shisha va kremniy oksidi yuqori haroratda silikatli matritsa hosil qilib, materialning termik barqarorligini oshiradi. Alyuminiy oksidi esa refrakter komponent sifatida kompozitsiyaning yuqori haroratga chidamliligini (≈1200°C gacha) sezilarli darajada oshiradi.*

***Kalit so‘zlar:*** *qoplama material, makrostruktura, termoizolyatsion qatlam, silikat matritsa, g‘ovak, refrakter komponent, zichlik, himoyalovchi qoplama, issiqlik oqimi, substrat, sinergetik ta’sir, suspenziya, mexanik aralashtirgichsuyuq shisha, kremniy oksidi, alyuminiy oksidi, akril asosidagi emulsiya, borat kislotasi, sement, mineral-polimer, kompozitsiya, yong‘inga chidamli.*

***Аннотация.*** *В статье предложена метод разработки огнестойкого минерально-полимерного композиционного покрытия нового поколения на основе жидкого стекла, оксида кремния, оксида алюминия, акриловой эмульсии, борной кислоты и цемента. Результаты исследований свидетельствуют о том, что синергетический эффект этих компонентов приводит к формированию многофазного силикатно-алюмосиликатного защитного слоя в условиях высоких температур. Жидкое стекло и оксид кремния при высоких температурах образуют силикатную матрицу, повышая тем самым термическую стойкость материала, в то время как оксид алюминия выступает в роли тугоплавкого компонента, существенно увеличивая устойчивость состава к воздействию*

*высоких температур (примерно до 1200°C).*

***Ключевые слова:*** *покрытие, макроструктура, теплоизоляционный слой, силикатная матрица, пора, огнеупорный компонент, плотность, защитное покрытие, тепловой поток, подложка, синергетический эффект, суспензия, механическая мешалка, жидкое стекло, оксид кремния, оксид алюминия, акриловая эмульсия, борная кислота, цемент, минерально-полимерная композиция, огнестойкий.*

***Annotation.*** *The article proposes a metod for developing a new-generation fire-resistant mineral-polymer composite coating based on liquid glass, silicon oxide, aluminum oxide, acrylic emulsion, boric acid, and cement. Research results indicate that the synergistic effect of these components leads to the formation of a multiphase silicate-aluminosilicate protective layer under high-temperature conditions. At high temperatures, liquid glass and silicon oxide form a silicate matrix, thereby enhancing the material's thermal stability, while aluminum oxide acts as a refractory component, significantly increasing the composition's resistance to high temperatures (up to approximately 1200°C).*

***Key words:*** *thermal insulation layer, silicate matrix, pore, refractory component, density, protective coating, heat flux, substrate, synergistic effect, suspension, mechanical stirrer, liquid glass, silicon oxide, aluminum oxide, acrylic emulsion, boric acid, cement, mineral-polymer composition, fire-resistant, coating, macrostructure.*

**Kirish.** Qurilish materiallarining yangi tarkiblarini dunyo miqyosida ishlab chiqarishga alohida e’tibor qaratilib, uy-joy qurilishida mahalliy energiya tejamkor, olovbardosh va issiqlik izolyatsiyalovchi qurilish materiallaridan foydalanish har tomonlama qulay hisoblanib, rivojlanib bormoqda. Respublikamizda olib borilayotgan keng qamrovli islohotlar jarayonida,

2022–2026 yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasida favqulodda vaziyatlarning oldini olish va bartaraf etishning samarali tizimini yaratish borasida bir qator ustuvor vazifalar belgilangan. Ushbu vazifalarni bajarishda yong‘in xavfsizligini ta’minlashga ham alohida e’tibor qaratilib kelinmoqda. Mazkur yo‘nalishda yangi tarkibli olovbardosh qurilish materiallarini ishlab chiqish ham katta ahamiyat kasb etadi [1].

Olovbardosh qurilish materiallarini olish borasidagi amalga oshirilgan tadqiqotlar natijasida energiya sarfi kam bo‘lgan avtoklavsiz olovbardosh kalsiy silikat plitkalarini olish usuli ishlab chiqilgan. Ilm-fan va ilg‘or texnologiyalarning rivojlanishi

natijasida, hozirgi vaqtda olovbardosh va issiqlik izolyatsiyalovchi qurilish materiallarining zamonaviy turlari ishlab chiqarilmoqda. Qurilish materiallarini olish uchun yangi tarkiblarni qo‘llash, issiqlikka chidamli va olovbardosh qurilish materiallarining mustahkamlik ko‘rsatkichlarini oshirishda, kam energiya hajmli qurilish materiallarini olishda xom ashyo materiallari tarkiblarini optimallashtirish, issiqlikka chidamli va olovbardosh qurilish materiallarini ishlab chiqarish texnologiyalarini modernizatsiya qilish, ularning hajmini oshirish uchun mineral qo‘shimchalarning mahalliy, muqobil manbalarini qo‘llash masalalari muhim ahamiyat kasb etmoqda [2-4].

Bino va inshootlarning xavfsizligini ta’minlashda fizik-kimyoviy xossalari oldindan o‘rganilgan, shu bilan birga yong‘in xavfsizligini ta’minlash bo‘yicha yong‘in-texnik tavsiflarga ega bo‘lgan qurilish materiallaridan foydalanish maqsadga muvofiq. Zamonaviy qurilish sanoatida yong‘in xavfsizligi, energiya tejamkorligi va uzoq muddatli ekspluatatsion barqarorlikni ta’minlay oladigan issiqlik izolyatsion materiallar ishlab chiqish dolzarb masalalardan biri bo‘lib, hozirgi vaqtda katta ahamiyat kasb etadi [4-10].

**Asosiy qism.** Ushbu tadqiqotda suyuq shisha, kremniy oksidi, alyuminiy oksidi, akril asosidagi emulsiya (777 marka), borat kislotasi va sement asosida yangi avlod mineral-polimer kompozitsion, yong‘inga chidamli qoplama materiali ishlab chiqish texnologiyasi taklif etilgan. Kompozitsiya tarkibi massa ulushlarda quyidagicha: suyuq shisha–40 %, kremniy oksidi–30 %, alyuminiy oksidi–10 %, akril asosidagi emulsiya (777 marka)–5 %, borat kislotasi –5 % sement –10 %.

Sinovlar GOST 30247.0 va GOST 30247.1 standartlari talablariga muvofiq o‘tkazilib, qurilish elementlarining yong‘in ta’sirida strukturaviy barqarorligi, issiqlik izolyatsion xossalari hamda yuzadagi temperaturaviy o‘zgarishlar aniqlangan [1, 2].

Olib borilgan tadqiqotlar natijalariga ko‘ra, ushbu komponentlarning sinergetik ta’siri natijasida yuqori harorat ta’sirida ko‘p fazali silikat-aluminosilikat himoya qatlam hosil bo‘lishi kuzatilgan. Suyuq shisha va kremniy oksidi yuqori haroratda silikatli matritsa hosil qilib, materialning termik barqarorligini oshiradi. Alyuminiy oksidi esa refrakter komponent sifatida kompozitsiyaning yuqori haroratga chidamliligini (≈1200°C gacha) sezilarli darajada oshiradi.

Borat kislotasi yuqori harorat ta’sirida endotermik parchalanish orqali issiqlik oqimini kamaytiruvchi va shishasimon himoya qatlam hosil qiluvchi komponent sifatida ishlaydi. Akril asosidagi emulsiya kompozitsiyaning dispersligini, substratga adgeziyasini hamda mexanik mustahkamligini yaxshilaydi. Sement esa struktura

stabilizatori bo‘lib xizmat qilib, qoplamaning qattiqligi va mexanik barqarorligini oshiradi.

Taklif etilayotgan texnologiya bo‘yicha kompozitsiya komponentlari mexanik aralashtirgichda 20–30 daqiqa davomida homogen suspenziya hosil bo‘lguncha aralashtiriladi. Dastlab suyuq shisha va akril emulsiyasi aralashtiriladi, keyin esa ketma-ket ravishda kremniy oksidi, alyuminiy oksidi, borat kislotasi va sement qo‘shiladi. Tayyor kompozitsiya metall, beton va yog‘och yuzalarga purkash, cho‘tka yoki valik yordamida surtiladi.

Hosil bo‘lgan qoplama yuqori harorat ta’sirida ko‘piklanib kengayuvchi issiqlik izolyatsion qatlam hosil qiladi va material yuzasini yong‘in ta’siridan himoya qiladi. Natijada issiqlik o‘tkazuvchanligi kamayadi va substratning kritik haroratga yetib borish vaqti sezilarli darajada uzayadi.

1-jadval.

**Yong‘indan himoyalovchi kompozitsiya asosidagi materialning fizik-kimyoviy xossalari gost talablari asosida yong‘inga chidamlilik ko‘rsatkichlari**

| T/r | Sinov ko‘rsatkichi (GOST talablari bo‘yicha) | GOST talabi / me’yori | 1- tarkib bilan qoplangan namuna | 2- tarkib bilan qoplangan namuna | Baholash |
|---|---|---|---|---|---|
| 1. | Yong‘inga chidamlilik vaqti, min (GOST 30247.0) | ≥ 60 min | 110–120 min | 90–100 min | Talabdan yuqori |
| 2. | Harorat o‘sish chegarasi (GOST 30247.1) | ≤ 140 °C | 95–110°C | 110–125°C | Talabga mos |
| 3. | Issiqlik o‘tkazuvchanlik koeffitsienti, W/(m·K) | ≤ 0.15 | 0.08–0.12 | 0.05–0.08 | Talabdan yaxshi |
| 4. | Qoplama qalinligi, mm | 2–5 mm | 3–5 mm | 2–3 mm | Me’yoriy |
| 5. | Qoplama adgeziyasi, MPa (GOST 15140) | ≥ 1.0 | 1.8–2.5 | 1.4–2.1 | Talabdan yuqori |
| 6. | Yonuvchanlik guruhi (GOST 30244) | G1 yoki NG | NG (yonmaydigan) | NG (yonmaydigan) | Talabga mos |
| 7. | Tutun hosil qilish koeffitsienti (GOST 12.1.044) | D1–D2 | D1 | D1 | Talabdan yaxshi |
| 8. | Qoplamaning yorilishga chidamliligi | Yorilishsiz | Barqaror | Barqaror | Talabga mos |
| 9. | Massaning termik yo‘qotilishi, % | ≤ 20 % | ≈ 18 % | ≈ 16 % | Talabga mos |

| | | | | | |
|---|---|---|---|---|---|
| 10. | Qurilish materiali yuzasining maksimal temperaturasi, °C | ≤ 500 °C | 380–420 °C | 410–450 °C | Talabdan yaxshi |

Taklif etilgan kompozitsiya yuqori termik barqarorlik (1000 °C gacha), past issiqlik o‘tkazuvchanlik (0.08–0.12 W/m·K), yuqori adgeziya va ekologik xavfsizlik kabi xossalarga ega bo‘lib, sanoat binolari, metall konstruksiyalar, qurilish materiallari va transport infratuzilmasi obyektlarini yong‘indan himoyalash uchun istiqbolli material hisoblanadi (1-jadval).

Mazkur jadvalda suyuq shisha asosida ishlab chiqilgan ikki turdagi yong‘indan himoyalovchi kompozitsiyaning tarkibiy tuzilishi, fizik-mexanik xossalari hamda ekspluatatsion ko‘rsatkichlari qiyosiy tahlil qilingan. Birinchi kompozitsiya silikat–alumooksid–borat–sement tizimiga asoslangan bo‘lib, unda suyuq shisha, kremniy oksidi, alyuminiy oksidi, borat kislotasi va sement komponentlarining birgalikdagi sinergetik ta’siri natijasida ko‘p fazali mineral matritsa shakllanadi.

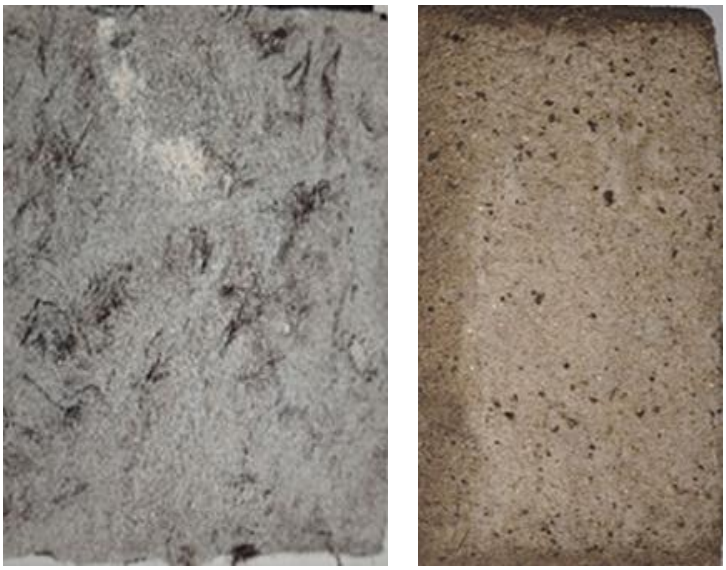
Ushbu tizim yuqori harorat ta’sirida silikat va aluminosilikat strukturalarning keramiklashuviga olib keladi, natijada qoplama yuqori refrakterlik, mexanik barqarorlik va uzoq muddatli yong‘inga chidamlilik xususiyatlariga ega bo‘ladi. Shuningdek, borat kislotasining endotermik parchalanish jarayoni issiqlik energiyasining bir qismini yutib, substratning qizishini sekinlashtiradi.

Ikkinchi kompozitsiya esa silikat–perlit–akril tizimi asosida shakllantirilgan bo‘lib, unda perlit mikrog‘ovakli mineral to‘ldiruvchi sifatida ishlaydi. Perlit zarrachalarining g‘ovakli tuzilishi kompozitsiya ichida ko‘plab yopiq havo bo‘shliqlarini hosil qiladi, bu esa issiqlik o‘tkazuvchanligini kamaytirib, qoplamaning termoizolyatsion samaradorligini oshiradi. Shu sababli mazkur tizim nisbatan yengil, past zichlikka ega va konstruksiyaga ortiqcha yuklama bermasdan issiqlik oqimini kamaytirishga xizmat qiladi.

Tadqiqotlar natijalariga ko‘ra birinchi kompozitsiya yuqori haroratli sharoitlarda ishlovchi konstruksiyalar uchun ko‘proq mos keladi, chunki u 1000–1200°C gacha bo‘lgan harorat yuklamalarda strukturaviy barqarorligini saqlab qoladi hamda yuqori mexanik mustahkamlikka ega. Ikkinchi kompozitsiya esa issiqlik o‘tkazuvchanligining pastligi va zichligining kichikligi bilan ajralib turadi, bu esa uni yengil qurilish materiallari va o‘rta darajadagi yong‘in xavfiga ega obyektlar uchun samarali qoplama sifatida qo‘llash imkonini beradi.

Shu tariqa, keltirilgan qiyosiy tahlil natijalari suyuq shisha asosidagi yong‘indan himoyalovchi kompozitsiyalarni maqsadli ravishda tanlash va ularning funksional

imkoniyatlarini optimallashtirishda muhim ilmiy-amaliy ahamiyatga ega ekanligini ko‘rsatadi. Birinchi tizim keramiklashuvchi va kimyoviy barqarorlashuv mexanizmi orqali yong‘indan himoya qilsa, ikkinchi tizim esa mikrog‘ovakli termoizolyatsion qatlam hosil qilish orqali issiqlik oqimini cheklaydi. Natijada ushbu ikki kompozitsiya turli ekspluatatsion sharoitlar uchun moslashtirilgan yong‘inga chidamli materiallar sifatida qaralishi mumkin. Rasmda suyuq shisha asosidagi mineral-polimer kompozitsiyalardan tayyorlangan tajriba namunalarini yong‘in ta’siridan oldingi va keyingi holatlari ko‘rsatilgan. Namunalarni tashqi ko‘rinishi, rang o‘zgarishi hamda sirt tuzilmasidagi transformatsiyalar ularning yuqori harorat sharoitida fizik-kimyoviy jarayonlarga uchrashini vizual tarzda namoyon etadi.



**Birinchi kompozitsiya** **Ikkinchi kompozitsiya**

**1- rasm. Suyuq shisha asosidagi yong‘indan himoyalovchi kompozitsiyalar namunalarining yuqori harorat ta’siridan oldingi va keyingi makrostrukturaviy holati.**

Rasmning yuqori qatorida joylashgan namunalar qoplamaning boshlang‘ich yoki qisman termik ta’sirga uchragan holatini aks ettiradi. Ushbu namunalar yuzasida nisbatan tekis struktura va bir jinsli mineral matritsa kuzatiladi. Sirtning rang jihatdan och kulrangdan to to‘q kulranggacha o‘zgarishi kompozitsiya tarkibidagi mineral komponentlarning turli nisbatlarda bo‘lishi hamda qisman termik oksidlanish jarayonlari bilan izohlanadi. Ayrim namunalarda sirtning biroz qoramtir tusga kirishi yuqori harorat ta’sirida organik fazaning parchalanishi va mineral komponentlarning qayta kristallanish jarayonlari bilan bog‘liq bo‘lishi mumkin.

**Xulosa.** Namunalarda yuzaning mayda go‘zenekli struktura hosil qilishi perlit yoki boshqa g‘ovak hosil qiluvchi komponentlarning termik ta’sir natijasida struktura ichida havo bo‘shliqlari hosil qilganini ko‘rsatadi. Bunday mikrog‘ovaklar issiqlik o‘tkazuvchanligini kamaytiradi va qoplamaning yong‘indan himoya qilish samaradorligini oshiradi. Shu bilan birga, sirtning qisman qorayishi yoki karbonlashishi

yuqori harorat ta’sirida polimer komponentlarning parchalanishi va mineral skeletning saqlanib qolganini bildiradi.

Namunalar yuqori harorat ta’sirida kompozitsiya tarkibida sodir bo‘ladigan silikat matritsaning zichlashuvi, g‘ovakli termoizolyatsion qatlam hosil bo‘lishi va mineral skeletning barqarorlashuvi kabi jarayonlarni tasdiqlaydi. Ushbu makrostrukturaviy o‘zgarishlar yong‘indan himoyalovchi qoplamaning asosiy funksional mexanizmlaridan biri bo‘lib, issiqlik oqimini cheklash va substratni yuqori haroratdan himoya qilishga xizmat qiladi.

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# BARQAROR RIVOJLANISH SHAROITIDA ELEKTR ENERGETIKASIDA ENERGIYA SAMARADORLIGINI OSHIRISHNING ZAMONAVIY USULLARI VA YONDASHUVLARI

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***Annotatsiya:*** *Ushbu maqola sanoatda energiya samaradorligini oshirishning zamonaviy usul va yondashuvlariga bag‘ishlangan. Unda chiqindilarni minimallashtirish va massa balansini optimallashtirishga yo‘naltirilgan toza ishlab chiqarish (TICh) yondashuvi ko‘rib chiqiladi. Energiya samaradorligini oshirishning texnik usullari, jumladan, chastotani rostlovchi yuritmalardan va energiya tejamkor elektr dvigatellardan foydalanish masalalari yoritiladi. Resurslardan nooqilona foydalanish holatlarini aniqlash vositasi sifatida energiya auditi alohida ahamiyat kasb etadi. Shuningdek, mavjud joriy etish to‘siqlariga qaramay, energiya samaradorligini oshirishning istiqbolli usuli sifatida chiqindi issiqlikni qayta tiklash (WHR) texnologiyasi batafsil tahlil qilinadi.*

***Kalit so‘zlar:*** *energiya samaradorligi, toza ishlab chiqarish, energiya auditi, issiqlikni qayta tiklash, FACTS texnologiyalari, massa balansi, energiya tejamkorligi, sanoatni optimallashtirish, yashil energetika.*

***Аннотация:*** *Статья посвящена современным методам и подходам к повышению энергоэффективности в промышленности. Рассматривается подход чистого производства (ЧП), направленный на минимизацию отходов и оптимизацию материального баланса. Освещаются технические методы повышения энергоэффективности, включая применение частотно-регулируемых приводов и энергоэффективных электродвигателей. Особое внимание уделяется энергоаудиту как инструменту выявления нерационального использования энергетических ресурсов. Кроме того, подробно рассматривается технология рекуперации отработанного тепла (WHR) как перспективный метод повышения энергоэффективности, несмотря на существующие барьеры для её внедрения.*

***Ключевые слова:*** *энергоэффективность, чистое производство, энергоаудит, рекуперация тепла, технологии FACTS, материальный баланс, энергосбережение, промышленная оптимизация, зеленая энергетика.*

***Abstract:*** *The article focuses on modern methods and approaches to improving energy efficiency in industry. It examines the clean production (CP) approach aimed at minimizing waste and optimizing the material balance. Technical methods for improving energy efficiency are discussed, including the use of variable frequency drives and energy-efficient electric motors. Particular attention is paid to energy audits as a tool for identifying inefficient use of energy resources. In addition, waste heat recovery (WHR) technology is examined in detail as a promising method for improving energy efficiency despite the existing barriers to its implementation.*

***Keywords:*** *energy efficiency, clean production, energy audit, waste heat recovery, FACTS technologies, material balance, energy conservation, industrial optimization, green energy.*

Energetika sohasida energiya samaradorligini oshirish, eng avvalo, karbonat angidrid ($CO_2$) chiqindilarini kamaytirish va korxonalarning atrof-muhitga salbiy ta’sirini minimallashtirishga xizmat qiladi. Energiyadan yanada samarali foydalanish orqali atmosferaga chiqariladigan issiqxona gazlari miqdorini kamaytirish va shu orqali iqlim o‘zgarishiga qarshi kurashishga hissa qo‘shish mumkin. Shuningdek, energiya samaradorligini oshirish qayta tiklanuvchi energetika sektorida yangi ish o‘rinlarini yaratish, mahsulotlar tannarxini hamda elektr energiyasi tariflarini pasaytirish kabi qator iqtisodiy afzalliklarni ta’minlaydi.

Bunday yondashuv toza ishlab chiqarish (TICh) deb ataladi. U ishlab chiqarish jarayonlari doirasida chiqindilarni minimallashtirish imkonini beradi. Bunda massa balansi, ya’ni dastlabki xomashyo, materiallar, yarim tayyor mahsulotlar va oraliq mahsulotlar miqdori o‘rtasidagi eng maqbul nisbat aniqlanadi. Ushbu va boshqa ko‘plab yondashuvlarda energiya samaradorligini oshirishda boshqaruv qarorlarini qabul qiluvchi mutaxassis muhim o‘rin tutadi. U ishlab chiqarish turi va boshqa statistik ko‘rsatkichlardan kelib chiqib, korxonada optimallashtirish usullarini tanlaydi.

Mazkur faoliyat jarayonida juda katta hajmdagi axborot bilan ishlashga to‘g‘ri keladi. Shu sababli mavjud ma’lumotlarni oqilona tizimlashtirish, umumlashtirish va tahlil qilish muhim ahamiyatga ega. Buning uchun, masalan, hayotiy sikl tahlili, energiya samaradorligi tahlili va boshqa analitik usullardan foydalanish mumkin. Ularning asosiy vazifasi ishlab chiqarishning barcha bosqichlarida uning hayotiy siklini baholashdan iborat.

Bugungi kunda hayotiy siklni baholashda keng qo‘llaniladigan modellardan biri Greiner modeli hisoblanadi [4, 6-b.]. Mazkur model XX asrning 70-yillarida ishlab chiqilgan bo‘lib, unda muallif tashkiliy rivojlanishni beshta evolyutsion bosqichga ajratib ko‘rib chiqishni taklif etadi. Ushbu bosqichlar «inqilob» yoki tashkilotda yuz beradigan keskin va tub o‘zgarishlarning qisqa davrlari bilan bir-biridan ajratiladi.

Energiya samaradorligini oshirishning texnik jihatlari haqida so‘z yuritganda, bir qator usullarni ajratib ko‘rsatish mumkin. Jumladan, chastota bilan boshqariladigan yuritmalardan, energiya samaradorligi yuqori bo‘lgan elektr dvigatellardan foydalanish, shuningdek, kondensatorlar yoki kondensator batareyalari yordamida tizimning quvvat koeffitsiyentini yaxshilash shular jumlasidandir. Kondensatorlar va kondensator batareyalari energiyani tezkor ravishda chiqarish hamda garmonikalarni filtrlash hisobiga yuklamaning keskin o‘zgarishlarini yumshatish uchun qo‘llaniladi.

Ushbu usullarning asosini texnologiyalardan oqilona foydalanish va texnologik jarayonlarni samarali tashkil etish tashkil etadi. Bu esa, o‘z navbatida, foydalanilayotgan energiya resurslarining foydali ish koeffitsiyentini (FIK) oshirish imkonini beradi [5, 70-b.]. Bunga FACTS tizimi (boshqariladigan o‘zgaruvchan tok uzatish tizimlari) misol bo‘la oladi. Mazkur tizim quyidagi texnologiyalar guruhini o‘z ichiga oladi: parallel ulangan holatda reaktiv quvvat va kuchlanishni rostlovchi qurilmalar; ketma-ket ulangan holatda elektr tarmog‘i parametrlarini, xususan, tarmoq qarshiligini rostlovchi qurilmalar; shuningdek, dastlabki ikki turdagi qurilmalarning funksional xususiyatlarini birlashtira oladigan qurilmalar [1, 4-b.].

Biroq energiya samaradorligini oshirishda mavjud yondashuvni o‘zgartirish zaruratini aniqlash uchun shunchaki kuzatuvchanlikning o‘zi yetarli emas. Buning uchun energiya auditlari o‘tkaziladi. Sodda qilib aytganda, energiya auditi — bu energiya resurslarining qanday sarflanayotgani to‘g‘risidagi ma’lumotlarni yig‘ish va tahlil qilish jarayonidir. Uning asosiy maqsadi energiya resurslaridan nooqilona foydalanish holatlarini aniqlashdan iborat.

Energiya auditini ajratilgan vaqt va kutilayotgan natijaga qarab uch turga bo‘lish mumkin: boshlang‘ich (dastlabki) audit — oldindan tahlil qilish; oraliq audit — energiya iste’molini o‘rganish va tekshirilayotgan qurilma yoki tizimning kompleks tahlilini amalga oshirish; kengaytirilgan audit — katta kapital mablag‘ talab qiluvchi modernizatsiya va texnik o‘zgartirishlarni batafsil tahlil qilish [3, 2814-b.].

Energiya auditlari yordamida muayyan tarmoqda energiya samaradorligini oshirish yo‘lidagi mavjud to‘siqlarni aniqlash mumkin. Bunga misol sifatida energiyaning eng yirik iste’molchilaridan biri bo‘lgan qayta ishlash sanoatini keltirish mumkin. Ushbu sohaning energiya sarfi, asosan, ishlab chiqarish binolarining

energiyaga bo‘lgan ehtiyoji, dvigatellar va stanoklarning yoqilg‘i hamda elektr energiyasini iste’mol qilishi bilan belgilanadi.

Mazkur sanoat tarmog‘ida elektr energiyasidan foydalanishning eng samarali usullarini aniqlash nihoyatda dolzarb hisoblanadi. Chunki mavjud tizimning energiya samaradorligi past bo‘lib, qayta ishlash sanoati dunyo miqyosidagi issiqxona gazlari chiqindilarining 25 foizdan ortig‘ini shakllantiruvchi sohalardan biridir. Ko‘plab tadqiqotlar natijalariga ko‘ra, barcha stanoklar va elektr dvigatellarini yangi uskunalarga almashtirish energiya samaradorligini sezilarli darajada oshirmaydi. Shu sababli asosiy e’tiborni mavjud to‘siqlarni aniqlash va ularni bartaraf etishga qaratish lozim [2, 140-b.].

Bunday to‘siqlarni bartaraf etish usullaridan biri chiqindi issiqlikni qayta tiklash texnologiyasi (WHR — *Waste Heat Recovery*) hisoblanadi. AQSh Energetika vazirligi (DOE) ma’lumotlariga ko‘ra, energiya iste’moli jarayonining o‘zidayoq taxminan 20–50 foiz energiya yo‘qotiladi. Chiqindi issiqlikni qayta tiklash texnologiyalarini joriy etish orqali ushbu energiyadan samarasiz ravishda yo‘qolib ketishiga yo‘l qo‘ymasdan, undan oqilona foydalanish mumkin. Masalan, chiqindi issiqlikni elektr energiyasiga aylantirish va hosil bo‘lgan elektr energiyasini qayta energiya qurilmalari yoki elektr iste’molchilarining ishlashiga yo‘naltirish mumkin.

Shunga o‘xshash jarayon issiqlik elektr markazlarida (IEM) ham amalga oshiriladi va kogeneratsiya, ya’ni elektr va issiqlik energiyasini birgalikda ishlab chiqarish deb ataladi. Chiqindi issiqlikdan foydalanish bilan bog‘liq muammolarning bir qismini hal etishda termoelektrik generator (TEG) ham muhim yechim bo‘lishi mumkin. TEG qurilmalari termoelektr yurituvchi kuch hosil bo‘lishi prinsipiga asoslangan bo‘lib, bu kuch qurilmaning ishchi elementlari orasidagi harorat farqi natijasida yuzaga keladi. Natijada issiqlik jarayonlari hisobiga elektr toki va elektr energiyasi hosil qilinadi.

Ushbu texnologiyani amaliyotga joriy etish bo‘yicha muayyan tajriba mavjud bo‘lishiga qaramay, chiqindi issiqlikni qayta tiklash texnologiyasi hali yetarlicha chuqur o‘rganilmagan. Buning asosiy sabablaridan biri shundaki, ko‘plab yirik sanoat korxonalari investitsiyalarning qoplanish muddati bir necha yildan ortiq bo‘lishi sababli WHR loyihalariga mablag‘ kiritishga ehtiyotkorlik bilan yondashadi.

Bundan tashqari, ayrim holatlarda WHR texnologiyasini joriy etish texnik jihatdan imkonsiz yoki qisman cheklangan bo‘lishi, shuningdek, undan foydalanishni tartibga soluvchi tegishli me’yoriy-huquqiy hujjatlar va siyosiy mexanizmlarning yetarli darajada shakllanmaganligi ham muhim to‘siqlardan hisoblanadi.

Shunga qaramay, energiya samaradorligini oshirish nuqtayi nazaridan ushbu texnologiya ilmiy hamjamiyat uchun ham, zamonaviy “Yashil energetika” siyosati uchun ham katta ilmiy-amaliy qiziqish uyg‘otadi.

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# 5. MEDICINE, PHARMACY, AND HEALTHCARE

# QANDLI DIABET II TIP HAMDA SURUNKALI YURAK YETISHMOVCHILIGI BILAN KASALLANGAN BEMORLARDA BUYRAKLAR FUNKSIONAL HOLATINI BAXOLASH

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**Tadqiqotning maqsadi:** Qandli diabet II tip hamda surunkali yurak yetishmovchiligi bilan kasallangan bemorlarda buyraklar funksional holatini baholashdan iborat.

**Material va metodlar.** II tin Qandli diabet (QD) va Yurak ishemik kasalligi (YUIK) I-III funksional sinf (FS) surunkali yurak yetishmovchiligi (SYY) bo'lgan 124 nafar barcha bemorlar klinik, laborator va instrumental tekshiruvlardan o'tkazildi

Barcha tekshirilgan QD bo'lgan bemorlar SYY FS bo'yicha guruhlarga bo'lingan: SYY I FS (35 nafar bemor), SYY II FS (38 nafar bemor) va SYY III FS (51 nafar bemor). Bemorlar buyrak koptokchalar filtratsiyasi tezligi darajasiga ko'ra ham ajratildi (I guruh QD va SYY I-III FS koptokcha filtratsiya tezligi (KFT) CKD-EPI ≥60 ml/min/1,73m2 (n=56) II guruh QD va SYY I-III FS KFT CKD-EPI ≥60 ml/min/1,73m2 (n=68)).

QD va SYY FS I-III bilan og'rigan bemorlarning buyraklar funksional faoliyatini baholash uchun kreatinin va sistatin C miqdorlari aniqlandi va ular asosida KFT ko'rsatkichlarini xisoblandi hamda ACR miqdorlari aniqlandi.

**Tadqiqot natijalari**. Tahlil natijalari shuni ko'rsatdiki, QD bikan hastalangan bemorlarda yurak yetishmovchiligi og'irlashgan sari buyrak funksiyasini aks ettiruvchi biomarkerlar izchil ravishda yomonlashganligi kuzatildi, ya'ni nefron faoliyati pasayishi va filtratsiya jarayonining buzilishi kuzatildi (p<0,001). Xususan, kreatinin

va KFT (kreatinin bo‘yicha) ko‘rsatkichlari sezilarli darajada farq qildi. I FSda kreatinin 85,2±3,9 mkmol/l bo‘lib, II FSda 1,1 marta oshgan bo‘lsa ($p<0,001$), III FSda esa kreatinin 111,3±5,2 mkmol/l gacha yetib, I FSga nisbatan 31% (1,3 marta) yuqori bo‘ldi ($p<0,001$). Shu bilan bir vaqtda KFT (kreatinin bo‘yicha) I FSda 94,3±9,62 ml/min/1,73m², II FSda 84,4±11,25 ml/min/1,73m² bo‘lgan va 10% pasaygan ($p<0,01$), III FSda esa 76,2±10,83 ml/min/1,73m² gacha tushgan ya’ni 1,2 marta pasayganligi kuzatildi ($p<0,001$). Sistatin C va KFT (sistatin bo‘yicha) ko‘rsatkichlar ham o‘xshash dinamikada bo‘ldi. I FSda sistatin C 0,92±0,06 mg/l, II FSda esa 1,09±0,08 mg/l bo‘lgan va 19% ko‘proq ajralgan( $p<0,01$), III FSda esa 1,24±0,12 mg/l gacha oshgan va I FSga nisbatan 35% (1,3 marta) farqni anglatadi ($p<0,01$). Shunga mos ravishda KFT (sistatin bo‘yicha) I FSda 90,5±10,05 ml/min/1,73m², II FSda 81,7±10,44 ml/min/1,73m² (10% pasaygan $p<0,05$), III FSda esa 74,5±9,77 ml/min/1,73m² gacha tushgan va 18% ga (1,2 marta) pasaygan ($p<0,01$). Albumin-kreatinin nisbati (ACR) ham sezilarli darajada ortgan. I FSda ASR 22,6±7,6 mg/g, II FSda 33,3±9,4 mg/g (47% ga, $p<0,01$), III FSda esa 42,4±13,6 mg/g gacha yetgan, ya’ni qariyb 1,9 marta yuqori natija qayd etilgan ($p<0,001$).

**Xulosa**. QD va SYYning og‘irlashishi bilan birga kreatinin darajasi 30%, sistatin C 35%, ACR esa qariyb 1,9 marta oshib borganligi, shu bilan birga KFT (kreatinin va sistatin bo‘yicha) 18,8% gacha pasayganligi kuzatildi. Bu o‘zgarishlar QD bilan hastalangan bemorlarda yurak nasos funksiyasi pasayishi natijasida rivojlanuvchi renal gipoperfuziya, ishemik nefropatiya va kardiorenal sindromning izchil rivojlanishini ko‘rsatadi. SYY fonida nefron perfuziyasining pasayishi, filtratsiyaning buzilishi va tubulyar strukturalarning izchil shikastlanishi bilan izohlanadi.

# QANDLI DIABET II TIP HAMDA SURUNKALI YURAK YETISHMOVCHILIGI BILAN KASALLANGAN BEMORLARDA BUYRAKLAR DISFUNKSIYASI DARAJASIGA QARAB YURAK REMODELLANISH JARAYONLARINING O‘ZIGA XOS XUSUSIYATLARINI O‘RGANISH

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**Tadqiqotning maqsadi:** buyraklar disfunksiyasi darajasiga qarab yurak remodellanishi parametrlarining o‘zgarish xususiyatlarini aniqlashdan iborat.

**Material va metodlar.** Qandli diabet II tip (QD) va Yurak ishemik kasalligi (YUIK) I-III funksional sinf (FS) surunkali yurak yetishmovchiligi (SYY) bo‘lgan 124 nafar bemorning klinik holati, jismoniy yuklamaga chidamliligi, chap qorincha remodellanish jarayonlari, natriy uretrik peptid miqdorlari va buyraklarning funksional holatini baholash bilan kompleks tekshiruv o‘tkazildi.

Barcha tekshirilgan bemorlar SYY FS bo‘yicha guruhlarga bo‘lingan: SYY I FS (35 nafar bemor), SYY II FS (38 nafar bemor) va SYY III FS (51 nafar bemor). Bemorlar buyrak koptokchalar filtratsiyasi tezligi darajasiga ko‘ra ham ajratildi (I guruh SYY I-III FS koptokcha filtratsiya tezligi (KFT) CKD-EPI ≥60 ml/min/1,73m2 (n=56) II guruh SYY I-III FS KFTCKD-EPI ≥60 ml/min/1,73m2 (n=68)). I guruhdagi bemorlarning o‘rtacha yoshi 57,82±0,94 yoshni, II guruhdagi bemorlarning o‘rtacha yoshi 62,4±0,56 yoshni va III guruhdagi bemorlarning o‘rtacha yoshi 63,34±0,72 yoshni tashkil etdi. I guruh bemorlarida kasallikning davomiyligi 5,31±0,75-yil; II guruhda 6,42±0,73 yil va III guruh bemorlarida 8,21±0,76 yil.

Miokardning strukturaviy-funksional holati va CHQ remodellanish jarayoni dopplerografiya bilan ExoKG usulida baholandi. ExoKG "MEDISON ACCUVIX

V20" (Koreya) apparatida 3,25 MGs datchik yordamida standart exokardiografik pozitsiyalarda, yotgan holatda transtorakal usulda va chap yonboshda ExoKG usulida Amerika Exokardiografiya Assotsiatsiyasi (ASE) tavsiyalariga muvofiq M- va V-rejimlarda amalga oshirildi.

**Tadqiqot natijalari**. QD bilan xastalangan bemorlarda KFT≤60 ml/min/1,73m2 bo‘lganda SYY og‘irligining rivojlanishi NT-pro-BNP miqdorlari oshishi, CHQ hajm ko‘rsatkichlarining oshishi, yaqqol strukturaviy qayta qurish, shuningdek, CHQ dilatatsiyasining yaqqol darajasi bilan birga kechdi. Shu bilan birga, SYY III FS bo‘lgan bemorlar guruhida SYY I FS bo‘lgan I guruh ma’lumotlariga nisbatan CHQ SS o’lchami 27,2% (p<0,001) va CHQ SD o’lchami 11,07% (p<0,01) ga oshganligi qayd etildi. CHQ sistolik funksiyasining parametrlari (CHF va OF) tahlili, shuningdek, sistolada CHQning fraksion qisqarishi shuni ko‘rsatdiki, II guruhda SYY II FS bilan og‘rigan bemorlarda CHQ otish fraksiyasi (OF), zarb hajmi va Fs% ning SYY I FS ma’lumotlariga nisbatan 11,02%, 14,8% va 9,3% (r>0,05) ga sezilarli darajada pasayishi qayd etildi. SYY III FS bilan og‘rigan bemorlarda ham SYY I FS ma’lumotlariga nisbatan OF 28,64% (r<0,01) va Fs% 32,15% (p<0,001) ga yaqqol pasayishi kuzatildi.

KFT≤60 ml/min bo‘lgan SYY bilan og‘rigan bemorlarda diastolik funksiya ko‘rsatkichlari tahlili CHQ diastolik funksiyasining yaqqol buzilishlari SYY II FS bilan og‘rigan bemorlar guruhida qayd etiladi, bu yerda bo‘lmachalarning kech to‘lishining maksimal tezligi (RA) 25,4% ga (p<0,001) oshishi va chap qorinchaning erta to‘lishining maksimal tezligi (RE) ko‘rsatkichining I tadqiqot guruhiga nisbatan 12,26% ga (p>0,05) sezilarli darajada kamayishi qayd etiladi.

**Xulosa**. 1. CHQ va CHQ bo‘shliqlari, shuningdek, CHQ devorlari o‘lchamlari ko‘rsatkichlari tahlili natijalariga ko‘ra,QD va SYY I-III FS bilan og‘rigan bemorlarda yurak chap bo‘limlarining strukturaviy-geometrik o‘zgarishlarining o‘ziga xosligi aniqlandi (CHQMMning 10,54% ga oshishi; p<0,001) KFT>60 ml/min/1,73m2 bo‘lgan ma’lumotlarga nisbatan. KFT≤60 ml/min/1,73m2 bo‘lgan bemorlarda CHQOF darajasining pasayishi SYY bilan og‘rigan bemorlarda sistolik funksiyaning pasayishida DP og‘irlik darajasining ahamiyati haqida dalolat beradi (CHQ OF 26,1% ga va Fs% 11,8% ga (r<0,001)).

2. KFT≤60 ml/min/1,73m2 bo‘lgan II guruh bemorlarida diastolik funksiya ko‘rsatkichlari tahlili chap qorincha erta to‘lishining maksimal tezligi (RE) ko‘rsatkichining 13,36% ga (9<0,001) oshganligini ko‘rsatdi, bu esa KFT≤60 ml/min/1,73m2 bo‘lgan SYY bilan og‘rigan bemorlarda KFT>60 ml/min/1,73m2 bo‘lgan SYYga nisbatan E/A ning 20,72% ga oshishiga olib keldi (p<0,001).

# MITOCHONDRIAL TRANSPLANTATION: A NOVEL THERAPEUTIC APPROACH FOR PATHOLOGIES ASSOCIATED WITH CELLULAR ENERGY DEFICIENCY

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***Abstract:*** *Mitochondrial transplantation is an innovative therapeutic approach aimed at treating diseases associated with impaired mitochondrial function, which plays a central role in cellular energy metabolism. Experimental and clinical studies conducted in recent years have demonstrated that mitochondrial dysfunction plays a significant role in the pathogenesis of cardiovascular diseases, neurodegenerative disorders, muscular dystrophies, ischemic injuries, and metabolic syndromes. The fundamental principle of this approach is to restore intracellular energy homeostasis by transferring functional mitochondria isolated from healthy donor cells into damaged or energy-deficient cells.*

*Studies have demonstrated that mitochondrial transplantation can enhance adenosine triphosphate (ATP) synthesis, reduce oxidative stress, and suppress apoptotic processes. In particular, this approach has shown promising efficacy in myocardial ischemia–reperfusion injury and neuronal damage. Nevertheless, several critical challenges remain, including the development of effective mechanisms for mitochondrial delivery into recipient cells, immunological compatibility, long-term safety, and standardized protocols for clinical application.*

***Keywords:*** *Mitochondrial transplantation, cellular energy dysfunction, ATP synthesis, oxidative stress, neurodegenerative diseases, myocardial injury, regenerative medicine, metabolic syndrome, cellular metabolism, innovative therapy.*

**Introduction:** Cells require a continuous supply of energy to maintain their vital functions. Mitochondria serve as the primary energy-producing organelles of the cell, providing energy through the synthesis of adenosine triphosphate (ATP). Impaired mitochondrial function can lead to energy deficiency in various organs and systems, thereby contributing to the development of pathological conditions such as cardiovascular diseases, neurodegenerative disorders, muscular dystrophies, and metabolic syndrome. Conventional therapeutic approaches are often primarily symptomatic and may not fully restore cellular energy homeostasis. Therefore, emerging approaches such as mitochondrial transplantation offer the potential to restore cellular function and address the underlying mechanisms of disease at the cellular level. Determining the efficacy and safety of this therapeutic strategy has become one of the major areas of scientific research in recent years.

**Main Body:** Mitochondrial transplantation (MT) has attracted considerable scientific attention over the past decade as an innovative biotechnological approach aimed at restoring cellular energy metabolism. Studies indicate that mitochondrial dysfunction plays a significant role in the pathogenesis of various human diseases. For example, in neurodegenerative disorders such as Parkinson's disease and Alzheimer's disease, the mitochondrial capacity for ATP production may decline to 30–50% of normal levels, thereby increasing neuronal susceptibility to oxidative stress and apoptosis (Smith et al., 2021). Similarly, in the cardiovascular system, myocardial ischemia can result in a 40–60% reduction in ATP levels, substantially limiting the survival capacity of myocardial cells.

The fundamental principle of mitochondrial transplantation is the delivery of functional mitochondria isolated from healthy donor cells into recipient cells experiencing energy deficiency. Experimental studies have demonstrated that MT can increase intracellular ATP levels by approximately two- to threefold, restore mitochondrial membrane potential, and reduce markers of cellular oxidative stress, such as reactive oxygen species (ROS), by approximately 35–50%. These effects are particularly pronounced in myocardial ischemia–reperfusion injury and neuronal cells, where mitochondrial transplantation has been associated with an increase in cell survival rates of up to 60–80%.

Several approaches to mitochondrial transplantation have been investigated, including direct intracellular delivery using micropipettes, transport via mesophase vesicles, and delivery through extracellular microparticles. Experiments conducted in animal models have demonstrated that, in experimental myocardial infarction models, the area of myocardial injury was reduced by approximately 30–45% in animals receiving mitochondrial transplantation compared with untreated controls. In neuronal cells, mitochondrial transplantation has also been associated with a reduction in apoptotic markers, including a 40% decrease in caspase-3 activity, suggesting a

potential cytoprotective mechanism of mitochondrial transplantation at the cellular level.

Mitochondrial transplantation also appears to have therapeutic potential in metabolic disorders. For example, clinical studies conducted in 2022 reported that the introduction of donor mitochondria into diabetic muscle cells improved glucose uptake and oxidative metabolism, while blood glucose levels decreased by an average of 15% over a 12-week period. Nevertheless, issues concerning immunological compatibility and long-term safety have not yet been fully resolved, and additional clinical trials are required before mitochondrial transplantation can be widely implemented in humans.

Available evidence further suggests that mitochondrial transplantation may effectively alleviate cellular energy deficiency in myocardial, neuronal, and hepatic cells, enhance cellular resistance to oxidative stress, and attenuate apoptotic processes. Consequently, mitochondrial transplantation is increasingly regarded as a promising future direction in regenerative medicine and may become an important component of personalized therapeutic strategies.

**Conclusion:** Mitochondrial transplantation represents a promising and innovative therapeutic approach for the treatment of pathologies associated with cellular energy deficiency. Studies have demonstrated that mitochondrial transplantation enhances ATP synthesis, reduces oxidative stress, and attenuates apoptotic processes, thereby contributing to the restoration of cellular function in conditions such as myocardial ischemia, neurodegenerative diseases, and metabolic syndrome. Although the efficacy of mitochondrial transplantation has been demonstrated in animal models and selected clinical studies, further research is required to address issues related to immunological compatibility, long-term safety, and optimal mitochondrial delivery mechanisms. In the future, mitochondrial transplantation may play a central role in regenerative medicine and personalized therapeutic strategies.

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# QORINCHALARARO TO‘SIQ NUQSONI BO‘LGAN BOLALARDA CHAK MIKROBITSENOZINING METABOLIK SALOHIYATI VA UNING O‘ZIGA XOS XUSUSIYATLARI

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**Dolzarbligi.**Qorinchalararo to‘siq nuqsoni (QATN) bo‘lgan bolalarda o‘sishdan ortda qolish kuzatiladi. Bu holat nafaqat asosiy kasallik, balki ichak mikrobiomi tarkibining buzilishi bilan ham bog‘liq. Ichak mikrobiotasi disbiozi hazm jarayonlarini buzishi, immun javobning nomutanosibligini keltirib chiqarishi va kasalliklarga moyillikni oshirishi mumkin. Bu esa jarrohlik davolashidan keyingi noxush prognoz bilan bog‘liq bo‘lishi ehtimoldan xoli emas.

**Tadqiqotning maqsadi** — operatsiyadan oldin 6–12 oylik QATN bo‘lgan bolalarda ichak mikrobiomi va uning metabolik faolligini o‘rganish.

**Materiallar va usullar.** QATN bo‘lgan 31 nafar bola tekshirildi, nazorat guruhini 10 nafar sog‘lom bola tashkil etdi. Barcha bolalar ko‘krak suti bilan oziqlantirilgan. Jami 41 ta najas namunasi Genemind (Xitoy) platformasida 16S rRNA genini sekvenslash usuli yordamida tahlil qilindi. Qisqa zanjirli yog‘ kislotalari (SCFA) Thermo Scientific TRACE 1310 GC qurilmasida DB-FFAP kolonkasi yordamida GC-FID gaz xromatografiyasi usulida aniqlandi. Ma’lumotlar **M ± σ** ko‘rinishida taqdim etildi.

**Natijalar.**Bolalarning o‘rtacha yoshi QATN guruhida 9,1 ± 1,1 oy, nazorat guruhida esa 9,9 ± 2,3 oyni tashkil etdi ($p > 0,05$). Tana massasi indeksi mos ravishda 14,0 ± 1,6 kg/m² va 15,6 ± 0,2 kg/m² ni tashkil etdi ($p < 0,05$), bu QATN bo‘lgan bolalarda tana vazni yetishmovchiligi mavjudligini ko‘rsatdi.Sekvenslash natijalariga ko‘ra, QATN guruhida **Escherichia/Shigella** miqdori nazorat guruhiga nisbatan 5,6 barobar yuqori bo‘lib, mos ravishda 46,14 ± 5,23% va 8,20 ± 3,49% ni tashkil etdi ($p < 0,05$). Bu mikrobiotaning yetilmaganligi, ichak to‘siq funksiyasining pasayishi va past darajali yallig‘lanish xavfini ko‘rsatadi.**Bifidobacterium** miqdori nazorat

guruhiga nisbatan 2,5 barobar kamayib, 23,26 ± 4,22% ni tashkil etdi ($p < 0,05$). **Veillonella** miqdori 8,96 ± 1,45% gacha oshib, nazorat guruhiga nisbatan 2,2 barobar yuqori bo‘ldi ($p < 0,05$), bu gipoksiyani ko‘rsatadi. **Streptococcus** miqdori 7,70 ± 1,34% ni tashkil etib, nazorat guruhiga nisbatan 1,5 barobar yuqori bo‘ldi ($p < 0,05$). Bu anaerob bakteriyalar konsentratsiyasining kamayishi bilan bog‘liq bo‘lib, ichak to‘siq funksiyasining buzilishiga olib kelishi mumkin. **Eggerthella** miqdori 5,56 ± 0,89% gacha oshib, nazorat guruhiga nisbatan 1,7 barobar yuqori bo‘ldi ($p < 0,05$).SCFA ishlab chiqaruvchi bakteriyalarning kamayishi aniqlandi: **Faecalibacterium, Roseburia va Agathobacter** QATN guruhida 0% ni tashkil etdi. Bu holat qisqa zanjirli yog‘ kislotalari miqdorining kamayishi bilan birga kuzatildi. C2 — sirka kislotasi miqdori 1,605 ± 0,204 mg/g va nazorat guruhida 3,406 ± 0,165 mg/g bo‘lib, QATN guruhida 2,1 barobar past edi. C3 — propion kislotasi miqdori mos ravishda 0,476 ± 0,090 mg/g va 0,479 ± 0,122 mg/g ni tashkil etdi ($p > 0,05$). C4 — moy kislotasi miqdori esa 0,165 ± 0,067 mg/g va nazorat guruhida 0,265 ± 0,071 mg/g bo‘lib, QATN guruhida 1,6 barobar past edi.

**Xulosa.**Aniqlangan ichak mikrobiomi va qisqa zanjirli yog‘ kislotalari profili QATN bo‘lgan bolalarda gipoksiya sharoitida bo‘shliqdagi hazm jarayonlarining buzilishi va ichak epiteliysi destruksiyasi belgilarini ko‘rsatishi mumkin. Ushbu o‘zgarishlar malabsorbsiya, tana vaznining kamayishi va immun reaktivlikning pasayishini yanada kuchaytiradi.

# METABOLIK SINDROMLI ONADAN TUG‘ILGAN CHAQALOQLARDA SARIQLIKNING KLINIK VA BIOKIMYOVIY XUSUSIYATLARI.

(Adabiyotlar sharhi)

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**Dolzarbligi:** Ona va bola sog‘lig‘ini muhofaza qilish O‘zbekistonda davlat ijtimoiy siyosatining ustuvor yo‘nalishlaridan biridir. Yangi avlod sog‘lig‘ini saqlash va mustahkamlash davlat ijtimoiy vazifalarining eng muhim yo‘nalishlaridan sanaladi.

Pediatriyada bugungi kunda dolzarb muammolardan biri — metabolik sindromli onalardan tug‘ilgan yangi tug‘ilgan chaqaloqlarning holatini o’rganishdir. So’nggi yillarda, ayniqsa kon’yugatsion turi ko’p uchrashi, neonatal sariqlik (NS) holatlarining ko’payishi kuzatilmoqda. Shu bilan birga, pediatrlar oldida tobora ko’proq “CHo’zilgan sariqlik” deb ataluvchi, hayotining 1 oyliqdan osgan davrida bolalarda cho’zilgan sariqlik muammosi paydo bo’lmoqda.

**Maqsad:** Cho’zilgan neonatal sariqlik kasalligi bilan onalardagi metabolik sindromni kechishi va ularni bir-biriga ta’sirini so’ngi yillarda chop etilgan adabiyotlar tahlili asosida o’rganish.

Metabolik sindrom (MS) sog’liqni saqlash tizimi uchun nihoyatda muhim muammo hisoblanadi, chunki uning tarqalishi butun dunyo bo’ylab yildan-yilga ortib bormoqda va ayrim mamlakatlarda kattalar aholining uchdan bir qismigacha yetmoqda.Muhim jihatlardan biri shundaki, cho’zilgan neonatal sariqlik (NS) ko’pincha pediatrlar va ota-onalarda tashvish uyg’otadi hamda ularni asossiz diagnostik va davolash choralari ko’rishga undaydi. Neonatal sariqlikni oldindan aniqlash esa muhim vazifa bo’lib, uni hal etish sariqlikning oldini olish, davolash samaradorligini oshirish imkonini beradi.

Shunday qilib, semizlik insulinrezistentlik, giperlipidemiya, yallig’lanish omillarining faollashuvi va tomir disfunktsiyasi kabi metabolik buzilishlar bilan bog’liqdir. Shubhasiz, ushbu omillar rivojlanayotgan fetoplatsentar kompleksga salbiy ta’sir ko’rsatishi mumkin. Platsenta ona organizmidan homilaga ozuqa moddalari o’tishini tartibga solganligi sababli, uning holati akusherlik asoratlarining rivojlanishida hal qiluvchi omil hisoblanadi.

**Xulosa:** O’tkazilgan adabiyotlar taxlili shundan iboratki tadqiqotlar natijasida platsenta rivojlanishidagi anomaliyalar homila o’sishidagi buzilishlar, preeklampsiya, muddatidan avval tug’ilish va o’lik tug’ilish holatlari bilan bog’liqligi aniqlangan. Semizlik bilan bog’liq kasalliklar — masalan, qandli diabet, arterial gipertenziya, preeklampsiya — ham ushbu akusherlik asoratlari rivojlanish xavfini oshiradi. Semizlikning o‘zi ham yuqorida qayd etilgan akusherlik asoratlari rivojlanish xavfini sezilarli darajada oshirishi mumkin.Ushbu xolatlarda monand farmakoterapiya tanlash bo’yicha o’tkazilgan tadqiqotlar etarli emas va Respublikamizda unga bag’ishlangan kuzatuvlar o’tkazilmagan. Shu sababli ushbu yo’nalishdagiilmiy kuzatuvlarni amalga oshirish maqsadga muvofiq hisoblanadi.

# CLINICAL AND IMMUNOLOGICAL EFFICACY OF A NON-TOXIC ELIMINATION METHOD IN THE TREATMENT OF TAENIA SAGINATA INVASION UNDER THE CONDITIONS OF UZBEKISTAN

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## 1. INTRODUCTION

### Background and Relevance

Taeniasis is a major zoonotic helminthiasis caused by the beef tapeworm, *Taenia saginata*, which parasitizes the human small intestine (3). It remains a persistent public health and socio-economic challenge in the livestock-intensive regions of Uzbekistan. In recent years, the growing popularity of insufficiently cooked meat products—particularly rare and medium-rare steaks—has markedly accelerated transmission and infection rates among the population.

Conventional chemical anthelmintic regimens often induce the shedding of gravid proglottids while leaving the scolex (the attachment organelle) embedded within the intestinal mucosa (3). This incomplete evacuation frequently leads to regeneration of the strobila and subsequent clinical recrudescence. Furthermore, conventional chemotherapeutic agents exhibit significant hepatotoxicity and trigger systemic enterotoxemic side effects, which substantially delay the post-therapeutic recovery and rehabilitation of patients.

## 2. RESEARCH AIM

The primary objective of this investigation is to evaluate the clinical efficacy of a non-pharmacological, integrated physiotherapeutic and dietary intervention protocol for patients diagnosed with *Taenia saginata*invasion. The study seeks to achieve complete mechanical evacuation of the helminth (including the scolex), thereby facilitating the spontaneous restoration of host immuno-hematological parameters without chemical toxicity.

## 3. MATERIALS AND METHODS

### 3.1. Cohort Selection and Patient Profiles

The study cohort comprised 58 patients aged 22 to 55 years with laboratory-confirmed cases of *Taenia saginata* invasion. Notably, the cohort included the principal investigator (a parasitologist) via self-observation. The baseline clinical presentations across the cohort were characterized by chronic secondary anemia and secondary neuropsychiatric/psychosomatic disturbances.

### 3.2. Three-Phase Non-Toxic Elimination Protocol

A proprietary, non-pharmacological, three-stage evacuation protocol was systematically implemented:

- **Phase I (Dietary Detachment):** Administration of a specialized dietary regimen designed to alter the intestinal microenvironment and loosen the mechanical fixation of the scolex to the mucosal wall.
- **Phase II (Physiotherapeutic Stimulation):** Sequential physical and physiotherapeutic modalities targeted at hyper-activating intestinal peristalsis and propagating aboral motor complexes.
- **Phase III (Mechanical Evacuation):** Controlled mechanical expulsion of the intact parasite. The procedure was strictly monitored until visual and microscopic confirmation of the detached scolex was achieved.

## 4. RESULTS AND DISCUSSION

### 4.1. Parasitological Clearance Rates

The therapeutic intervention yielded a 100% eradication rate (n = 58). In all cases, the helminth was evacuated completely intact, with definitive preservation and identification of the scolex, thereby preventing any risk of intra-intestinal regeneration.

### 4.2. Hematological and Psychosomatic Recovery Kinetics

Baseline clinical screening indicated that 92% of the patients suffered from mild-to-moderate iron-deficiency anemia, profound asthenia, and psychosomatic disorders (such as persistent sleep architecture disruption and heightened irritability).

Following complete mechanical clearance of the parasite, significant spontaneous hematological recovery was observed without the administration of exogenous iron supplements or adjuvant pharmacotherapy. Within a post-elimination window of 45 to 60 days, mean hemoglobin concentrations rose by 14–18 g/L.

### 4.3. Immunological and Cognitive Stabilization

From an immunological and functional perspective, the elimination of helminthic metabolic suppression resulted in the normalization of systemic vitality and cognitive

capacities. Longitudinal self-observation by the principal investigator further validated the clinical safety, high therapeutic tolerance, and total absence of immediate autoinfection or recrudescence risk associated with this methodology.

## 5. CONCLUSION

1. **Therapeutic Superiority over Chemotherapy:** The proposed non-toxic mechanical elimination method demonstrates superior clinical efficacy compared to conventional anthelmintic chemotherapy. It provides a guaranteed, verified extraction of the scolex, eliminating the primary cause of post-treatment failure.
2. **Alternative for High-Risk Groups:** This drug-free protocol serves as a safe and highly effective alternative for patients with severe systemic comorbidities, chronic anemia, or individuals who exhibit absolute contraindications to hepatotoxic anthelmintic drugs.
3. **Epidemiological Recommendations:** To control and reduce the incidence of taeniasis within the livestock sectors of Uzbekistan, it is critical to mandate that all beef products undergo rigorous thermal processing at core temperatures not falling below 80°C. Furthermore, veterinary-sanitary surveillance frameworks must be strictly enhanced across all regional distribution networks.

⚠ **Medical Disclaimer:** This document contains general scientific information regarding a clinical study on helminth elimination. It should not be used as a personal diagnostic tool or medical advice. Patients suffering from parasitic infections must consult a licensed healthcare professional or parasitologist to confirm their physical diagnosis and determine an appropriate treatment plan based on approved medical protocols.

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# ZAMONAVIY JAMIYATDA GIPODINAMIYA MUAMMOSI: FIZIOLOGIK O‘QIBATLARI, XAVF OMILLARI VA OLDINI OLISHNING TIBBIY-IJTIMOIY MEXANIZMLARI

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***ANNOTATSIYA.*** *Ushbu ilmiy maqolada zamonaviy jamiyatda keng tarqalayotgan gipodinamiya va gipokineziya muammosining fiziologik, metabolik hamda tibbiy-ijtimoiy oqibatlari akademik nuqtai nazardan tahlil qilingan. Harakat faolligining pasayishi yurak-qon tomir, endokrin va tayanch-harakat tizimlarida keltirib chiqaradigan patologik o‘zgarishlar, jumladan, miokard atrofiyasi, insulinga rezistentlik va osteoporoz kabi kasalliklarning rivojlanish mexanizmlari yoritilgan. Tadqiqotda gipodinamiyani bartaraf etish va aholining harakat faolligini oshirishga qaratilgan tizimli va individual oldini olish chora-tadbirlari ilmiy asoslab berilgan.*

***Kalit so‘zlar:*** *gipodinamiya, gipokineziya, yurak-qon tomir tizimi, metabolik buzilishlar, fiziologik moslashuv, sog‘lom turmush tarzi, ommaviy sport, tibbiy-ijtimoiy profilaktika.*

***АННОТАЦИЯ.*** *В данной научной статье с академической точки зрения анализируются физиологические, метаболические и медико-социальные последствия проблемы гиподинамии и гипокинезии, широко распространенной в современном обществе. Освещены патологические изменения в сердечно-сосудистой, эндокринной и опорно-двигательной системах, вызванные снижением двигательной активности, включая механизмы развития таких заболеваний, как атрофия миокарда, инсулинорезистентность и остеопороз. В исследовании научно обоснованы системные и индивидуальные профилактические меры, направленные на устранение гиподинамии и повышение физической активности населения.*

***Ключевые слова:*** *гиподинамия, гипокинезия, сердечно-сосудистая система, метаболические нарушения, физиологическая адаптация, здоровый образ жизни, массовый спорт, медико-социальная профилактика.*

***ABSTRACT.*** *This scientific article analyzes the physiological, metabolic, and medico-social consequences of hypodynamia and hypokinesia, which are increasingly*

*prevalent in modern society, from an academic perspective. It highlights the pathological changes in the cardiovascular, endocrine, and musculoskeletal systems caused by reduced physical activity, including the underlying mechanisms of conditions such as myocardial atrophy, insulin resistance, and osteoporosis. The study provides a scientific foundation for both systemic and individual preventive measures aimed at counteracting physical inactivity and enhancing the physical activity levels of the population.*

***Keywords:*** *hypodynamia, hypokinesia, cardiovascular system, metabolic disorders, physiological adaptation, healthy lifestyle, mass sports, medico-social prevention.*

XXI asrda fan-texnika taraqqiyoti, ishlab chiqarish jarayonlarining avtomatlashuvi, raqamli texnologiyalarning ommalashuvi va urbanizatsiya darajasining keskin ortishi insonning kundalik turmush tarzini tubdan o‘zgartirdi. Mehnat va maishiy faoliyatdagi fizik omillarning engillashuvi mushak harakatlari hajmining kamayishiga olib keldi. Natijada zamondosh sivilizatsiyaning eng jiddiy tibbiy-ijtimoiy va biologik muammolaridan biri — gipodinamiya (harakat faolligining cheklanishi) va gipokineziya (harakat kuchi va amplitudasining pasayishi) yuzaga keldi.[2]

Jahon sog‘liqni saqlash tashkiloti (JSST) ma’lumotlariga ko‘ra, sayyoramiz aholisining uchdan bir qismidan ortig‘i ehtiyoj darajasidagi fiziologik harakat faolligini amalga oshirmaydi. Gipodinamiya faqatgina nomaqbul turmush tarzining oqibati bo‘lib qolmay, balki yurak-qon tomir, metabolik, endokrinologik hamda tayanch-harakat tizimi kasalliklari rivojlanishining mustaqil xavf omiliga aylandi. Ushbu maqolada gipodinamiyaning inson organizmi tizimlariga patofiziologik ta’siri mexanizmi, uning oqibatlari va oldini olishning ahamiyati ilmiy-nazariy jihatdan tahlil qilinadi.

Gipodinamiyaning patofiziologik mexanizmlari va a me’zolar tizimiga ta’siri

- Yurak-qon tomir tizimidagi o‘zgarishlar: Mushaklarning doimiy dinamik qisqarishi qon aylanishida «ikkinchi yurak» (mushak nasosi) vazifasini bajaradi. Harakatsizlik sharoitida venulalar va venalarga tushadigan mexanik bosim kamayadi, bu esa qonning yurakka qaytishini (venoz oqimini) sekinlashtiradi. Doimiy gipodinamiya miokardning qisqarish qobiliyati pasayishiga, yurakning sistolik va minutlik hajmining kamayishiga olib keladi. Natijada yurak mushagining atrofiya bo‘lishi, arterial gipertenziya, miokard ishemik kasalligi va aterosklerotik o‘zgarishlar rivojlanish xavfi bir necha barobarga ortadi[1].
- Moddalar almashinuvi va metabolik buzilishlar: Fizik faollikning etishmasligi me’da-ichak va skelet mushaklarida insulinga sezuvchan retseptorlarning faolligini

susaytiradi. Bu holat to‘qimalarda glyukozaning o‘zlashtirilishini qiyinlashtirib, giperinsulinemiya va 2-tip qandli diabetning asosiy sababchisiga aylanadi.[3] Bundan tashqari, lipidlar almashinuvida jiddiy siljishlar kuzatiladi: qon plazmasida past zichlikdagi lipoproteinlar (PZLP) va triglitseridlar miqdori ortib, yuqori zichlikdagi lipoproteinlar (YUZLP) kamayadi, bu esa semirish va steatogepatit rivojlanishiga zamin yaratadi.

- Tayanch-harakat apparati va suyak-bog‘lam tizimi: Gipodinamiya sharoitida suyak to‘qimasida mineral moddalar, xususan kalsiy tuzlarining yuvilishi (dekalsinatsiya) tezlashadi[2]. Bu holat osteoporoz va suyak sinishlari xavfini oshiradi. Mushak tolalarining funksional faolligi pasayib, ularda atrofiya (jadallikning kamayishi) va distrofik o‘zgarishlar boshlanadi. Umurtqa pog‘onasini ushlab turuvchi mushak korsetining kuchsizlanishi osteoxondroz, skoliox hamda disk grijalari kabi patologiyalarni keltirib chiqaradi.
- Markaziy asab tizimi va neyroendokrin boshqaruv: Proprioretseptorlardan (mushak va bo‘g‘im retseptorlaridan) bosh miya po‘stlog‘iga keluvchi afferent impulslar oqimining kamayishi markaziy asab tizimining funksional holatiga salbiy ta’sir ko‘rsatadi. Bu astenik sindrom, depressiya, surunkali charchoq, uyqu buzilishi va intellektual ish qobiliyatining susayishi bilan namoyon bo‘ladi. Ichki endorfinlar va dopamin sintezining pasayishi ruhiy-emotsional beqarorlikni keltirib chiqaradi.[7]

Gipodinamiya zamonaviy tibbiyotda global epidemiya sifatida baholanmoqda. Uning oqibatlari nafaqat alohida shaxs sog‘lig‘iga, balki butun jamiyatning ijtimoiy-iqtisodiy rivojlanishiga tahdid soladi.[5] Ishga layoqatli aholi orasida noinfeksion kasalliklarning (yurak-qon tomir, inkologik, metabolik) yasharish tendensiyasi bevosita harakatsizlik bilan bog‘liqdir. Bu o‘z navbatida sog‘liqni saqlash tizimiga tushadigan iqtisodiy yuklamani va nogironlik ko‘rsatkichlarini oshiradi.[6]

Gipodinamiyani bartaraf etish va oldini olishning asosiy yo‘nalishlari

Muammoni hal etish kompleks va tizimli yondashuvni talab etadi:

- Individual fiziologik faollikni orttirish: Kunlik minimal fizik yuklama kamida 8 000–10 000 qadamni yoki 150 daqiqalik o‘rtacha jadallikdagi aerob mashg‘ulotlarni (piyoda yurish, suzish, velosiped haydash) tashkil etishi lozim.
- Ishlab chiqarish va mehnat gigiyenasi: Ofis va aqliy mehnat xodimlari uchun har 45–60 daqiqada 3–5 daqiqalik mikropauzalar (fizkultminutkalar) uyushtirish, ish joyida ergonomik sharoitlarni yaratish.
- O‘z-o‘zini nazorat qilish usullarini ommalashtirish: Tinch holatdagi pulsni o‘lchash, Rufye-Dikson testi vositasida yurak-qon tomir tizimining yuklamaga

moslashish darajasini baholash hamda fitnes-trekerlar orqali kunlik harakatni monitoring qilish.

- Ijtimoiy-ma me'rifiy va infratuzilmaviy chora-tadbirlar: Aholi o'rtasida ommaviy sport va sog'lom turmush tarzini targ'ib qilish, shaharsozlikda jamoat parklari, piyodalar va velosiped yo'lakchalarini kengaytirish.[4]

Gipodinamiya — zamonaviy insoniyat biologik va sotsial moslashuvidagi eng jiddiy ziddiyatlardan biridir. Inson organizmi evolyutsion jihatdan muntazam fizik yuklamalar sharoitida ishlashga moslashgan bo'lib, harakatsizlik uning fiziologik tizimlarida chuqur destruktiv o'zgarishlarni keltirib chiqaradi. Gipodinamiyaga qarshi kurashish nafaqat tibbiy aralashuvlarni, balki har bir insonning o'z sog'lig'iga bo'lgan mas'uliyatini oshirishni va jamiyat miqyosida sog'lom muhitni shakllantirishni talab etadi. Muntazam, dozirovka qilingan fizik faollik organizmning rezerv imkoniyatlarini oshirish, surunkali kasalliklarning oldini olish va umumiy umr ko'rish davomiyligini uzaytirishning eng samarali va tabiiy vositasi hisoblanadi.

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# HARBIY XIZMATCHILAR VA FUQAROLARDA YELKA SUYAGI PROKSIMAL QISMI SINISHLARINING KLINIK-DEMOGRAFIK VA TRAVMATOLOGIK XUSUSIYATLARI

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**Dolzarbligi.** Yelka suyagining proksimal qismi sinishlarining klinik kechishi bemorning yoshi, suyak sifati, travma mexanizmi va funksional ehtiyojiga bog‘liq. Fuqarolik amaliyotida ushbu jarohat ko‘pincha keksa yoshdagi bemorlarda past energiyali yiqilishlar bilan bog‘liq bo‘lsa, harbiy xizmatdagi yuqori jismoniy faollik, xizmat va sport mashg‘ulotlari yuqori energiyali shikastlanishlar ulushini oshiradi. Kontingentlarning klinik-demografik va travmatologik farqlarini aniqlash tekshiruv hajmi, davolash usuli va reabilitatsiya maqsadini individual belgilash uchun muhimdir.

**Maqsad.** Harbiy xizmatchilar va fuqarolik kontingentida yelka suyagining proksimal qismi sinishlarining yosh-jins tarkibi, travma mexanizmi, energiyasi va shikastlangan tomon bo‘yicha xususiyatlarini qiyosiy baholash.

**Material va usullar.** Retrospektiv–prospektiv qiyosiy tahlilga 2018–2024-yillarda yelka suyagining proksimal qismi sinishi bilan davolangan 145 bemor kiritildi. Fuqarolik kontingentini 2018–2021-yillarda Respublika shoshilinch tibbiy yordam ilmiy markazi Farg‘ona filialida davolangan 100 bemor, harbiy kontingentni 2022–2024-yillarda Farg‘ona harbiy gospitalida davolangan 45 harbiy xizmatchi tashkil etdi. Yosh, jins, travma mexanizmi va shikastlangan tomon tahlil qilindi. Tik turgan holatdan yiqilish va maishiy jarohatlar past energiyali; yo‘l-transport hodisasi, balandlikdan yiqilish hamda sport yoki xizmat mashg‘ulotidagi jarohatlar yuqori energiyali deb guruhlandi. Miqdoriy ko‘rsatkichlar M±SD, toifali ko‘rsatkichlar n (%) ko‘rinishida berildi. Guruhlar Welch t-mezoni va Pirsonning $\chi^2$ mezoni bilan qiyoslandi; $p<0,05$ statistik ahamiyat mezoni sifatida qabul qilindi. Guruhlar turli davr va klinik muassasalarda shakllangani sabab natijalar sababiy bog‘liqlik sifatida talqin qilinmadi.

**Natijalar.** Fuqarolik kontingentida o‘rtacha yosh 58,3±14,7 yil, harbiy xizmatchilarda 38,6±11,9 yil bo‘lib, farq statistik ahamiyatli edi ($p<0,001$). Fuqarolik

guruhida 61 yosh va undan kattalar 44,0%, harbiy guruhda esa 31–45 yoshdagilar 44,4% bilan yetakchi bo‘ldi. Erkaklar ulushi mos ravishda 46,0% va 93,3% ni tashkil etdi ($p<0,001$). Fuqarolik guruhida tik turgan holatdan yiqilish 43,0% va maishiy jarohat 24,0% bo‘lib, past energiyali shikastlanishlar jami 67,0% ni tashkil etdi. Harbiy xizmatchilarda sport yoki xizmat mashg‘ulotidagi jarohat 37,8%, yo‘l-transport hodisasi 24,4% va balandlikdan yiqilish 20,0% bo‘lib, yuqori energiyali shikastlanishlar 82,2% ga yetdi. Travma mexanizmlari va energiyasi bo‘yicha guruhlararo farq statistik ahamiyatli bo‘ldi ($p<0,001$). O‘ng yelka fuqarolik guruhida 56,0%, harbiy guruhda 64,4% holatda shikastlangan, biroq tomonlar taqsimotida statistik ahamiyatli farq aniqlanmadi ($p=0,440$).

**Xulosa.** Fuqarolik kontingentida keksa yosh, ayol jins va past energiyali yiqilishlar, harbiy xizmatchilarda esa mehnatga layoqatli yosh, erkak jins va yuqori energiyali jarohatlar ustun bo‘ldi. Shikastlangan tomon bo‘yicha guruhlar o‘rtasida farq kuzatilmadi. Dastlabki klinik baholashda bemorning kontingenti va travma mexanizmini hisobga olish nurli diagnostika hajmi hamda keyingi davolash-reabilitatsiya yo‘nalishini asosli tanlash imkonini beradi.

# СТРУКТУРА ОСЛОЖНЕНИЙ И ПОВТОРНЫХ ХИРУРГИЧЕСКИХ ВМЕШАТЕЛЬСТВ ПРИ ЛЕЧЕНИИ ПЕРЕЛОМОВ ПРОКСИМАЛЬНОГО ОТДЕЛА ПЛЕЧЕВОЙ КОСТИ

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**Актуальность.** Результаты лечения переломов проксимального отдела плечевой кости зависят не только от консолидации, но и от частоты инфекционных, механических и функциональных осложнений. Вторичное смещение, варусная деформация, контрактура и проблемы импланта могут привести к стойкому ограничению функции и повторной операции. Корректный анализ требует различать число пациентов хотя бы с одним осложнением и число отдельных нежелательных событий.

**Цель.** Изучить структуру осложнений и частоту повторных хирургических вмешательств при лечении переломов проксимального отдела плечевой кости в контрольной и основной клинических группах.

**Материал и методы.** Проведен ретроспективно–проспективный анализ 145 пациентов, лечившихся в 2018–2024 гг. Контрольную группу составили 100 пациентов 2018–2021 гг., основную — 45 пациентов 2022–2024 гг. Учитывали раневую инфекцию, гематому, вторичное смещение, варусную деформацию, контрактуру, миграцию импланта или проблемы винтов, аваскулярный некроз и повторную операцию. Общую частоту осложнений рассчитывали по числу пациентов хотя бы с одним осложнением. Частоты отдельных событий анализировали независимо и не суммировали, поскольку у одного пациента могли сочетаться несколько осложнений. Группы сравнивали точным критерием Фишера; $p<0,05$ считали статистически значимым.

**Результаты.** Хотя бы одно осложнение зарегистрировано у 25/100 (25,0%) пациентов контрольной и у 7/45 (15,6%) пациентов основной группы; различие

не достигло статистической значимости (p=0,280). Раневая инфекция выявлена соответственно у 3 (3,0%) и 1 (2,2%) пациента, гематома — у 2 (2,0%) и 1 (2,2%), вторичное смещение — у 8 (8,0%) и 2 (4,4%), варусная деформация — у 6 (6,0%) и 1 (2,2%), контрактура — у 9 (9,0%) и 2 (4,4%), миграция импланта или проблемы винтов — у 7 (7,0%) и 2 (4,4%), аваскулярный некроз головки плечевой кости — у 3 (3,0%) и 1 (2,2%). Повторная операция выполнена у 5/100 (5,0%) пациентов контрольной и у 1/45 (2,2%) пациента основной группы (p=0,666). Наиболее частыми нежелательными событиями в обеих группах были контрактура, вторичное смещение и связанные с имплантом механические проблемы.

**Выводы.** В основной группе наблюдалось численное снижение общей частоты осложнений, вторичного смещения, варусной деформации, контрактуры и повторных операций, однако статистически значимых различий не получено. Небольшой объем основной группы и исторический характер контроля не позволяют трактовать выявленную разницу как доказанный причинный эффект. Профилактика осложнений должна включать точную оценку морфологии перелома, восстановление медиальной опоры, контроль положения импланта и винтов, а также поэтапную реабилитацию с ранним выявлением контрактуры.

# 6. AGRICULTURE, VETERINARY MEDICINE, AND FOOD TECHNOLOGY

# CURRENT STATE AND PROBLEMS OF GRAIN PRODUCTION IN THE REPUBLIC OF UZBEKISTAN: A REGIONAL ANALYSIS FOR 2020-2024

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***Аннотация.*** *Мазкур мақолада Ўзбекистон Республикасида ғалла етиштириш соҳасининг сўнгги йиллардаги ҳолати, эришилган натижалар ва мавжуд асосий муаммолар таҳлил қилинган. Тадқиқот давомида дон экинлари майдонлари, ялпи ҳосил ва ҳосилдорлик кўрсаткичлари статистик-таҳлилий усулда ўрганилиб, ҳудудлар кесимида қиёсий гуруҳлаш ўтказилган, шунингдек ғалла харид жараёнида қўлланилаётган рақамли технологияларнинг («электрон тарози» тизими) ютуқ ва камчиликлари очиб берилган.*

***Калит сўзлар:*** *ғаллачилик, буғдой, дон экинлари, озиқ-овқат хавфсизлиги, ҳосилдорлик, аграр сиёсат, экин майдонлари, рақамли технологиялар, электрон тарози.*

***Аннотация.*** *В данной статье анализируется современное состояние отрасли зерноводства Республики Узбекистан за последние годы, достигнутые результаты и основные нерешённые проблемы. В ходе исследования статистико-аналитическим методом изучены показатели посевных площадей, валового сбора и урожайности зерновых культур, проведена сравнительная группировка регионов, а также раскрыты преимущества и недостатки цифровых технологий («электронные весы»), применяемых в процессе закупки зерна.*

***Ключевые слова:*** *зерноводство, пшеница, зерновые культуры, продовольственная безопасность, урожайность, аграрная политика, посевные площади, цифровые технологии, электронные весы.*

***Abstract.*** *This article examines the recent state of the grain-farming sector in the Republic of Uzbekistan, the results achieved, and the main unresolved problems. Using statistical-analytical methods, the study examines sown area, gross harvest, and yield indicators of cereal crops, performs a comparative regional grouping, and reveals the*

*advantages and disadvantages of digital technologies (the "Electronic Scale" system) applied in the grain-procurement process.*

***Keywords:*** *grain farming, wheat, cereal crops, food security, yield, agricultural policy, sown areas, digital technologies, electronic scale.*

## Introduction

Ensuring food security is an essential condition for the economic and social stability of any state. Within this context, grain farming occupies a special place, since cereal products constitute the population's main source of food while also serving as an important raw material for livestock breeding and the food-processing industry. In recent years, the Republic of Uzbekistan has been implementing large-scale reforms aimed at developing the grain sector, making more efficient use of sown areas, and increasing yields.

The theoretical and scientific foundations of this topic have been examined by a number of researchers. In particular, a structural analysis of food security in Uzbekistan has been provided [1], the issue has been assessed from the perspective of state policy and the institutional environment [2], the transition of Uzbekistan's agriculture from a cotton monoculture toward food security has been analyzed [3], the principal scientific directions of food security for the Central Asian countries have been defined [4], and the natural-geographic factors affecting the population's food supply have been examined [5]. At the same time, the studies cited above do not sufficiently address a comprehensive analysis of the regional development dynamics of the grain sector or the role of digital technologies within this process, which underlines the relevance of the present article.

The aim of this study is to analyze, at the regional level, the dynamics of sown area, gross harvest, and yield of grain crops in the Republic of Uzbekistan for 2020–2024, to identify the sector's development model, and to assess the role of digital technologies applied in the grain-procurement process. To achieve this aim, trend analysis, comparative analysis, and regional grouping were applied: annual indicators for 2020–2024 were first used to establish the overall trend; the percentage change between the initial and final year was then calculated for each region (comparative analysis); the resulting values were finally used to classify the regions into three groups according to their development pattern (regional grouping).

## Current State of the Sector

According to preliminary data from the National Statistics Committee, in 2025 all categories of farms in the Republic harvested more than 10.11 million tonnes of cereal

and leguminous crops, representing a 13 percent increase compared to 2024. The Fergana region led in output, producing more than 1,147 thousand tonnes of grain, while the Bukhara and Tashkent regions also ranked among the top-performing areas [6], [7].

According to the March 2026 GIEWS report of the Food and Agriculture Organization of the United Nations (FAO), Uzbekistan's aggregate 2025 cereal production reached an above-average level of 8.9 million tonnes, including 7.3 million tonnes of wheat and about 900,000 tonnes of maize. Wheat import requirements (grain and flour combined) for the 2025/26 marketing year are forecast at a near-average level of about 4 million tonnes [8]. This reflects the effectiveness of the agrarian reforms being implemented in the country — the introduction of high-yielding, climate-resilient wheat varieties, the modernization of irrigation systems, and support measures for dehkan and farmer households.

In recent years, the areas sown with new, high-yielding winter wheat varieties resistant to unfavorable weather conditions — including varieties developed through local breeding — have significantly expanded, replacing biologically outdated cultivars, which underscores the need to strengthen the link between science and production.

An analysis of the dynamics across the Republic during 2020-2024 reveals that the sector is undergoing profound qualitative changes (Table 1). Specifically, over this period the area sown with grain crops decreased from 1,646.2 thousand hectares to 1,556.8 thousand hectares, a reduction of 89.4 thousand hectares (5.4 percent). Nevertheless, thanks to an increase in yield from 41.8 centners to 50.8 centners per hectare — a rise of 9.0 centners, or 21.5 percent — the gross harvest grew from 7,636.0 thousand tonnes to 8,791.5 thousand tonnes, an increase of 1,155.5 thousand tonnes (15.1 percent).

**Table 1**

**Changes in sown area, gross harvest and yield of grain crops in the Republic of Uzbekistan, 2020-2024**

| Indicator | 2020 | 2021 | 2022 | 2023 | 2024 | Change (2024/2020, +;-) |
|---|---|---|---|---|---|---|
| Sown area, thousand ha | 1,646.2 | 1,596.9 | 1,567.3 | 1,542.5 | 1,556.8 | **-89.4** |

| Indicator | 2020 | 2021 | 2022 | 2023 | 2024 | Change (2024/2020, +;-) |
|---|---|---|---|---|---|---|
| Gross harvest, thousand t | 7,636.0 | 7,634.6 | 7,990.5 | 8,453.4 | 8,791.5 | **+1,155.5** |
| Yield, centner/ha | 41.8 | 40.9 | 43.4 | 47.9 | 50.8 | **+9.0** |

*Source: compiled by the author based on data from the National Statistics Committee of the Republic of Uzbekistan.*

This substantial rise in yield is explained primarily by the wide adoption of the new, high-yielding, climate-resilient wheat varieties noted above, the modernization of irrigation systems, and the agrarian reforms carried out by the state, including support measures in seed production and lending. In other words, the growth in gross harvest was driven not by an expansion of sown area but by qualitative improvements in breeding and agrotechnology.

Behind the aggregate national indicators lie diverging regional trends. Consolidating each region's change across the three indicators (sown area, gross harvest, yield) for 2020-2024 (Table 2) provides a clearer picture of the sector's development model.

**Table 2**

**Regional changes in grain-farming indicators, 2020-2024 (consolidated analysis), %**

| № | Region | Sown area, +;- % | Gross harvest, +;- % | Yield, +;- % |
|---|---|---|---|---|
| 1 | Republic of Karakalpakstan | -3.8 | +18.8 | +11.5 |
| 2 | Andijan | +1.0 | +14.4 | +16.4 |
| 3 | Bukhara | +9.7 | +22.9 | +12.4 |
| 4 | Jizzakh | -9.3 | -6.3 | +7.4 |
| 5 | Kashkadarya | -12.8 | -1.0 | +13.5 |
| 6 | Navoi | -4.1 | +11.3 | +24.2 |
| 7 | Namangan | -7.8 | +34.4 | +39.9 |

| № | Region | Sown area, +;- % | Gross harvest, +;- % | Yield, +;- % |
|---|---|---|---|---|
| 8 | Samarkand | -9.6 | +7.0 | +18.9 |
| 9 | Surkhandarya | -3.5 | +15.6 | +24.0 |
| 10 | Syrdarya | +6.2 | +26.3 | +22.7 |
| 11 | Tashkent | -1.9 | +24.4 | +24.7 |
| 12 | Fergana | -4.5 | +30.4 | +33.9 |
| 13 | Khorezm | -1.1 | +19.6 | +19.6 |
| | **Republic average** | **-5.4** | **+15.1** | **+21.5** |

*Source: author's calculations based on original regional statistical data (2020-2024) on sown area, gross harvest and yield of grain crops.*

The consolidated analysis allows the regions to be classified into three groups. The first group comprises regions where the sown area was maintained or expanded while the harvest also grew — Andijan, Bukhara, and Syrdarya — where growth was driven by both extensive and intensive factors. The second and largest group consists of Namangan, Fergana, Tashkent, Khorezm, Karakalpakstan, Surkhandarya, Navoi, and Samarkand, where, despite a decline in sown area, the gross harvest still increased owing to a substantial rise in yield — reflecting the dominant nationwide trend of intensification. The third group includes Kashkadarya and, in particular, Jizzakh, where, despite yield growth, a sharp reduction in sown area (-12.8% and -9.3%, respectively) led either to stagnation of the gross harvest (Kashkadarya) or to its decline (Jizzakh, -6.3%). Jizzakh region therefore stands out as an area requiring particular attention.

Overall, the nationwide 15.1 percent increase in gross harvest was driven primarily by higher yields (an intensive factor), which represents an appropriate strategic direction under conditions of limited land and water resources. At the same time, the reasons behind the sharp contraction of sown areas in certain regions (notably Jizzakh and Kashkadarya) merit separate study, along with measures to manage this trend where necessary.

**Key Problems in the Sector**

Alongside the analysis above, the sector faces a number of serious problems that require resolution:

**1. Limited land and water resources.** Climate change and intensifying water scarcity in the region constrain the possibility of expanding irrigated land, requiring that the gross harvest be increased primarily through higher yields rather than expanded area.

**2. Shortcomings in the seed-production system.** The supply of high-reproduction, certified seed adapted to local conditions remains insufficient in some regions, hindering sustained yield growth.

**3. Agrotechnology and machinery provision.** The adoption of modern agricultural machinery, resource-saving irrigation methods (such as drip irrigation), and digital agrotechnologies remains below the required level.

**4. Declining soil fertility.** Many years of intensive land use, imbalanced application of mineral fertilizers, and soil salinization in some areas are gradually reducing soil fertility.

**5. The impact of climate change.** Unfavorable and sharply fluctuating weather conditions (winter frosts, irregular spring precipitation) negatively affect yields and increase risk levels for farming households. In this regard, introducing an agricultural risk-insurance system remains an urgent task.

**6. Insufficient economic incentive mechanisms.** Lending, insurance, and market-access conditions for grain producers, as well as pricing policy and the state procurement system, require further improvement. Worth highlighting here is the "Electronic Scale" information system introduced in recent years as a concrete response to this problem: it automatically weighs harvested output at grain-collection points and transmits the data in real time to the Ministry of Agriculture's "Harvest Acceptance" system, thereby ensuring transparency in the procurement process [9]. Presidential Decree No. PF-7 of 17 January 2025 and the procedure for purchasing wheat from the 2023 harvest both make this system mandatory at cotton- and grain-reception points [10; 11].

**Table 3**

**Advantages and disadvantages of the "Electronic Scale" information system**

| Advantages | Disadvantages |
|---|---|
| ● Ensures transparency in harvest acceptance, preventing the artificial inflation or understatement of weight indicators | ● Not all grain-reception points are yet fully equipped with electronic scales, requiring additional infrastructure investment |

| Advantages | Disadvantages |
|---|---|
| ● Data is transmitted in real time to the central "Harvest Acceptance" system, enabling prompt monitoring and analysis<br>● Speeds up settlements with dehkan and farmer households and reduces intermediary and inefficient practices<br>● Improves the accuracy of regional statistical data, supporting evidence-based state policymaking<br>● Maintains state oversight of measurement accuracy through mandatory metrological calibration requirements | ● Insufficient internet connectivity in rural areas may cause interruptions in data transmission<br>● The level of digital literacy among staff operating the system varies across regions<br>● Increased system load during peak harvest periods raises the risk of technical failures<br>● Ensuring the cybersecurity of the centralized electronic database requires additional financial and technical resources |

The region-level data collected through this system is directly useful for management decisions on the other problems discussed above — for example, promptly identifying regions with shrinking sown area or yield gaps so that targeted agrotechnical measures can be directed there. In this sense, the system should be viewed not as a separate topic but as one practical instrument for addressing the problems identified above.

**Conclusion**

The analysis shows that, during 2020-2024, Uzbekistan's grain-farming sector shifted toward an intensive development path: despite a 5.4 percent reduction in sown area, gross harvest grew by 15.1 percent, driven by a 21.5 percent rise in yield. At the same time, limited land and water resources, shortcomings in the seed-production system, declining soil fertility, and climate change remain serious challenges.

Based on this analysis, three concrete recommendations are proposed: first, intensive agrotechnologies and high-yielding varieties should be prioritized for expansion in regions where sown area has contracted sharply, particularly Jizzakh and Kashkadarya, to offset the lost area through higher yields; second, the "Electronic Scale" system should be rolled out on an accelerated basis at all grain-reception points, including in regions currently lagging behind; third, seed-production and agrotechnical extension services should be strengthened so that the practices of high-yield regions (Namangan, Fergana, Tashkent) can be extended to others. Consistent implementation of these measures would strengthen food security and increase the Republic's grain export potential.

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# TENSION ИНФИЛЬТРОМЕТР ЁРДАМИДА ТУПРОҚ СУВ ЎТҚАЗУВЧАНЛИГИНИ АНИҚЛАШНИНГ ТОМЧИЛАТИБ СУҒОРИШ МЕЪЁРИНИ ҲИСОБЛАШДАГИ АҲАМИЯТИ

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***Аннотация.*** *Ушбу мақолада тупроқнинг сув ўтқазувчанлигини аниқлашда ва томчилатиб суғориш меъёрини белгилашда Tension инфильтрометр ёрдамида аниқлаш аҳамияти кўриб чиқилган. Tension инфильтрометр ёрдамида тупроқнинг сув ўтқазувчанлигини ўлчаш жараёни, унинг асосий формулалари ва Wooding тенгламаси келтирилган. Тошкент, Жиззах ва Қашқадарё вилоятларида олинган тажриба натижалари тақдим этилиб, тупроқнинг гидравлик ўтказувчанлиги, инфильтрация тезлиги ва томчилатиб суғориш меъёрининг ҳисобланиши бўйича амалий кўрсатмалар берилган. Эътибор қаратилган асосий масалалар орасида тупроқнинг сув билан тўйиниши ва суғориш тизимининг самарадорлиги, шунингдек, ўсимликлар учун зарур сув миқдорини белгилаш кўрсатилган.*

***Калит сўзлар:*** *Tension инфильтрометр, тупроқ сув ўтқазувчанлиги, томчилатиб суғориш меъёри, гидравлик ўтказувчанлик, инфильтрация жараёни, сув ресурслари, эвапотранспирация.*

***Аннотация.*** *В данной статье обсуждается важность использования Tension инфильтрометра для определения водопроницаемости почвы и определения норм капельного орошения. Представлен процесс измерения водопроницаемости почвы с использованием Tension инфильтрометра, его основные формулы и уравнение Wooding. Представлены результаты экспериментов, проведенных в Ташкентской, Джизакской и Кашкадарьинской областях, а также даны практические рекомендации по расчету гидравлической проводимости почвы, скорости инфильтрации и норм капельного орошения. К основным рассматриваемым вопросам относятся водонасыщение почвы и эффективность оросительной системы, а также определение количества воды, необходимого растениям.*

***Ключевые слова:*** *Tension инфильтрометр, водопроницаемость почвы, норма капельного орошения, гидропроводность, процесс инфильтрации, водные ресурсы, суммарное испарение.*

***Annotation.*** *This article discusses the importance of using a Tension infiltrometer to determine soil permeability and determine drip irrigation rates. The process of measuring soil permeability using a Tension infiltrometer, its basic formulas, and the Wooding equation are presented. The results of experiments conducted in Tashkent, Jizzakh, and Khashkadarya regions are presented, and practical guidelines are given for calculating soil hydraulic conductivity, infiltration rate, and drip irrigation rates. The main issues addressed include soil water saturation and the efficiency of the irrigation system, as well as determining the amount of water needed by plants.*

***Key words:*** *Tension infiltrometer, soil water permeability, drip irrigation rate, hydraulic conductivity, infiltration process, water resources, evapotranspiration.*

**Кириш.** Ўзбекистон Республикасида сув ресурсларининг чекланганлиги ва уларни оқилона бошқариш зарурияти қишлоқ хўжалигида самарали суғориш технологияларининг жорий этилишини тақозо этмоқда. Айниқса, томчилатиб суғориш тизимлари экинларнинг сувга бўлган эҳтиёжини аниқлашда, сувни тежашда ва ҳосилдорликни оширишда муҳим рол ўйнайди. Бундай тизимларнинг муваффақиятли ишлаши кўп жиҳатдан тупроқнинг сув ўтқазувчанлигига боғлиқ бўлиб, бу параметр тупроқнинг сувни ва унда эриган моддаларнинг ҳаракатини ифодалайди. Сув ўтқазувчанлик коэффитсиэнти (К) тупроқдаги сувнинг гравитацион кучлар таъсирида қанчалик тез ҳаракатланишини кўрсатади. Ушбу кўрсаткич сув хўжалиги ва қишлоқ хўжалигида мақбул суғориш режимини тузишда асосий параметр ҳисобланади [1].

Тупроқнинг сув ўтқазувчанлигини ўлчашда бир неча ўлчаш усуллар қўлланилади, улардан бири Tension инфильтрометр ўлчаш усулидир. Бу усул тупроқдаги капилляр ҳаракатни ўлчаш орқали сув ўтиш тезлигини аниқлашда қўлланилади. Tension инфильтрометр тизими ёрдамида олинган маълумотлар сув билан тўйинган тупроқ ҳолатларини аниқлашга ва томчилатиб суғориш технологияси учун нормал суғориш меъёри (НС) ни белгилашга имкон беради [2]. Тадқиқотлар шуни кўрсатадики, турли вилоятларда тупроқнинг физик хусусиятлари ва сув ўтқазувчанлик кўрсаткичлари фарқланади. Шунинг учун Тошкент, Жиззах ва Қашқадарё вилоятларида кузатув участкасида ўтказилган ўлчаш ишлари тупроқнинг сув ўтқазувчанлиги ва томчилатиб суғориш меъёрини аниқлаш мақсадида олиб борилди.

**Адабиётлар шарҳи.** Tension инфильтрометр ёрдамида тупроқ сув ўтқазувчанлигини аниқлашнинг самарали ва кенг қўлланиладиган методлардан биридир. Rawls ва Brakensiek ўз тадқиқотларида тупроқнинг гидравлик хусусиятларини аниқлаш учун бу усулни кенгайтирган. Улар тупроқнинг турли хил тузилишлари ва намлик даражалари ўртасидаги муносабатларни ўрганиш орқали инфильтрометр ёрдамида сув ўтқазувчанлигини аниқлаш жараёнини батафсил ёритганлар [10].

Hillel “Soil Physics” илмий адабиётида тупроқ физикаси, шу жумладан сув ўтқазувчанлиги ва инфильтрометр усули билан боғлиқ назарий жиҳатларни муҳокама қилган. Ушбу манба, тақдим этилган методология ва тупроқнинг сувни қандай қабул қилиши ҳақида кенг қамровли маълумотлар бериб ўтилган [1].

Kirkham, Nielsen ва Biggar каби муаллифлар, инфильтрометр усулининг енгил ва тезкор ўлчовлар олиб бориш имкониятини таъкидлаб, тупроқнинг сув ресурсларини бошқаришда унинг аҳамиятини кўрсатганлар. Бу тадқиқотлар, олинган натижалар асосида тупроқнинг сув ўтказувчанлигини ўлчашда муҳим методологик ёндашувлар тақдим этади [11,12].

Garnier ва Menard ўзларининг тадқиқотларида янги Tension инфильтрометр дизайнини таклиф қилиб, тупроқнинг сув ўтказувчанлигини аниқлашда усулнинг самарадорлигини оширишни мақсад қилганлар. Уларнинг ишида сув ўтказувчанлиги ва унинг ўлчовлари ўртасидаги боғланишлар ёритилган бўлиб, бу томчилатиб суғориш меъёри аниқлашда муҳим аҳамиятга эга [13].

Томчилатиб суғориш меъёри, сувни самарали тақсимлаш ва экинлар учун оптимал сув миқдорини таъминлашда муҳим рол ўйнайди. Allen ва бошқалар “Crop Evapotranspiration” илмий тадқиқотида эвапотранспирация ва тупроқдаги сувнинг қайта тўлдирилиши каби омилларни ҳисобга олган ҳолда томчилатиб суғориш меъёри аниқлаш жараёнини батафсил тушунтирганлар [9]. Уларнинг тадқиқотлари, олинган сув ўтказувчанлиги маълумотларини бирлаштириб, амалий қишлоқ хўжалиги стратегияларини ишлаб чиқишда фойдалидир.

Keller ва Bliesner томчилатиб суғориш тизимларининг самарадорлиги ҳақида муҳим маълумотларни тақдим этганлар. Улар, олинган натижалар асосида тупроқ сув ўтказувчанлиги ва суғориш тизимларининг самарасини таққослаш орқали муҳим тавсиялар беришган [14].

**Тадқиқот олиб бориш услуби.** Тупроқнинг сув ўтказувчанлигини аниқлаш ва томчилатиб суғориш меъёрини белгилашда Tension инфильтрометр усули қўлланилди. Бу усул тупроқнинг физик хусусиятларини аниқлашда юқори аниқликка эга бўлиб, суғориш технологияларини мақбуллаштириш учун зарур бўлган маълумотларни тақдим этади [4]. Тадқиқот жараёни учта босқичлардан иборат бўлиб, ҳар бир босқич аниқ ўлчовларни талаб этади:

**1. Тадқиқот жойини танлаш.** Тупроқнинг сув ўтказувчанлигини аниқлашда тадқиқот жойининг хусусиятлари муҳим аҳамиятга эга. Ушбу тадқиқот Тошкент, Жиззах ва Қашқадарё вилоятларида олиб борилди. Тадқиқотлар учун жойлар танланаётганда тупроқнинг турли хил физик-механик хусусиятларини ўрганиш мақсад қилинган. Танланган жойларнинг тупроқ тури, намлиги ва тупроқ қатламларининг қалинлиги ўрганилди.

**2. Tension инфильтрометрни ўрнатиш.** Tension инфильтрометр ўрнатиш жараёни қуйидаги босқичлардан иборат бўлди:

• Тупроқ сатҳи текисланди, юзаси силлиқ ва тоза ҳолатга келтирилди. Бу тупроқнинг сув билан бир хил таъсирланишини таъминлашда муҳимдир [6];

• Инфильтрометрнинг биринчи қисми тупроқ ичига жойлаштирилди, бу босқичда тупроқ юзасининг қуруқлик даражаси ҳисобга олинди. Бу чуқурлик, сувнинг тупроққа тўғри кириши ва натижаларни аниқ аниқлаш учун муҳим [4];

• Инфильтрометр сув билан тўлдирилди, сув сатҳини маълум даражада ушлаб туриш учун қурилма созланди.

**3. Ўлчовлар олиш.** Тупроқнинг сув ўтқазувчанлигини ўлчашда бир нечта ўлчовлар олиб борилди:

• Инфильтрометрга сув тўлдирилади ва тупроққа кириш вақти қайд этилади. Сувнинг тупроққа кириши билан вақт ўлчанади ва ҳар бир ўлчовда сув миқдори қайд этиб борилади [1].

Ўлчовлар ҳар хил вақт оралиғида амалга оширилиб, тупроқнинг сувни қабул қилиш жараёни кузатилади. Бу маълумотлар тупроқнинг сув ўтқазувчанлик коэффитсиэнти (К) ни ҳисоблашда қўлланилади.

Ушбу метод орқали олинган натижалар қишлоқ хўжалиги ерларида томчилатиб суғориш тизимини мақбуллаштиришда қўлланилиб, ҳосилдорликни ошириш ва сув ресурсларидан самарали фойдаланишга ёрдам беради.

**Натижалар ва мунозара.** Олиб борилган тадқиқотлар сув ресурсларини бошқаришда инновацион ёндашувларни ривожлантиришга хизмат қилади. Шунингдек, тупроқнинг сув ўтқазувчанлиги ва томчилатиб суғориш меъёри ўртасидаги боғланишларни янада чуқурроқ таҳлил қилиш имконини беради, бу эса сув хўжалиги амалиётларида ижобий таъсир кўрсатади.



**1-расм. Tension инфильтрометрни дала шароитида ишлатиш**

Tension инфильтрометр – бу икки қисмли қурилма бўлиб (1-расм), уларнинг бири тупроққа жойлаштирилади, иккинчиси эса сув билан тўлдирилади. Ушбу тизим тупроқнинг сувни қабул қилиш ва уни ўтказиш хусусиятларини

аниқлашда, сувнинг тупроқ қатламига кириш тезлигини баҳолашда кенг қўлланилади [3,5]. Ушбу усул орқали олинган натижалар қишлоқ хўжалиги экинларини мақбул суғориш режаларини ишлаб чиқишда асосий омил бўлиб хизмат қилади.

**Тупроқ сув ўтқазувчанлигини аниқлаш.** Тупроқ инфильтрациясини аниқлашда Силиндир ҳалқали инфильтрометр ва Tension инфильтрометрлардан фойдаланилади. Силиндир ҳалқали инфильтрометрда (2 расм) иккита цилиндр тупроққа қўйилади ва иккала цилиндрга ҳам сув қуйилади. Силиндир ҳалқали инфильтрометрда тупроқнинг қанчалик тезликда сувни сингдириши ўлчанади. Сув ички цилиндрдан тупроққа кириб боради, ташқи цилиндр эса сув оқимини ёнга сизилишини чеклайди ва вертикал инфильтрацияни ўлчашга ёрдам беради [15].



**2-расм. Силиндир ҳалқали инфильтрометрлар**

$$I = \frac{V}{At} \qquad (1)$$

Силиндир ҳалқали инфильтрометрлар ҳисоблаш формуласи (1)

Бу ерда:

- **I** — вақтга боғлиқ ҳолда инфильтрация тезлиги (см/с),
- **V** — сув ҳажми (мл),
- **A** — цилиндрнинг юзаси (см²),
- **t** — вақт (с).

Силиндир ҳалқали инфильтрометр кўпроқ тупроқнинг умумий инфильтрацион хусусиятларини, яъни тупроқ қатлами қанчалик тез сувни қабул қилишини аниқлайди. Бу усул ёрдамида инфильтрация тезлиги билан бирга тупроқнинг юқори қатламининг гидравлик ўтказувчанлигини баҳолаш мумкин. Силиндир ҳалқали инфильтрометр натижаларига кўра инфильтрация тезлиги вақт ўтиши билан камаяди. Дастлаб сув тупроққа тез сингади, лекин тупроқнинг намлиги ортиб борган сари сингдириш тезлиги пасаяди. Якуний натижа эса тўйинганлик ҳолатидаги инфильтрация тезлигини кўрсатади.

Tension инфильтрометр эса тупроқнинг майда тешиклари орқали сувнинг киришини ўлчашга мўлжалланган. Майда тешиклар ва тупроқ тортиш кучи остида сувнинг қанчалик тез сингиши аниқланади. Шунингдек, тупроқнинг сув ўтказувчанлиги, яъни сувнинг майда тешиклар орқали ўтишини таҳлил қилади. Tension инфильтрометр билан ўлчанган инфильтрация натижалари тупроқнинг микропораларидан сувнинг қандай киришини аниқ кўрсатиб беради. Бу усул орқали тупроқнинг тўйинганликка етгунча қанчалик вақт кетишини аниқлаш мумкин. Tension инфильтрометр ёрдамида тупроқнинг гидравлик ўтказувчанлиги юқори аниқлик билан ўлчанади, айниқса капилляр кучлар таъсири остида сувнинг кириши таҳлил қилинади. Tension инфильтрометр ёрдамида тупроқнинг сув ўтқазувчанлигини аниқлашда Wooding тенгламаси асосида инфильтрация ҳисобланади. Ушбу тенглама, тупроқ орқали сувнинг ҳаракатини кузатишда ва гидравлик ўтказувчанликни (К) аниқлашда ишлатилади [7,8]. Wooding тенгламаси (2) доимий ҳолатда доиравий сизилишни ифодалайди ва инфильтрация жараёнининг радиал хусусиятларини ўзида акс эттиради. Тенглама қуйидагича ифодаланади:

$$Q = \pi r^2 K \left[1 + \frac{4}{\pi r \alpha}\right] \quad (2)$$

Бу ерда:

- **Q** – инфильтрация қилган умумий сув ҳажми (м³),
- **K** – тупроқнинг гидравлик ўтказувчанлиги (м/с),
  $K(h) = K_{cat}\, exp(\alpha h)$ (3)
- **α** – инфильтрация радиусига боғлиқ константа,
  $\alpha = \frac{ln[Q(h_2)/Q(h_1)]}{h_2 - h_1}$ (4)
- **r** – инфильтрация ҳалқасининг радиуси (м),

**Tension инфильтрометр ёрдамида ўлчов натижалари.** Тошкент, Жиззах ва Қашқадарё вилоятларида кузатув участкасида ўтказилган тадқиқотлар бўйича олинган маълумотлар таҳлил қилинганда, ҳар бир тупроқ тури учун сувнинг инфильтрация тезлиги ва сув сатҳи даражаси кузатилди. Қуйидаги 1-жадвалда сув сатҳи даражаси ва инфильтрация тезлиги бўйича олинган маълумотлар келтирилган:

**1-жадвал**

**Тошкент, Жиззах ва Қашқадарё вилоятларида кузатув участкасида олиб борилган Tension инфильтрометр ўлчаш натижалари**

| Тупроқнинг сув ўтқазувчанлиги (К) | Инфильтрация тезлиги Q (см³/соат) | Альфа α | Тўйинган гидравлик ўтказувчанлик ($К_{сат}$) (см/соат) |
|---|---|---|---|
| Тошкент (-10 см) | 139,905 | 0,061 | 2,8414 |
| Тошкент (-5 см) | 189,649 | 0,398 | 2,8414 |
| Тошкент (-2,5 см) | 512,984 | 0,229 | 2,8414 |
| Жиззах (-10 см) | 279,809 | 0,034 | 0,3220 |
| Жиззах (-5 см) | 331,885 | 0,047 | 0,3220 |
| Жиззах (-2,5 см) | 373,079 | 0,04 | 0,3220 |
| Қашқадарё (-10 см) | 186,54 | 0,139 | 0,0566 |
| Қашқадарё (-5 см) | 93,27 | 0,162 | 0,0566 |
| Қашқадарё (-2,5 см) | 139,905 | 0,012 | 0,0566 |

Бу натижалардан тупроқнинг сув ўтқазувчанлиги Тошкент, Жиззах ва Қашқадарё вилоятларида ўзгаришлар кўрсатмоқда. Тўйинган гидравлик ўтказувчанлик ($К_{сат}$) бўйича олинган маълумотлар ушбу ҳудудларда тупроқнинг физик хусусиятлари ва сувни қабул қилиш имкониятларини аниқлашга имкон беради.

Суғориладиган тупроқ қатламининг ҳажм оғирлиги 1 г/см$^3$ дан 1,81 г/см$^3$ гача бўлиши мумкин. Таркибида гумус моддаси кўп бўлган тупроқлар зичлиги 1-1,2 г/см$^3$, гумуси кам бўлган тупроқлар зичлиги 1,3-1,5 г/см$^3$ бўлади. Ўзбекистоннинг суғориладиган деҳқончилик ривожланган ҳудудларида тарқалган тупроқларнинг зичлиги 1,3-1,52 г/см$^3$ атрофида бўлади. Устки ҳайдалма қатлам, кичик ҳажмий оғирликка 1,1-1,3 г/см$^3$ эга, чунки бу қатламда агрегатлар ғовак жойлашган бўлади. Қуйи қатламда агрегатлар миқдори камайиб борганлиги ҳамда агрегат ва заррачаларнинг зич жойлашганлиги туфайли бўшлиқлар миқдори камайиб боради, натижада ҳажм оғирлик ортади, 1,6-1,7г/см$^3$ атрофида бўлади. Структурали тупроқлар кичик ҳажм оғирликка эга бўлиб, у бутун ўсув даврида ўзгариб туриши мумкин [16].

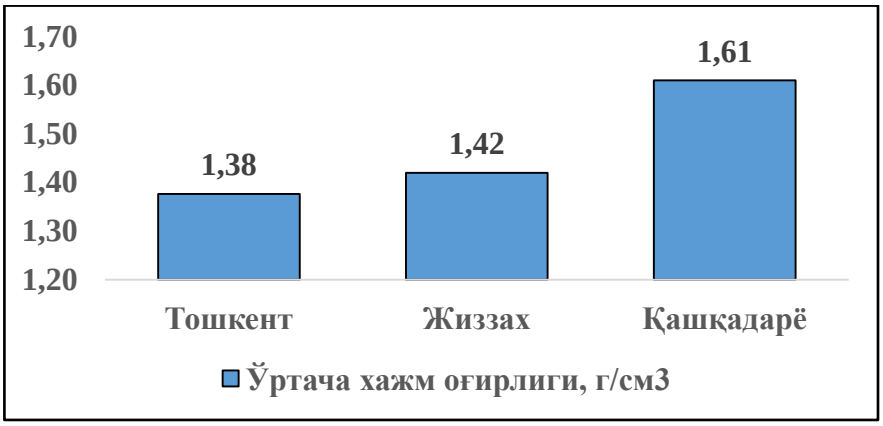
Тошкент, Жиззах ва Қашқадарё вилоятларида кузатув участкасида тажриба майдонлари тупроқ ҳажм оғирлиги қийматлари аниқланганда, улар бир биридан кескин фарқ қилди (2 жадвал).

**2-жадвал**

**Тажриба майдони тупроғларининг ҳажм оғирлиги, г/см$^3$**

| **Қатламлар, см** | **Тошкент** | **Жиззах** | **Қашқадарё** |
|---|---|---|---|
| **0-10** | 1,37 | 1,39 | 1,53 |

| | | | |
|---|---|---|---|
| **10-20** | 1,37 | 1,38 | 1,61 |
| **20-30** | 1,37 | 1.41 | 1,67 |
| **30-40** | 1,38 | 1,41 | 1,52 |
| **40-50** | 1,38 | 1,43 | 1,60 |
| **50-60** | 1,36 | 1,44 | 1,63 |
| **60-70** | 1,36 | 1,45 | 1,71 |
| **70-80** | 1,42 | 1,42 | 1,64 |
| **Ўртача** | **1,38** | **1,42** | **1,61** |




**1-диаграмма. Тошкент, Жиззах ва Қашқадарё вилоятларида тажриба майдонлари тупроғининг ўртача ҳажм оғирлиги, г/см$^3$**

Тажриба майдонлари тупроғининг ўртача ҳажм оғирлиги Тошкент вилоятида 1.38 г/см$^3$, Жиззах вилоятида 1.42 г/см$^3$ ва Қашқадарё вилоятида 1.61 г/см$^3$ бўлиб, инфильтрация қийматлари ҳам бир биридан фарқ қилди.

Ушбу ўлчов натижалари асосида томчилатиб суғориш учун оптимал нормани ҳисоблаш мумкин бўлади.

**Томчилатиб суғориш меъёри.** Томчилатиб суғориш меъёри (NS) ўсимликларнинг сувга бўлган эҳтиёжи ва тупроқнинг сувни ютиш қобилияти билан боғлиқдир. Ушбу параметрни қуйидаги (5) тенглама ёрдамида аниқлаш мумкин [9]:

$$NS = \frac{P*E}{ET} \qquad (5)$$

Бу ерда:

- **NS** – Томчилатиб суғориш меъёри (л/с ёки мм/с);
- **P** – Тупроқдаги сувнинг даражаси (қайта тўлдирилиши керак бўлган сув миқдори, мм);
- **E** – Суғориш тизимининг самарадорлиги (0 < E < 1, одатда 0.7–0.9);

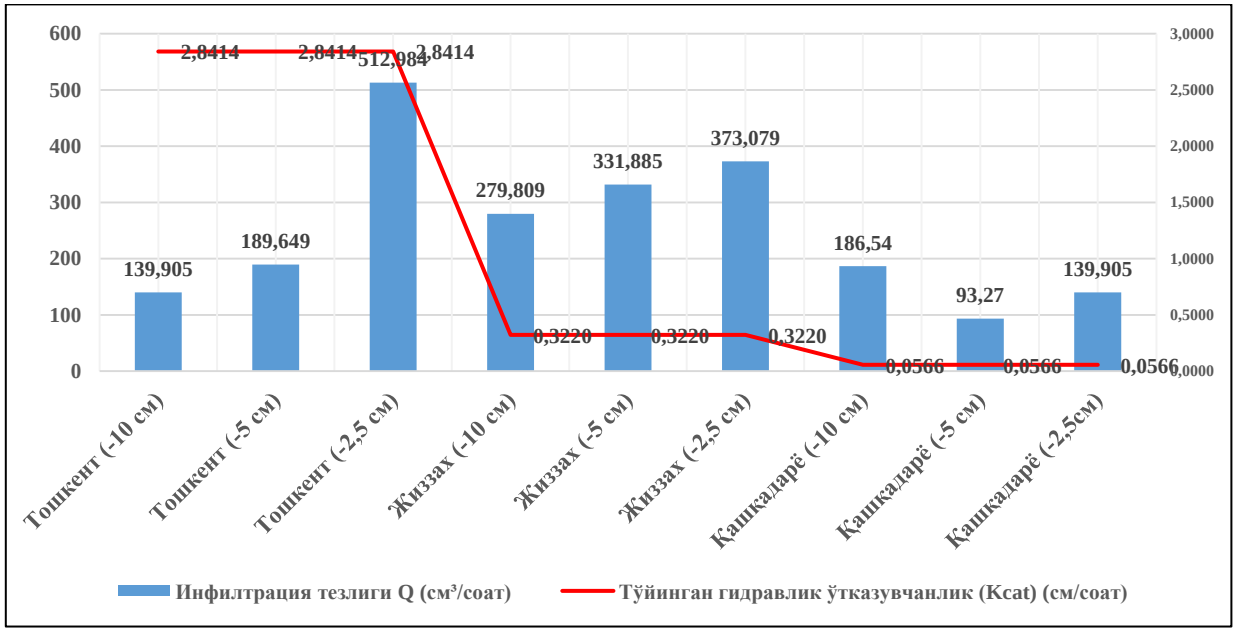
- **ET** – Ўсимликлар томонидан истеъмол қилинадиган сув миқдори (эвапотранспирация, мм).

$$NS = \frac{(K*A*t)*E}{ET} \qquad (6)$$

Бу ерда:

- **K**— тупроқнинг гидравлик ўтказувчанлиги (м/с ёки мм/с);
- **A**— инфильтрация майдони (м²);
- **t**— вақт (с).

Суғориш меъёри тупроқнинг сув ўтказиш коэффиценти (К) билан боғлиқ бўлиб (6), тупроқнинг сувни қабул қилиш қобилияти ва суғориш вақти (t) ҳам эътиборга олинади. Тупроқнинг сув ўтказувчанлиги паст бўлган ҳолатларда Қашқадарё вилояти учун $К_{сат}$=0,0566 см/соат бўлганда, суғориш меъёри ва суғориш вақтини ошириш керак бўлади. Тупроқнинг сув ўтказиш коэффиценти юқори бўлган Тошкент вилоятида $К_{сат}$=2,8414 см/соат, сув ўтказиш коэффиценти ўртача бўлган Жиззах вилоятида $К_{сат}$=0,3220 см/соат бўлиб, суғориш вақти қисқартирилиши ва суғориш меъёри камайтириш керак бўлади.




**2-диаграмма. Тошкент, Жиззах ва Қашқадарё вилоятларида кузатув участкасида ўлчанган инфильтрация тезлиги (Q) ва тўйинган гидравлик ўтказувчанлик ($К_{cat}$)**

Тошкент, Жиззах ва Қашқадарё вилоятларида ўлчанган инфильтрация тезлиги ва тўйинган гидравлик ўтказувчанлик ($К_{сат}$) бўйича 2-диаграммада тасвирланган. Диаграммадан кўриниб турибдики, Тошкент, Жиззах вилоятидаги тупроқларда инфильтрация тезлиги юқорироқ бўлса, Қашқадарё вилоятида бу

қиймат пастроқ. Шу билан бирга, тўйинган гидравлик ўтказувчанлик Тошкент вилоятида энг юқори. Бу таҳлиллар томчилатиб суғориш меъёри ва суғориш муддатини белгилашда муҳим аҳамият касб этади. Суғориш тизими самарадорлигини ошириш учун инфильтрация тезлиги ва гидравлик ўтказувчанлик каби параметрлар тўғри аниқланиши зарур.

**Хулоса** Тошкент, Жиззах ва Қашқадарё вилоятлари кузатув участкасида Tension инфильтрометр ёрдамида тупроқнинг гидравлик ўтказувчанлиги ва инфильтрация тезлиги ўлчанди. Тадқиқот натижалари шуни кўрсатдики, Тошкент, Жиззах вилоятларида тупроқнинг гидравлик ўтказувчанлиги ($К_{сат}$) ва инфильтрация тезлиги (Қ) Қашқадарё вилоятига қараганда сезиларли даражада юқори. Бу Тошкент, Жиззах вилоятларидаги тупроқларнинг сувни тезроқ ўтказишини ва суғориш тизимлари учун мақбул сув бериш меъёри қисқароқ вақт ичида амалга оширилиши мумкинлигини англатади. Қашқадарё вилоятида эса инфильтрация тезлиги пастроқ бўлиб, гидравлик ўтказувчанлик ($К_{сат}$) қиймати ҳам нисбатан паст бўлди. Бу тупроқ сувни аста-секин ўзлаштириши ва томчилатиб суғориш тизимида узоқроқ вақт давомида сув беришни талаб қилиши мумкинлигини кўрсатди. Бунда тупроқ турига мос суғориш меъёри ва вақти тўғри белгиланмаса, суғориш самарадорлиги пасайиши ва сув ресурсларидан нотўғри фойдаланиш ҳолати кузатилиши мумкин. Шунингдек, томчилатиб суғориш меъёрини белгилашда тупроқнинг гидравлик ўтказувчанлиги (К) ва ўсимликларнинг сув истеъмол қилиш коэффиценти ($ЕТ_с$) ҳисобга олиниши керак. Ҳисоблашлар натижасида, тупроқнинг сув ўтказувчанлиги юқори бўлган жойларда суғориш вақтини қисқартириш ёки суғориш меъёрини камайтириш мумкинлиги аниқланди. Ушбу тадқиқотнинг амалий аҳамияти шундаки, гидравлик ўтказувчанлик ва инфильтрация тезлигини аниқ белгилаш орқали тупроқнинг сув билан тўйинганлиги даражасини бошқариш ва мақбул суғориш меъёри учун суғориш вақтини тўғри аниқлаш мумкин. Натижада, сув ресурсларидан самарали фойдаланиш, ҳосилдорликни ошириш ва экологик барқарорликни таъминлашга эришилади.

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# THE ORGANIZATIONAL AND ECONOMIC ROLE OF GREENHOUSE FARMING IN FOOD SECURITY UNDER CLIMATE AND RESOURCE CONSTRAINTS: INTERNATIONAL EXPERIENCE AND IMPLICATIONS FOR UZBEKISTAN

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***Abstract.*** *This study analyzes the organizational and economic role of greenhouse farming in ensuring food security, improving resource-use efficiency, and strengthening market stability. Based on the theoretical approaches, international experience, and indicators for Uzbekistan presented in the dissertation, the paper highlights key aspects of a comprehensive assessment of greenhouse systems. The organizational, technological, and market mechanisms of greenhouse development in the Netherlands, Spain, and Israel are examined from the perspective of their adaptation to Uzbekistan. The results substantiate the need to combine cooperation, technological modernization, resource efficiency, and export-oriented management.*

***Keywords:*** *food security; greenhouse farming; organizational and economic mechanism; resource efficiency; international experience; export; cooperation*

## Introduction

Food security is one of the strategic directions of the modern economy and requires new production models under conditions of population growth, climate change, declining water resources, and rising production costs. As stated in the dissertation, the world population is expected to reach 9.7 billion by 2050, creating a need for a significant increase in food production. Under such conditions, greenhouse technologies are particularly important as a system that enables year-round production, product-quality management, and intensive use of resources.

The economic content of greenhouse farming is not limited to crop production. It is a complex system integrated with logistics, storage, processing, financing, labor organization, and markets. Therefore, yield or gross revenue alone is insufficient for assessing greenhouse performance. The dissertation proposes an integrated approach combining economic, technological, environmental, and labor indicators. This

approach can provide a methodological basis for adapting international experience to local conditions.

The purpose of the study is to systematize the organizational and economic characteristics of international greenhouse farming models and identify opportunities for using them to strengthen food security in Uzbekistan. The study is based on a methodological concept that combines systemic, comparative, economic-statistical, and integrated assessment methods.

**1. Organizational and Economic Characteristics of International Greenhouse Farming Models**

The Netherlands is presented in the dissertation as a prominent example of integrating production and market infrastructure in greenhouse farming. Cooperative forms, auction mechanisms, logistics, and export channels play an important role in this model. Its main economic advantage is the reduction of market risks for individual producers, the sale of products in large batches, and the systematization of price formation.

The Spanish model is characterized by regional specialization and efficient organization of production areas. Its relevance for Uzbekistan is primarily reflected in adapting production to climatic conditions and forming a product assortment oriented toward export markets. The Israeli experience is distinguished by its emphasis on drip irrigation, automation, and technological management under conditions of water scarcity.

A common feature of all three models is that a greenhouse is viewed not merely as a building or technical facility, but as an economic system in which technology, capital, labor, markets, and management are interconnected. This conclusion is also important for Uzbekistan. Even when capital investment is high, the absence of resource-saving technologies, stable sales channels, and qualified management may lengthen the investment payback period.

**2. Resource-Use Efficiency and Technological Modernization**

In greenhouse economics, land, water, energy, labor, equipment, and seeds are considered the main resources. The dissertation explains resource-use efficiency as one of the factors determining competitiveness. In particular, high water and energy costs increase the economic importance of technological renewal under Uzbekistan's conditions.

The dissertation also presents the resource-use efficiency (RUE) approach. It relates output to the corresponding values of water, energy, and labor inputs. This approach makes it possible to consider not only the increase in production volume but

also the value of resources consumed per unit of output. Thus, high productivity alone is not a complete criterion of efficiency; the resources used to obtain that output must also be assessed.

Technologies such as drip irrigation, automatic climate control, IoT monitoring, hydroponics, and LED lighting help control operational parameters in greenhouse activities. A sample table in the dissertation indicates that drip irrigation may reduce water consumption by 30–40%, while LED lighting may reduce electricity consumption by up to 20–35%. These figures should be treated as illustrative calculations from the dissertation and should be separately verified under the conditions of a specific enterprise.

Technological modernization initially increases investment costs, but over the long term it can improve economic outcomes through production stability, product quality, and resource efficiency. The dissertation cites an average payback period of 3–5 years for modern greenhouse projects. This figure should also be regarded as generalized experience, since it varies depending on the financial model, energy prices, product type, and market conditions.

**3. Adaptation of International Experience for Uzbekistan**

For Uzbekistan, it is important not to copy international experience directly, but to adapt it to local resource availability, climate, infrastructure, and market conditions. The dissertation puts forward the idea of a hybrid model combining elements of Spanish production-area organization, Israeli technologies, and Dutch trade organization. Such an approach makes it possible to integrate production, technology, and commercialization mechanisms into a single value chain.

The first element of the hybrid model is adaptation of production to regional and agro-climatic conditions. The second is the introduction of technologies that improve water and energy efficiency. The third is the development of cooperation, logistics, and export channels. The fourth is monitoring efficiency through a unified system of indicators. As a result, investment decisions are assessed not only on the basis of construction costs but across the entire project life cycle.

Under integration with international markets, quality standards, certification, consistency, and delivery times also become competitive factors. Therefore, it is advisable to strengthen cooperation within greenhouse clusters among producers, logistics operators, storage and processing enterprises, financial institutions, and export entities.

**4. Integrated Assessment Approach and International Competitiveness**

The dissertation proposes an integrated index combining economic, technological, environmental, and labor blocks for assessing greenhouse efficiency. The formula is expressed as: ISI = 0.40 Economic + 0.35 Technological + 0.15 Environmental + 0.10 Labor. This formula makes it possible to bring different indicators into a unified assessment system. The weights of the index are considered a proposal within the author's methodology.

The economic block may include indicators such as revenue, net profit, cost, profitability, and investment payback period; the technological block may include productivity, the level of automation, and energy and water efficiency; the environmental block may include emissions and water reuse; and the labor block may include labor productivity. This method helps compare different farms using the same methodological basis.

In the conditional statistical example presented in the dissertation, the correlation between productivity and technological provision is shown as 0.88, while the relationship between revenue and water efficiency is 0.81. These values are illustrative analyses intended to show that technological development and rational resource use are associated with economic outcomes. For practical policy purposes, recalculation based on multi-year data from actual farms is required.

From the perspective of international competitiveness, the advantage of the integrated index is that it helps identify the strengths and weaknesses of export-oriented farms. For example, if productivity is high but energy consumption is also high, the next stage of technological modernization can be identified. Conversely, if resource efficiency is good but sales channels are weak, improving marketing and logistics mechanisms becomes a priority.

**Conclusion**

The analysis of international experience shows that greenhouse efficiency should be assessed not only by production volume but also through organizational integration, resource use, technological innovation, and market mechanisms. The Dutch model provides important experience in markets and cooperation, the Israeli model in technology and water efficiency, and the Spanish model in regional organization and export orientation.

For Uzbekistan, it is advisable to combine these experiences within a hybrid model. Regional specialization, modern technologies, cooperation, logistics, and export infrastructure should operate as a unified system. The use of an integrated efficiency index can systematize the selection of investment projects and the identification of modernization priorities.

In practical terms, three priority directions can be identified for greenhouse development: first, the introduction of water- and energy-saving technologies; second, strengthening cooperation and logistics systems; and third, production of export-oriented products in accordance with international standards. These measures can contribute not only to food security but also to employment and investment activity in rural areas.

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# TOMCHILATIB SUG‘ORISH TIZIMLARIDAGI SILINDRSIMON IN-LINE TIPLI EMITTERLAR ORQALI BOSIM YO‘QOTISHLARINI CFD TAHLILI YORDAMIDA ANIQLASH TAHLILLARI

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***Annotatsiya.*** *Ushbu tadqiqot silindrli tomchilatib sug'orish tizimlari uchun bosh yo'qotishlarni aniqlashga qaratilgan. Simulyatsiya va empirik natijalar o'rtasidagi moslik, CFD tahlillari oqimning muhim parametrlarini, masalan, in-line emitentlari bilan birlashtirilgan tomchilatib sug'orish quvurlarining umumiy bosim yo'qotishlarini hisoblash uchun ishlatilishi mumkin deb talqin qilinishi mumkin.*

***Kalit so‘zlar:*** *Kompyuter texnikasi, hisoblash suyuqliklar dinamikasi, tomchilatib sug‘orish, empirik hisob-kitoblar, gidravlik yo'qotishlar, emitent.*

***Аннотация****. Это исследование направлено на определение потерь давления в системах капельного орошения с цилиндрическими эмиттерами. Совпадение между результатами моделирования и экспериментальными данными можно интерпретировать так, что CFD-анализы могут использоваться для расчета общих потерь давления в трубопроводах капельного орошения, соединенных с эмиттерами, установленными в линию.*

***Ключевые слова:*** *Компьютерная техника, вычислительная гидродинамика, капельное орошение, эмпирические расчёты, гидравлические потери, эмитент.*

***Annotation****. This study is aimed at identifying head losses in drip irrigation systems with cylinders. The match between simulation and empirical results can be interpreted to mean that CFD analyses can be used to calculate the overall pressure losses of drip irrigation pipes combined with in-line emitters.*

***Keywords:*** *Computer technology, computational fluid dynamics, drip irrigation, empirical calculations, hydraulic losses, emitter.*

**Kirish**. Tomchilatib sug'orish tizimlari qishloq xo'jaligi dalalarida suvni bir tekis taqsimlash uchun qo'llaniladi. Tomchilatib sug'orishning asosiy qurilmasi Gation tizimi tomchilatib yuboruvchidir (Wei va boshqalar, 2006; Wang va boshqalar, 2006; Zhao va boshqalar, 2009). U bosimni yo'qotish va lateral bo'ylab bir necha nuqtada doimiy tezlikda kichik bir xil oqim yoki suv oqimini chiqarish uchun ishlatiladi. U oqim tezligi sezilarli darajada farq qilmaydigan tarzda ishlab chiqilgan lateral bo'ylab bosimdagi kichik o'zgarishlardir [9].

Tomchilatib sug'orish tizimini loyihalashda muhim rol o'ynaydigan emitentlarning xususiyatlari quyidagilardir: ishlab chiqarishga bog'liq bo'lgan oqim o'zgarishi; tushirish-bosim munosabatlarining dizayn xususiyatlariga yaqinligi; emitentning zaryadsizlanish ko'rsatkichi; ish bosimi diapazoni; emitentlarning kiritilishi tufayli laterallarda bosimning yo'qolishi; va uzoq vaqt davomida tushirish-bosim munosabatlarining barqarorligi. Biroq, amaliyotda fizik tajribalar yordamida darvoza oqimi parametrlari; laterallar va emitentlar ichidagi suyuqlikning mahalliy yo'qotishlarni va oqim harakatini juda yaxshi aniqlik bilan bashorat qilish oson emas. Ushbu muammoni hal qilish uchun oqim simulyatsiyasiga asoslangan raqamli usullar sug'orish qurilmalaridagi oqim sharoitlarini o'rganish uchun juda foydali bo'lishi mumkin. [1, 10]

Hisoblash suyuqliklari dinamikasi (CFD) ilovalari juda keng muhandislik fanlarida suyuqlik oqimining murakkab muammolarini hal qilish uchun ishlatilgan. So'nggi tadqiqotlar, shuningdek, CFD ilovalari qishloq xo'jaligi muhandisligi ishlanmalarida juda foydali bo'lishi mumkinligini ko'rsatdi (Sun, 2002; Norton va boshq., 2007; Wang va Wang, 2006; Celik va boshq., 2010). CFD simulyatsiyalari ichki va tashqi oqim sharoitlari uchun o'rnatilishi mumkin va natijalar tegishli oqim parametrlarini bashorat qilish va mahsulotlarning oqim yo'lini deyarli yaxshi aniqlik bilan va ortiqcha dizayn xarajatlari va vaqt yo'qotishlarisiz loyihalash, qayta loyihalash

va optimallashtirish uchun ishlatilishi mumkin. Bu, shuningdek, prototip raqamlari va tekshirish protseduralarini kamaytirishga yordam beradi [2,7,8,9].

**Tadqiqot uslubi.** Ushbu maqolada silindrsimon turdagi tomchilatib yuboruvchilarga ega bo'lgan namunali sug'orish quvurlari tizimi uchun bosh yo'qotishlarini bashorat qilish uchun CFD simulyatsiya usulidan foydalanilgan. Tadqiqotda ushbu emitentlarning beshtasi 250 [mm] oraliqda quvurga teng masofada joylashtirilgan. Suv oqimining harakati uch o'lchovli simulyatsiya qilingan va bosim yo'qotishlari butun quvur tizimi va har bir emitent uchun keyingi va oldingi nuqtalarda emitent bosimining yo'qolishini mahalliy darajada aniqlash uchun hisoblab chiqilgan. Simulyatsiya natijalari va tegishli adabiyotlardan olingan empirik ma'lumotlar solishtirilgan.

Bosimning yo'qolishini aniqlash tomchilatib sug'orish laterallarida bosh yo'qotishlarni ikki guruhga bo'lish mumkin: ishqalanish natijasida bosh yo'qotish va emitentni kiritish natijasida bosh yo'qotish (mahalliy yo'qotish). Ishqalanish tufayli boshning yo'qolishini Darsi-Veysbax tenglamasi yordamida hisoblash mumkin (Giles va boshqalar, 1995): [5]

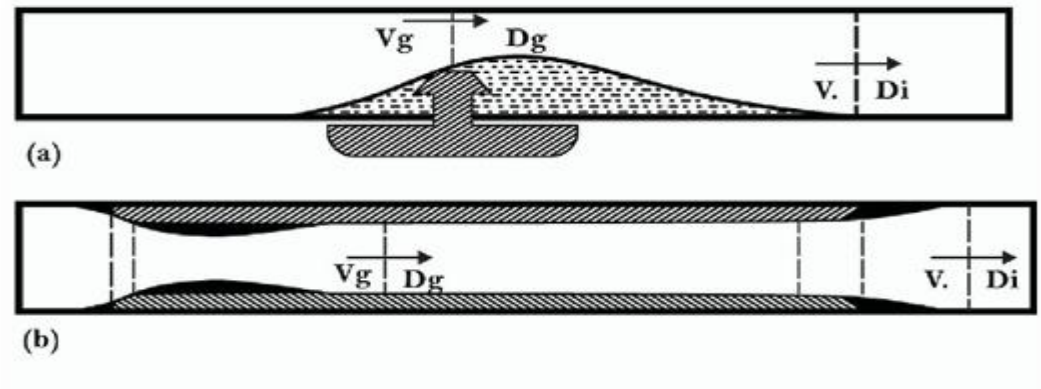
$$H_k = f \times L/D \times v^2/2 \qquad (1)$$

bu yerda; $H_k$-quvurning ishqalanish yo'qolishi [m], L-quvur uzunligi [m], D-quvurning ichki diametri [m], v-tezlik [m/s], g-tortishish ta'siridagi tezlanish (9,81 [m/s$^2$]), f-ishqalanish koeffitsienti. Silliq quvurlar uchun ishqalanish koeffitsienti Blasius tenglamasi bilan tavsiflanadi (Giles va boshqalar, 1995)

$$f = 64/\,Re \;(Re < 2100) \qquad (2)$$

Bu yerda: Re=v D/n-Reynolds soni va n-suvning kinematik yopishqoqligi ( 20ºC suv haroratida n=1,01x10$^{-6}$) [5].

Onlayn va o'rnatilgan in-line emitentlar uchun oqim qisqarishi va keyinchalik kattalashtirishning sxematik ko'rinishi 1-rasmda ko'rsatilgan (Dutta, 2008): [4]



**1-rasm. (a) onlayn, (b) o'rnatilgan in-line emitentlar uchun oqimning sxematik ko'rinishi.**

Emitentlarning o'rnatilishi tufayli bosh yo'qotilishini hisoblash mumkin.

Quyidagi tenglamalar yordamida tuzilgan (Giles va boshq., 1995; Keskin va Guner, 2007) [6] $H_f = k \times v^2/2g$

Bu yerda; $H_f$ -emitent kiritilishi natijasida yo'qotish [m], k-koeffitsient, v-suv tezligi [m/s] va g-tortishish ta'siridagi tezlanish (9,81[m/s$^2$]). k koeffitsienti quyidagicha ifodalanishi mumkin: $k = 0{,}056 \times[(D_i/D_g)^{17.83}-1]$ (4)

Bu yerda; $D_i$ -quvurning ichki diametri (m), $D_g$-emitent uchun ichki diametri [m].

$i^{th}$ -emitentdagi umumiy bosh yo'qotish : $\Sigma H = (H_k + H_f)$ (5)

Demir va boshqalar. (2004) tomchilatib sug'orishda ishqalanish yo'qotishlarining o'lchovli tahlilidan foydalangan holda bashorat qilish modelini ishlab chiqdi. Demir va boshqalar. (2004): [3]

$$\Delta H_f = 0.007017\ Q^{1.728}/D_i^{1.224}\ \Delta L^{0.72}/d_i^{\ 2.843}\ L_e\ 0.027 \quad (6)$$

Bu yerda: $\Delta H_f$ -emitent oralig'idagi ishqalanish yo'qolishi [m], Q hajmli oqim tezligi [m$^3$/s], $D_i$ -quvurning ichki diametri.

Oqim tezligini hisoblash uchun quyida keltirilgan oqim hajmining standart tenglamasidan foydalaniladi:

$$Q = A\ v \quad (7)$$

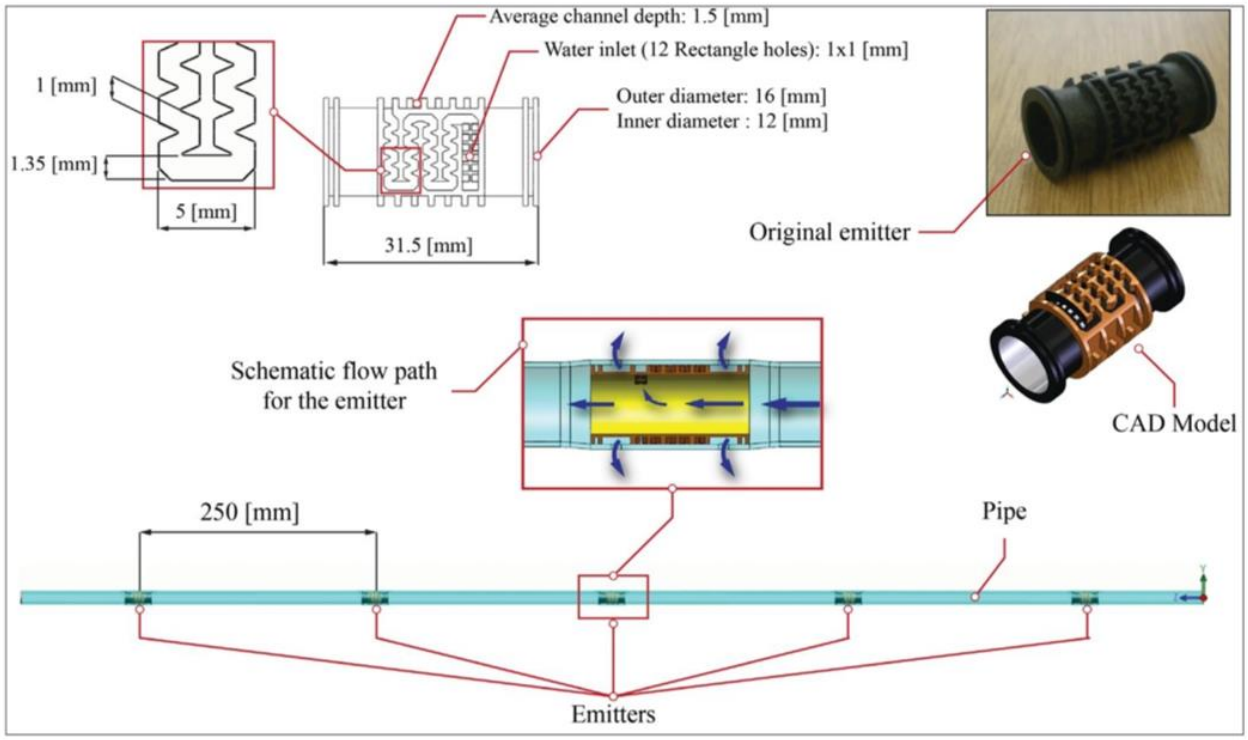
Bu yerda: Q-hajmli oqim tezligi [m$^3$/s ], A-tasavvurlar maydoni [m$^2$ ], v tezlik [m/s].

**Natijalar:** SAPR modellashtirish va CFD tahlili Tadqiqotda SolidWorks Parametrik Qattiq Modellashtirish Dizayn Dasturi yordamida 4,0 [l/soat] hajmli oqim quvvatiga ega bo'lgan silindrsimon turdagi in-line emitentning qattiq modeli yaratildi va bu emitentlardan beshtasi tomchilatib sug'orish moslamasiga joylashtirildi. Modellarning barcha o'lchamlari asl emitentdan teskari ishlab chiqilgan va tizimning yig'ilishi CFD tahlili uchun o'rnatildi. Umumiy spetsifikatsiya emitent va trubaning ionlari 2-rasmda ko'rsatilgan. SolidWorks Flow Simulation tijorat CFD kodi modellashtirilgan sug'orish tizimidagi suv oqimining harakatini o'rganish uchun ishlatilgan. Tizim to'g'ridan-to'g'ri sug'orish trubasiga (quvurning qiyaligisiz) joylashtirilgan beshta emitent bilan mavjud deb taxmin qilingan. To'rtta tahlil o'tkazildi. [7]

0,5, 1, 1,5 va 2 [bar] kirish bosimi uchun (o'lchov bosimi) albatta mos ravishda. Barcha to'rtta tahlil uchun bir xil chegara shartlari aniqlandi. Atrof muhit bosimi - 101,325 [kPa] 705 Mutlaq bosim-diametri 2 [mm] bo'lgan emitentning chiqish teshiklari uchun belgilangan. Suyuqlik domenining hujayra tuzilishi CFD kodidagi kengaytirilgan kanalni takomillashtirish opsiyasi bilan standart tarmoq funksiyasi bilan

aniqlangan. Jami hisob-kitob tion domeni - 17 x 17 x 1250 mm bo'lgan to'rtburchaklar hajmi. Standart avtomatik turbulentlik parametrlari CFD kodida aniqlangan (Solidworks Product, 2010). Aslida, simulyatsiyalar juda muhim ma'lumotlarni baholash qobiliyatini taqdim etsa-da, texnologik cheklovlar va oldindan aytib bo'lmaydigan holatlar tufayli simulyatsiyalardan real hayotdagi barcha javoblarni olish juda qiyin. Materialning diktativligi, suyuqlik, dinamik muhit ziddiyatlari, shunday qilib, tizim uchun chegara shartlari quyida keltirilganlar kabi qo'shimcha taxminlar bilan ham aniqlandi: [8]

Suv 20ºC muhit haroratida yopishqoq va siqilmaydigan suyuqlik sifatida tayinlangan. Tizimdagi oqim barqaror chegaraga ega (tomchilatib sug'orish tizimining suv boshi odatda butun ish davrida barqaror qiymatni saqlaydi) [10].




2-rasm. Emitent va quvurning umumiy xususiyatlari

**Xulosa.** Muhandislik simulyatsiyasi texnologiyasi va usullari hozirda juda ko'p muhandislik sohasida muhimroq bo'lib bormoqda. Ko'rinib turibdiki, bularning qo'llanilishi Gineering simulyatsiya usullari qishloq xo'jaligi muhandisligi ilovalaridagi tadqiqotlarda juda foydali bo'lishi mumkin. Shuning uchun, ilg'or muhandislik simulyatsiyalarining bir qismi sifatida, CFD ilovasi namuna tomchilatib sug'orish tizimidagi bosh yo'qotishlarni aniqlash uchun ushbu maqolada ta'kidlangan. CFD tahlili tadqiqotda tuzilgan suv chiqarish natijalari juda yaxshi baholashni taqdim etdi, bu sug'orish uskunasidagi suyuqlik oqimining harakatini tushunish uchun juda muhimdir.

Shuningdek, simulyatsiya va empirik hisob kitoblardan olingan raqamli natijalar ham bir-biri bilan yaxshi birlashganligi kuzatilmoqda, bu dizaynni tasdiqlash uchun juda muhim.

Taqdim etilgan tadqiqotga ko'ra, ba'zi muhim fikrlarni quyidagicha umumlashtirish mumkin: CFD sirt perimetri kabi devorning chegara va sirt sharoitlariga nisbatan murakkab. U yerda avvalo, CFD yordamida hisoblangan natijalar aniq bo'lishi kerak. Shunday qilib, CFD tahlili natijalari xalqaro miqyosda mavjud bo'lgan qabul qilingan empirik hisob-kitoblar bilan tasdiqlangan. CFD tahlili va empirik hisob-kitoblar o'rtasida yaxshi korrelyatsiya olindi. Ushbu korrelyatsiyani tushunish mumkinki, CFD tahlili ishqalanish natijasida bosh yo'qotishni va emitentlarning kiritilishini (mahalliy yo'qotish) maqbul aniqlik bilan aniqlash uchun ishlatilishi mumkin. CFD tahlillaridan shu turdagi yangi emitentlar va sug'orish uskunalarini loyihalashda bosh yo'qotishlarni aniqlash uchun foydalanish tavsiya etilishi mumkin. CFD tahlillari yangi turdagi emitentlarni loyihalashda va tomchilatib sug'orish quvurlarining optimal uzunligini aniqlashda qo'llanilishi mumkin.

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# EKISH MUDDATLARI VA ME'YORLARINI SOYANING “SEVINCH” VA “MADAD” NAVLARINI UNIB CHIQISH DINAMIKASIGA TA'SIRI

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***Annotatsiya****. Ushbu maqolada ekish muddatlari va ekish me’yorlarining soya navlari unib chiqish dinamikasiga ta’siri bo‘yicha ma’lumotlar keltirilgan. Tajriba natijalari shuni ko‘rsatdiki, birinchi ekish muddatida oltinchi kunga kelib unib chiqish ko‘rsatkichlari mos ravishda 68,7%, 75,1% va 79,4% ni tashkil etdi. Birinchi ekish muddati bilan solishtirganda, ikkinchi ekish muddatida tegishli variantlar bo‘yicha unib chiqish ko‘rsatkichlari 14,0%, 5,7% va 6,6% ga, uchinchi muddatda esa 15,8%, 9,0% va 8,9% ga yuqori bo‘ldi. Ekish me’yorlari bo‘yicha olib qaralganda, me’yorni (bazaviy ko‘rsatkichga nisbatan) 15 kg/ga gacha oshirish unib chiqishning 5,2–7,4% ga, 30 kg/ga gacha oshirish esa 8,6–10,7% ga ortishiga olib keldi.*

***Kalit so‘zlar:*** *ekish muddatlari, soya navlari, unib chiqish dinamikasi, ekish me’yorlari, "Sevinch", "Madad", urug‘larning unib chiqishi, ekish davri.*

***Аннотация.*** *В работе приведены данные о влиянии сроков и норм посева на динамику всхожести сортов сои. По результатам опыта динамика всхожести семян, при посеве семян в первый срок их всхожесть составила 68,7-75,1-79,4% на 6-й день. При посеве во второй период всхожесть семян в соответствующим порядке по вариантам по сравнению с первым периодом посева была на 14,0-5,7-6,6%, а в третьем периоде на 15,8-9,0-8,9% больше. Динамика всхожести при увеличении нормы высева до 15 ц-га по сравнению с 45 ц-га при посеве семян составила 5,2-7,4%, при увеличении до 30 ц/га выше на 8,6-10,7%.*

***Ключевые слова:*** *сроки посева, сорта сои, динамика всхожести, нормы высева, «Севинч» , «Мадад», всхожесть семян, период посева.*

***Annotation****. This paper presents data on the effect of sowing dates and seeding rates on the germination dynamics of soybean varieties. Experimental results showed that for the first sowing date, germination rates reached 68.7%, 75.1%, and 79.4% by the sixth day. Compared to the first sowing date, germination rates for the*

*corresponding variants were 14.0%, 5.7%, and 6.6% higher for the second sowing date, and 15.8%, 9.0%, and 8.9% higher for the third. Regarding seeding rates, increasing the rate to 15 kg/ha (compared to the baseline) resulted in a 5.2–7.4% increase in germination, while increasing it to 30 kg/ha resulted in an 8.6–10.7% increase.*

***Key words:*** *sowing dates, soybean varieties, germination dynamics, seeding rates, "Sevinch", "Madad", seed germination, sowing period.*

**Kirish**. Bugungi kunda dunyo mamlakatlarida soya o‘simligi qariyb 130 mln. gektar maydonda parvarish qilinmoqda. Jumladan, Amerika Qo‘shma Shtatlarida 70,6 mln. gektar, Braziliyada 23,7 mln. gektar, Hindistonda 13,3 mln. gektar, Argentinada 9,6 mln. gektar, Xitoy Xalq Respublikasida 9,3 mln. gektar, Rossiya Federatsiyasida 1,5 mln. gektar maydonlarda soya doni yetishtiriladi. Dunyo bo‘yicha soyadan olinadigan yalpi don hosili bo‘yicha eng yuqori ko‘rsatkichlar Amerika Qo‘shma Shtatlarida 106,9 mln.tonna, Braziliyada 100,3 mln.tonna, Argentinada 58,5 mln. tonna, Xitoy Xalq Respublikasida 12,3 mln. tonna, Rossiya Federatsiyasida esa 2,8 mln. tonnani tashkil etib, yiliga o‘rtacha 370-380 million tonna soya doni yig‘ishtirib olinadi.

O‘zbekiston Respublikasiqishloq xo‘jaligini rivojlantirishning 2020-2030 yillarga mo‘ljallangan strategiyasida “...qishloq xo‘jaligini barqaror rivojlantirishda tabiiy resurslardan oqilona foydalanish, aholini oziq-ovqat xavfsizligini ta’minlash hamda atrof-muhitni muhofaza qilish” kabi masalalar ustuvor vazifalar sifatida belgilangan. Shundan kelib chiqib, dastlab soya yetishtirish respublikada 2017-yildan boshlanib, shu yili 12 ming gektar maydonga soya ekilib, 14 ming tonna soya doni yetishtirilgan, xom-ashyoni qayta ishlash hisobiga aholiga 2 ming tonnadan ortiq soya yog‘i, parrandachilik korxonalariga 10 ming tonna yuqori ozuqali soya shroti yetkazib berilgan. Hozirga kelib esa soya yetishtiriladigan maydonlar hajmi qariyb 2 barobarga ortdi, joriy yildarespublikaning sug‘oriladigan 21 ming 154 gektar maydonida soya ekilib, 42 ming 390 tonna don hosili olish mo‘ljallanmoqda[1].

Shuningdek, “O‘zbekiston — 2030” strategiyasida Qishloq xo‘jaligida hosildorlik va rentabellik darajasini keskin oshirishmasalasi ustuvor vazifa etib belgilangan [2].

Respublikamizda hozirgi mavjud bo‘lgan navlar talabga mos kelsada, kundan-kunga o‘sib borayotgan aholi soni va uning iste’mol darajasini qanoatlantirish uchun turli noqulay sharoitlarga chidamli, yuqori hosil beradigan yangi navlarga talab kuchaymoqda. U asosiy yoki takroriy ekin sifatida o‘stirilsa, insonlarning oqsilga

bo‘lgan talabi qondiriladi, chorvachilik, parrandachilik va baliqchilik uchun oqsilli ozuqa shuningdek, ekologik toza o‘simlik moyi ko‘payadi, tuproq sof biologik azot bilan boyib, unumdorligini saqlab qolish imkoni vujudga keladi [3].

**Tajriba o‘tkazish sharoiti va metodikasi.** “Sevinch” va “Madad” navlarining ekish muddatlari va me'yorlarini soya navlarining unib chiqish dinamikasiga ta'sirini o‘rganish bo‘yicha ilmiy-tadqiqot ishlari Toshkent viloyatining O‘rta Chirchiq tumanida joylashgan Sholichilik ilmiy tadqiqot institutining tajriba dalalarida, o‘tloqi-botqoq tuproqlari sharoitida o‘tkazildi. Tajriba 18 ta variantdan iborat bo‘lib, xar bir variantning maydoni 240 $m^2$, hisobga olinadigan maydon 120 $m^2$ ni tashkil etdi. Tajriba bir yarusda, uch takrorlashda olib borildi. Bitta takrorlashning maydoni 4320 $m^2$, umumiy maydoni 1,30 gektarni tashkil etdi.

Tadqiqot o‘tkazilgan davrda soya navlarini ekishda havo va tuproqning harorati hamda tuproqning namligi hisobga olinib, ekishda havo harorati 18-20$^0$C, tuproqdagi harorat 12-14$^0$C bo‘lganda amalga oshirildi [4-6].

**Tadqiqot tajribalari va natijalari.** O‘simlikni me'yoriy ravishda unib chiqishi havo haroratiga, tuproq namligiga, tuproq haroratiga hamda urug‘ning sifatiga bog‘liq bo‘ladi. Tuproqda harorat va namlik yetarli bo‘lgan vaziyatda urug‘lik o‘z vazniga nisbatan 120-150% namlikni olgandan so‘ng murtak yetilib unib chiqish jarayoni boshlanadi. Havo haroratini oshishi bilan urug‘ni tuproqdan unib chiqishi tezlasha boradi [7-9].

Tadqiqot tajribalaridan olingan ma’lumotlarga ko‘ra, soyaning “Madad” navi birinchi ekish muddatida(25.04-30.04) 27.04, ikkinchi ekish muddatida(05.05-10.05) 08.05, uchinchi ekish muddatida (15.05-20.05)16.05 kunlari belgilangan me’yorlari bo‘yicha ekildi.Soya birinchi muddatda ekilganda 10 kunda, ikkinchi muddatda ekilganda 9 kunda, uchinchi muddatda ekilganda 8 kunda to‘liq unib chiqqanligi kuzatildi (1-jadval).

Ta’kidlash kerakki, soya birinchi muddatda ekilganidan 3 kun o‘tganidan keyin unib chiqish darajasi ekish me’yorlari bo‘yicha (45 kg/ga; 60 kg/ga; 75 kg/ga) tegishli ravishda 25,8; 39,7; 42,1%ni tashkil etgan bo‘lsa, xuddi shu me’yorlarda ikkinchi muddatda ekilgan variantlarda 39,8; 45,4; 48,7%ni, uchinchi muddatda ekilganda esa 41,2; 48,7; 51,0%ni tashkil etdi. Ekilganidan 6 kun o‘tgandan keyin esa mazkur ko‘rsatkichlar tegishli ravishda 68,7-75,1-79,4%; 79,1-84,3-87,7%; 91,4-89,0-90,1% ni tashkil etdi. Ko‘rinib turibdiki, urug‘larni unib chiqish dinamikasi ikkinchi muddatda ekilganda birinchi ekilgan muddatga nisbatan variantlar bo‘yicha tegishli tartibda 1,2-2,0-4,4%, uchinchi muddatda ekilganda esa 2,3-3,4-5,7% miqdorida urug‘lar ko‘proq

unib chiqqanligi aniqlandi. Buni kunlar o‘tishi bilan havo haroratini ko‘tarilib borishi hisobiga paralel ravishda tuproqning haroratini oshib borishi bilan izohlash mumkin.

1-jadval.

**Ekish muddatlari va me'yorlarining soya navlarini unib chiqish dinamikasiga ta'siri**

| Variant № | Soya navlari | Ekilgan kun | Soya navlarini unib chiqish dinamikasi, (%)hisobida | | | |
|---|---|---|---|---|---|---|
| 1. | Madad | 27.04 | ***29.04*** | ***01.05*** | ***04.05*** | ***07.05*** |
| | | | 3,4 | 25,8 | 68,7 | 89,1 |
| 2. | | | 3,9 | 39,7 | 75,1 | 85,6 |
| 3. | | | 5,1 | 42,1 | 79,4 | 84,4 |
| 4. | | 08.05 | **10.05** | **13.05** | **15.05** | **17.05** |
| 5. | | | 11,2 | 39,8 | 79,1 | 90,3 |
| | | | 18,7 | 45,4 | 84,3 | 87,6 |
| 6. | | | 24,1 | 48,7 | 87,7 | 88,8 |
| 7. | | 16.05 | **18.05** | **21.05** | **24.05** | **27.05** |
| 8. | | | 15,9 | 41,2 | 91,4 | - |
| 9. | | | 21,1 | 48.7 | 89,0 | - |
| | | | 23,4 | 51,0 | 90,1 | - |
| 10. | Sevinch | 27.04 | ***29.04*** | ***01.05*** | ***04.05*** | ***07.05*** |
| | | | 3,8 | 24,3 | 56,4 | 88,7 |
| 11. | | | 4,1 | 35,4 | 62,2 | 87,2 |
| 12. | | | 5,5 | 39,6 | 69,8 | 86,2 |
| 13. | | 08.05 | **10.05** | **13.05** | **15.05** | **17.05** |
| | | | 9,8 | 33,1 | 81,6 | 89,8 |
| 14. | | | 11,7 | 38,7 | 84,7 | 90,5 |
| 15. | | | 12,3 | 44,7 | 85,0 | 86,6 |
| 16. | | 16.05 | **18.05** | **21.05** | **24.05** | **27.05** |
| | | | 15,5 | 48,7 | 90,1 | - |
| 17. | | | 22,4 | 52,1 | 88,4 | - |
| 18. | | | 30,2 | 54,1 | 84,2 | - |

Urug‘larni unib chiqish dinamikasida uning ekish me’yorlarini o‘rni borligi kuzatildi. Olingan ma’lumotlarga ko‘ra, birinchi muddatda (25.04-30.04), gektariga 45 kg ekilgan variantda urug‘ ekilganidan so‘ng 6 kundan keyin 68,7% urug‘ unib chiqqan bo‘lsa, gektariga 60 kg ekilgan variantda

75,1%, gektariga 75 kg ekilgan variantda esa 79,4% unib chiqqanligi aniqlandi. Xuddi shunday qonuniyatlar tajribaning ikkinchi hamda uchinchi muddatlarida ham kuzatilib, tegishli ravishda 79,1; 84,3; 87,7%-91,4; 89,0; 90,1% bo‘lganligi kuzatildi. Demak, urug‘larni ekishda uni gektariga 15 kg.ga oshirilganda unib chiqish dinamikasi 4,5-2,7%ga, 30 kg.ga oshirilganda, 4,7 -1,5%ga yuqori bo‘lishi kuzatildi.

Soyaning “Sevinch” navi bo‘yicha olingan ma’lumotlarda ham mazkur qonuniyatlar kuzatildi.

Urug‘larni unib chiqish davri yakunida olingan ma’lumotlarga ko‘ra, ushbu navda urug‘lar 1-reproduksiya bo‘lganligi sababli ekilgan urug‘larning 85,-90,5% unib chiqqanligi kuzatildi.

**Xulosa.** Urug‘larni unib chiqish dinamikasi urug‘lar birinchi muddatda ekilganda ularning unib chiqish darajasi 6-kunda 68,7-75,1-79,4% bo‘lgani xolda ikkinchi muddatda ekilganda birinchi ekilgan muddatga nisbatan variantlar bo‘yicha tegishli tartibda urug‘larning 1,2-2,0-4,4%, uchinchi muddatda ekilganda esa 2,3-3,4-5,7% miqdorida ko‘proq unib chiqishini, urug‘larni ekishda gektariga 45 kg ekishga nisbatan urug‘larni ekish me’yori gektariga 15 kg.ga oshirilganda unib chiqish dinamikasi 2,7-4,5% ga, 30 kg.ga oshirilganda 1,5-4,7%ga yuqori bo‘lishini ta’minlaydi.

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# SUSTAINABLE AGRICULTURAL GROWTH AND FOOD SECURITY THROUGH INTEGRATED CLIMATE ADAPTATION STRATEGIES

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***ABSTRACT.*** *The impacts of global climate change on agricultural systems have become amongst the most significant challenges that we face as a species. Increasingly, global climate change is exerting additional pressures on food production, rural economic well-being, and natural resource availability. The present study has expanded and refined the academic literature on how climate change has affected the global crop production system from 2021-2025. The goal of this research is to develop a credible, evidence-based assessment of how modern adaptation mechanisms can improve food security, promote sustainable economic growth, and protect the environment when climate change occurs. In this study, four adaptation pathways were explored as being interlinked with one another: (1) improvement of water resource management and irrigation practices; (2) breeding, production, and dissemination of climate resilient crop varieties; (3) use of digital and precision agriculture technologies; and (4) development of institutional and social capacity of farms. Additionally, by merging 4 of the above strategies, there is potential to improve crop growth due to drought and heat stress by 20-30% and reduce water and energy usage by 50% or beyond. A key finding from our study demonstrates that climate adaptation for agriculture must be viewed as a system-transforming approach, not just a set of technical solutions for agricultural drought and heat stress adaptation. It must also address ecosystem integrity, rural economy stability, and global food system resilience. This study adds to the developing literature regarding climate-smart agriculture through global and regional perspectives, especially focusing on Central Asia and Uzbekistan.*

***Keywords:*** *climate change adaptation, agricultural resilience, water management, climate-smart agriculture, digital farming, food security.*

## INTRODUCTION

### Background and Problem Statement

Climate change's impact on global farming systems will only become significantly stronger in the next 10 years and especially between 2021 and 2025 as global average temperatures increase, as the occurrence of extreme weather events begins to happen with increasing frequency, and as the variability of global precipitation patterns increases dramatically. According to Baker and Smith (2024), the frequency of long-term droughts, extreme heat waves, and unanticipated frost occurrences has risen to unprecedented levels. The result has been a corresponding decrease in the stability of crop yields, which creates an increased level of risk, in both developed and developing regions.

Agriculture still continues to represent one of the most climate sensitive sectors of the global economy. Any change, even in temperature or rainfall quantity/quality, at the lowest extremes will cause disproportionate losses of crop production capability, especially in arid and semi-arid regions. While the ever-rising population size and the change in food habits increasingly raise the total demand for food, the vulnerability of the food sector to climatic change, issues of food security, and the socio-economic conditions of the regions are vastly poised for serious threats.

### Regional Context: Central Asia and Uzbekistan

According to the World Bank (2025), climate change has led to an intensification of climate change impacts on Central Asia, such as water scarcity, land degradation, and developing the agricultural landscape in Uzbekistan, which is reliant on irrigation-based farming, will also suffer from a significant reduction of freshwater resources since 2021. Glacial melting further complicating the issue of water scarcity for the agricultural sector due to inefficient water use coupled with greater temperature increases on agricultural producers. In this environment, farmers need to adapt to their environments to survive; adaptation is no longer optional but required.

The transition of the current agricultural system of Uzbekistan into a climate-resilient agricultural system would require many constituent elements of technologically or ecologically driven agricultural development, such as the application of new technologies, innovations, ecological management, and climate-resilient leaders, if favorable results are desired in the coming future (Ismoilov and Karimov, 2025). Failure to apply the best approaches for adapting to climate change, for example, through the application of climate-resilient agricultural practices, would result in the potential cumulative risk of agricultural losses of up to $150 billion in 2025 (Food and

Agriculture Organization, FAO, 2024) for the globe, with the highest risk posed by the region that faces water scarcity challenges.

## METHODS

### Overall Methodological Framework

As a consequence of the complexity of interactions between agricultural production systems, climate dynamics and socio-economic outcomes this study employs a mixed-methods approach to capture all of the interactions between these systems and the impact that they have on each other. The methodology uses a mixed-methods framework that combines experimental field data, laboratory-based assessments of physiological performance and economic assessment through quantitative statistical analysis. This integrated design provides a holistic approach within an overall climate adaptation research program by allowing for a simultaneous assessment of biophysical, economic and resource efficiency parameters associated with crop production.

### Data Collection and Sources

The research undertaken during the years 2021-2025 utilized several primary and secondary sources. Data for the primary sources came from three geographical areas in Uzbekistan - the Bukhara Region, Fergana Region, and Tashkent Region. Collectively, these three regions represent the arid, semi-arid and relatively high water availability zones within Uzbekistan's environment. The choice of these regions enables us to study areas with different climatic stress levels, as well as the different practices for irrigation and how they affect crop production in different regions.

Secondary sources included official reports, datasets and statistics from various organisations, including FAO, IPCC, WB and National Government Statistical Agencies. A systematic literature review of peer-reviewed research articles published from 2021 to 2025 was conducted in order to compare and contrast the information obtained on the regions studied with information reviewed on the international context over the same period.

### Agronomic and Climatic Analysis

The climatic factors that this study addresses are average and high temperature, occurrence of heat waves, amount of precipitation, and availability of irrigation water. These factors have been correlated with yield data from some of the world's most important staple foods and cash crops like wheat, cotton, and corn, respectively. The time-series analysis procedures were applied to assess how climate affects the value of the various crops produced.

At the field level the assessment of agricultural productivity assesses how traditional irrigation techniques compare to newer water efficient technologies, such as drip and sprinkler irrigation, using indicators scored for water efficiency (kilograms of yield produced per cubic meter of water consumed) and crop productive area (hectares) and amounts of soil moisture retained (days without irrigation). The data was taken over a period of years in order to account for multiple years of climate variations experienced during production of the various crop types.

**Laboratory Experiments and Crop Physiology**

Assessing how crops adapt at the individual variety level required performing laboratory tests on the physiological and biochemical characteristics of conventional and resilient varieties using methods described by Sultanov (2025). Testing occurred in an environment where heat stress was prevalent (40°C was the highest temperature), and it provided a means of evaluating the ability of various crop varieties to produce crops under extreme temperatures.

Economic performance was evaluated using several performance indicators including benefit/cost ratios (BCR), net profit/loss after expenses on production (NP), water efficiency, and returns on investment (ROI). The costs associated with these 4 aspects of performance were made up of initial capital costs to establish a system of irrigated agriculture with modern agricultural equipment and inputs (including improved seeds), while benefits were determined from higher levels of productivity than would otherwise occur, increased safety nets for farmers through decreased variability, and enhanced income stability.

Descriptive statistical techniques, as well as comparative techniques, synthesized results obtained from multiple geographical regions and various climate adaptation strategies. The triangulation of the data increased the reliability (validity) and robustness of the findings.

**RESULTS**

This study provides strong empirical evidence that agricultural adaptation activities carried out between 2021 and 2025 significantly enhanced both farm yield, resource use efficiency, and economic viability during climate stress conditions (from climatic factors). Climatic data analysed during this study have demonstrated that temperature extremes and frequency of drought have increased leading to instability in crop yield production, particularly in areas with high dependence on traditional agriculture practices.

Water-saving irrigation technologies were identified as one of the most effective agricultural adaptation techniques. The area of Uzbekistan irrigated with modern

irrigation systems increased from 433,000 hectares in 201, to over 1.2 million hectares by 2024. Drip and sprinkle irrigation systems used approximately 50 to 55 percent less water than traditional surface irrigation systems. Water saved, on an average per hectare, ranged from 3,500 to 4,000 cubic metres of water, with average yield increases as high as 29 percent for cotton, and as high as 15 to 20 percent for cereals. Soil water-holding capability and decreases in secondary soil salt concentration were also enhanced.

Thanks to climate-resilient crop strains, farmers are able to grow crops even when subjected to extreme heating conditions. During the 2021 summer season, crop losses of more than 50% were experienced by traditional maize strains because of extreme heating conditions. However, maize strains that are adapted to these extreme heating conditions were able to maintain their 90%-92% level of yields during the same season. The increasing number of farmers using climate-resilient seeds in 2025 is likely to reduce crop losses experienced because of climate conditions and increase yields across different agro-ecosystems.

Through the utilization of digital agriculture & precision agriculture technologies, the opportunity for increasing the efficiency of Agricultural Inputs through the use of digital agriculture and precision agriculture technology has increased significantly. The application of precision agriculture management systems from 2022-2024 resulted in a 22% decrease in the use of Fertilizers applied to cropland and an 18% decrease in the amount of Electricity consumed while crops were being grown. The use of Satellite-based Soil Moisture and Climate Prediction to provide Early Warnings to Farmers regarding Early Warnings (i.e., Stress) on their Crops decreases the Risk of Crop Loss from Climate Change.

In a Financial Analysis of Climate Adaptation Investments, it was determined that the Returns on Adaptation Investments is Significantly High. Within Uzbekistan, for every $1 spent on Climate Adaptation, Farmers realized $3.20 in Returns; whereas, Globally, the Average Return was approximately $4.10. Over the next 5 years, Farm Net Income averaged an increase of nearly 24% due to Higher Productivity and Lower Production Costs.

**DISCUSSION**

The research shows that a successful method to deal with the impacts of climate change on agriculture is using a comprehensive and systematic method of combining water-efficient agricultural irrigation systems with climate-resilient crop varieties through the adoption of digital agriculture technologies. When used together, these

three factors yield much higher short-term and long-term results than do any of them used independently of each other.

The way that farmers manage their water supplies will probably be one of the main adaptation focuses for agricultural areas located in arid and semi-arid climatic conditions. The reduction in the amount of water used for agriculture, when studied along with the climate data for the region that indicates a significant reduction in the amount of water resources from the glaciers as a result of the rise in temperature and the reduction in the amount of water runoff from the glaciers, suggests that the implementation of modern irrigation systems will not only be essential for the maintenance of agriculture, but it will also be essential for the maintenance of water resources in the region.

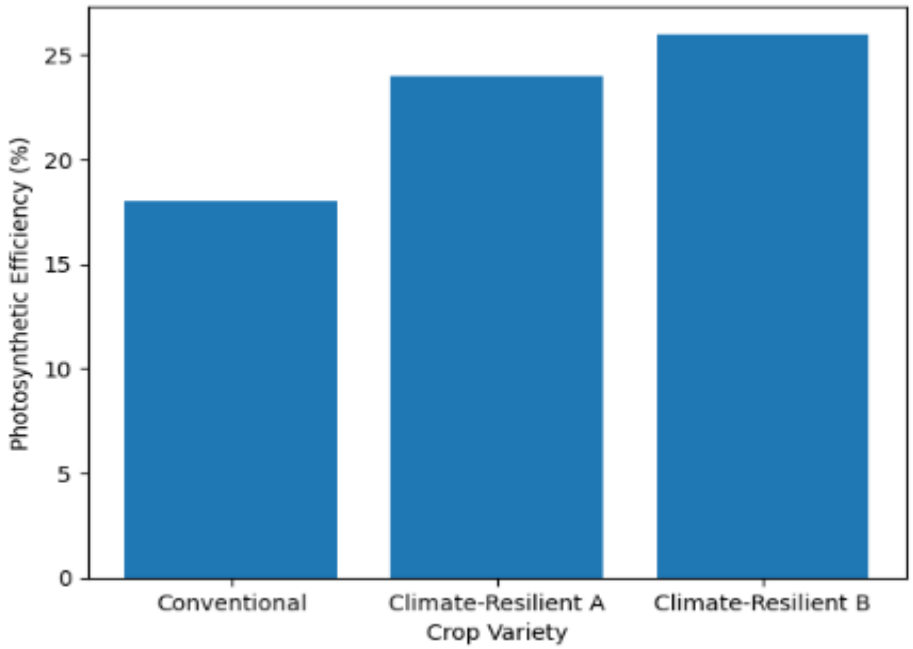
The superior performance of the climate-resilient crop varieties is a clear indication of the importance of continuing to invest in research and development to breed crops. The development of physiological traits such as increased photosynthesis efficiency (figure 1) and reduced transpiration during heat stress (figure 2) will have a significant impact on the maintenance of crop yields during climatic upsurges. This is consistent with previous research that has concluded, genetic adaptation is one of the key components of Climate Smart Agriculture (CSA).

The economic perspective supports the importance of adapting to climate change investments through their respective ratios (figure 3). These benefit-cost ratios indicate the strategic nature of adaptation investments; investing too late may have disastrous Macroeconomic consequences of potentially losing around 3% of GDP.

The data indicates additional important institutional and social limitations. Limited climate literacy among farmers and a lack of access to extension services are hindering farmers' adaptation to climate change. Less than a third of farmers rely on climate forecasts in making agricultural decisions; this shows a need for education and promotion through advice.

It can be concluded that for a successful adaptation to climate change, there is a need for more than just innovative adaptation technologies. There is a need for a favorable environment created by the formulation of policies to support adaptation, collaboration between institutions that can help farmers adapt to climate change, as well as a trained workforce that will enable farmers to use innovation in adaptation to climate change.

**Figure-1.** Photosynthetic efficiency of conventional and climate-resilient crop




varieties.

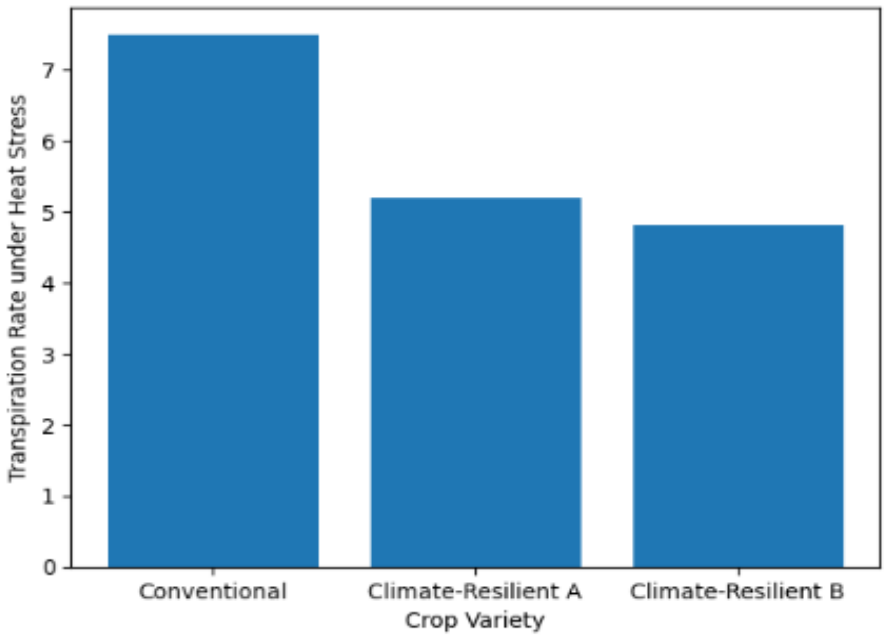
[1]

This figure shows the comparison of photosynthetic efficiency (%) of conventional and climate-resilient crop varieties, thereby establishing the superior carbon assimilation ability of climate-resilient crop varieties. This is a factor that leads to higher yield stability in climate-stressed conditions.

**Figure-2.** Transpiration rates of crop varieties under heat stress conditions.

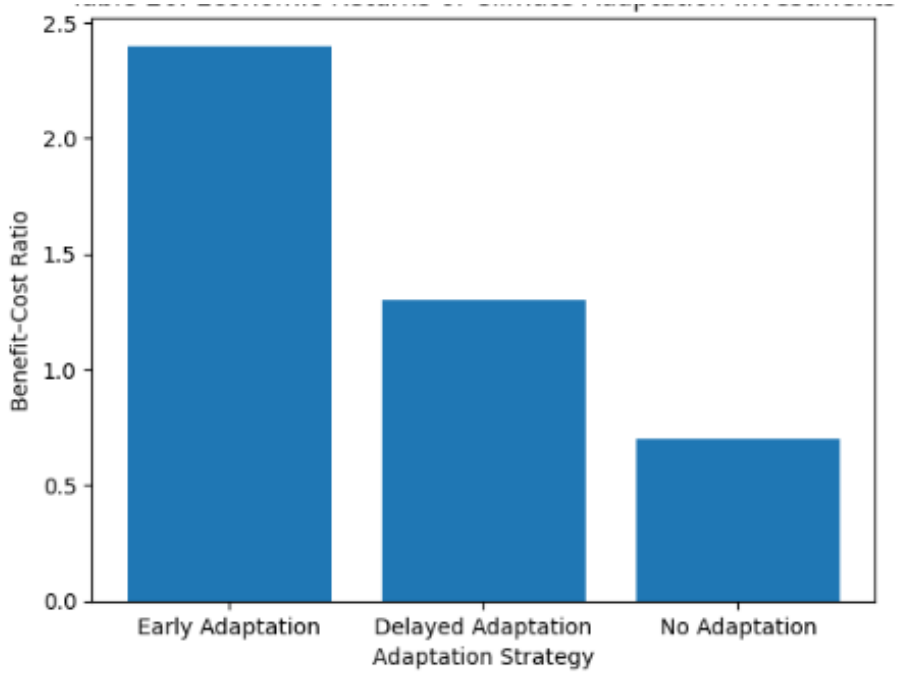
[1] https://cabiagbio.biomedcentral.com/articles/10.1186/s43170-022-00117-3

2




This figure shows the differences in transpiration rates under heat stress conditions for conventional and climate-resilient crop varieties. The lower transpiration rate in climate-resilient crop varieties indicates their superior water use efficiency and heat stress tolerance.

**Figure-3.** Benefit–cost ratios of climate change adaptation investment strategies.




[2] https://pubmed.ncbi.nlm.nih.gov/33278035/

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This figure shows the benefit-cost ratios for early adaptation, delayed adaptation, and no adaptation strategies. The findings indicate the macroeconomic benefit of early climate adaptation investment and the possible macroeconomic risks of delayed adaptation investment.

## CONCLUSION

The research provides evidence of how the utilization of the adaptability strategies developed during 2021 to 2025 will result in a significant improvement in Agricultural Sector Productivity, Efficiency of Natural Resources and Economic viability of Agriculture in response to the effects of Climate Change due to Global Warming. It also shows that Climate Smart Agriculture can improve yield by 20 - 30% and reduce water and energy consumption by as much as 50%. The research resulted in three main findings: (1) a reliance on modern water management technologies will have to be increased in order for Agricultural production to continue in the future due to the growing scarcity of fresh water; (2) the use of crops that are bred for resistance to climate change will lower the risk of crop failure due to extreme heat or drought, thus contributing to improved Food Security for people around the world.

Next, farmers will improve their risk management, streamline input-use, and enhance decision-making capabilities at the farm level by adopting digital/precise agriculture systems. Support from institutional sources, education of farmers, and extension service providers are critical in helping farmers maximize the benefits available under these adaptation strategies. Not only will increasing environmentally-friendly agricultural production systems help to protect the planet, but by implementing an integrated method that prioritizes the development of technology and enhancing the ability of farmers to effectively manage their resources, the likelihood for agricultural producers to adapt to changing climatic patterns and enjoy long-term success will improve significantly through increased resilience and sustainability and reduction of food insecurity and hunger resulting from global climate change.

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# FACTORS INFLUENCING THE ADOPTION OF RESOURCE-SAVING TECHNOLOGIES IN GRAIN PRODUCTION

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***Аннотация***. *Мазкур тезисда Ўзбекистон ғаллачилигида ресурс тежовчи технологияларни жорий этишга таъсир қилувчи иқтисодий, молиявий, институционал, технологик, ахборот ва хулқ-атвор омиллари тизимлаштирилган. Тадқиқотнинг асосий илмий муаммоси шундан иборатки, ресурс тежовчи технологиялар ишлаб чиқариш ресурслари сарфини камайтириш ва иқтисодий самарадорликни ошириш имконини берса-да, уларни фермер хўжаликлари томонидан қабул қилиш ва жорий этиш даражаси бир хил эмас. No-Till, Conservation Agriculture, минимал ишлов бериш, лазерли текислаш, сув тежовчи суғориш, аниқ деҳқончилик ва рақамли мониторинг технологиялари фермерларнинг иқтисодий қарор қабул қилиши нуқтаи назаридан кўриб чиқилди. Илмий адабиётларни тизимли таҳлил қилиш, қиёсий таҳлил, иқтисодий таҳлил ва омилларни таснифлаш усулларидан фойдаланилди. Натижалар технологияни қабул қилиш қарори бир омилга эмас, балки технологиянинг инвестиция қиймати, кутилаётган иқтисодий қайтими, фермернинг молиявий имконияти, кредит ва лизингдан фойдаланиши, давлат қўллаб-қувватлаши, техник инфратузилма, билим ва ахборот ҳамда инновацияга муносабатнинг ўзаро таъсирига боғлиқлигини кўрсатади. Тадқиқотда технологияни жорий этиш ва технологиядан фойдаланиш самарадорлиги тушунчалари фарқланиб, асосий эътибор фермернинг технологияни қабул қилиш ва инвестиция қилиш қарорини шакллантирувчи омилларга қаратилди.*

***Калит сўзлар:*** *ғаллачилик, қишлоқ хўжалиги иқтисодиёти, ресурс тежовчи технологиялар, технологияни қабул қилиш, инвестиция, фермер хўжалиги, кредит, лизинг, субсидия, No-Till, аниқ деҳқончилик.*

***Аннотация*** *В тезисе систематизированы экономические, финансовые, институциональные, технологические, информационные и поведенческие факторы, влияющие на внедрение ресурсосберегающих технологий в зерноводстве Узбекистана. Основная научная проблема заключается в том, что*

*ресурсосберегающие технологии позволяют сокращать затраты производственных ресурсов и повышать экономическую эффективность, однако уровень их принятия и внедрения фермерскими хозяйствами остается неодинаковым. Технологии No-Till, консервационного земледелия, минимальной обработки почвы, лазерного выравнивания, водосберегающего орошения, точного земледелия и цифрового мониторинга рассмотрены с позиции принятия фермерами экономических решений. Использованы систематический анализ научной литературы, сравнительный и экономический анализ, а также классификация факторов. Результаты показывают, что решение о принятии технологии определяется не одним фактором, а взаимодействием инвестиционных затрат, ожидаемой экономической отдачи, финансовых возможностей фермеров, доступа к кредитованию и лизингу, государственной поддержки, технической инфраструктуры, знаний и информации, а также отношения к инновациям. В исследовании разграничены понятия внедрения технологии и эффективности ее использования, при этом основное внимание уделено факторам, формирующим решение фермера о принятии технологии и инвестировании в нее.*

***Ключевые слова:*** *зерноводство, экономика сельского хозяйства, ресурсосберегающие технологии, принятие технологий, инвестиции, фермерские хозяйства, кредит, лизинг, субсидии, No-Till, точное земледелие.*

**Abstract**

This thesis systematizes the economic, financial, institutional, technological, informational, and behavioural factors influencing the adoption and implementation of resource-saving technologies in Uzbekistan’s grain production. The central scientific problem is that, although resource-saving technologies can reduce the consumption of production inputs and improve economic efficiency, their adoption and implementation rates among farms remain heterogeneous. No-Till, Conservation Agriculture, minimum tillage, laser land levelling, water-saving irrigation technologies, precision agriculture, and digital monitoring are examined from the perspective of farmers’ economic decision-making. The study employs a systematic review of scientific literature, comparative analysis, economic analysis, and factor classification. The findings indicate that technology adoption is determined not by a single factor but by the interaction of investment costs, expected economic returns, farmers’ financial capacity, access to credit and leasing, government support, technical infrastructure, knowledge and information, and attitudes toward innovation. The study distinguishes clearly

between technology adoption and implementation and the subsequent efficiency of technology use, with primary attention given to the factors shaping farmers' adoption and investment decisions.

**Keywords:** grain production, agricultural economics, resource-saving technologies, technology adoption, investment, farms, credit, leasing, subsidies, No-Till, precision agriculture.

**Introduction**

The efficient use of agricultural resources is directly associated with economic growth, optimization of production costs, and the competitiveness of farm enterprises. In grain production, expenditures on water, fuel, labour, machinery, and agrochemical inputs affect the formation of production costs. Therefore, the adoption of resource-saving technologies should be considered not only as an agrotechnological process but also as an investment and economic decision.

The relevance of this issue is particularly pronounced in Uzbekistan because of the limited availability of water resources. According to the World Bank, agriculture accounts for approximately 90% of the country's water consumption; increasing water scarcity and losses in irrigation infrastructure are therefore making efficient water use an important priority of agricultural policy [1]. In 2025, the World Bank approved US$200 million in concessional financing to support the modernization of irrigation and drainage infrastructure in Uzbekistan. The project aims, among other objectives, to reduce water losses and improve energy efficiency [1].

Resource-saving technologies include No-Till, Conservation Agriculture, minimum tillage, laser land levelling, water-saving irrigation technologies, precision agriculture, and digital monitoring. Their common feature is the optimization of production resource use. However, the resource-saving potential of a technology does not automatically lead to its adoption by farmers. Farmers assess the amount of investment required to purchase and implement a technology, its expected payback period, the level of risk, access to credit or leasing, and the expected economic return.

Recent systematic studies show that farmers' decisions to adopt sustainable innovations can be explained by a combination of economic benefits, technological complexity, risk, knowledge, social influence, and institutional support [2–4]. From this perspective, it is scientifically and practically important to move beyond describing the efficiency of technologies and examine why farmers in Uzbekistan's grain sector decide to adopt or not adopt them as an economic decision.

**Research Objective and Methodology**

The objective of the study is to systematize the major factors influencing the adoption of resource-saving technologies in Uzbekistan's grain production from an economic perspective, identify the mechanisms through which these factors affect farm-level technology adoption and investment decisions, and clarify the economic and institutional foundations for wider technology adoption.

The research object comprises No-Till, Conservation Agriculture, minimum tillage, laser land levelling, water-saving irrigation technologies, precision agriculture, and digital monitoring technologies used in grain production. The research subject is the set of economic relationships and factors influencing the adoption of these technologies by farm enterprises.

The methodological framework is based on a systematic review of scientific literature, comparative analysis, economic analysis, and factor classification. Findings from international studies on the adoption of conservation tillage, sustainable innovations, and precision agriculture were compared with the agro-economic conditions of Uzbekistan [2–4]. World Bank information on water and irrigation efficiency in Uzbekistan was used as contextual evidence for assessing the economic importance of resource-saving investment [1].

This study makes a clear conceptual distinction between "technology adoption and implementation" and "efficiency of technology use." Technology adoption and implementation refer to the process through which a farmer selects, invests in, and introduces a technology into farm operations. Efficiency of technology use, in contrast, refers to changes in resource consumption, production costs, yield, income, and other performance indicators resulting from the technology after implementation. Accordingly, the main focus of this study is on the factors determining the adoption and investment decision that precedes efficiency outcomes.

**Results and Discussion**

The analysis shows that the factors influencing the adoption of resource-saving technologies can be grouped, from the perspective of economic decision-making, into six interrelated blocks: economic; financial and institutional; technological; knowledge and information; social and behavioural; and environmental factors. Each block affects the farmer's assessment of the relationship between investment in technology and the expected outcome.

**1. Economic Factors**

The economic factors represent the central component of the technology adoption decision. These include the costs of purchasing and implementing the technology,

return on investment, production costs, reductions in resource-use expenditures, and the financial stability of the farm enterprise.

When evaluating a technology, farmers consider not only its purchase price but also changes in total costs after implementation. For example, No-Till and minimum tillage may reduce the number of soil preparation operations and thereby optimize expenditures on fuel, labour, and machinery. A systematic review of Conservation Agriculture indicates that costs, productivity, risk, and expected economic benefits are important determinants of farmers' decisions [2].

Therefore, assessing the economic attractiveness of a technology requires economic calculations that account for the payback period, changes in operating costs, and risk. For farmers, the decisive issue is not simply whether a technology is "resource-saving," but how the resulting resource savings translate into monetary benefits.

**2. Financial and Institutional Factors**

In technologies requiring substantial initial investment, insufficient own funds may constitute a major barrier to adoption. Access to credit, leasing, subsidies, concessional financing, and government guarantees can therefore expand the economic feasibility of technology adoption.

Financial mechanisms affect adoption through two main channels. First, they provide the initial capital required to purchase the technology. Second, they reduce the financial risk borne by the farmer. This is particularly important for technologies whose benefits may not become fully apparent within a single production season.

The institutional environment shapes farmers' long-term expectations. Government subsidies and incentives, water policy, leasing institutions, agricultural consulting systems, and technology certification mechanisms can reduce transaction costs associated with adoption. The World Bank's 2025 Uzbekistan project aims to reduce water losses and improve energy efficiency while improving the reliability of irrigation services for farmers [1]. This demonstrates the relationship between resource efficiency and institutional infrastructure.

**3. Technological Factors**

The availability of technology, access to machinery and equipment, technical support, agricultural machinery and implements, maintenance services, and spare parts influence farmers' investment decisions. Even when a technology is economically attractive, adoption is likely to remain limited if the necessary machinery or technical services are unavailable.

In Conservation Agriculture, minimum soil disturbance, permanent soil cover, and crop diversification are interconnected components; therefore, it would be

inappropriate to reduce the technology to a single piece of equipment [5]. Accordingly, the economic value of technical maintenance, operator skills, and agronomic support should be considered alongside equipment acquisition when evaluating technology implementation.

Differences in soil, water availability, and climatic conditions across Uzbekistan's regions also affect the economic outcomes of technologies. Thus, the economic value of a technology for a farmer depends not on its universal applicability alone, but on its compatibility with specific farm conditions and the available resource base.

**4. Knowledge and Information Factors**

Knowledge and information determine farmers' ability to assess the expected economic outcomes of a technology correctly. When information about technology costs, return on investment, maintenance requirements, or potential resource savings is insufficient, farmers make decisions under greater uncertainty.

Agronomic consulting, training, demonstration plots, and the experience of other farmers can reduce information asymmetry. Systematic research on the adoption of precision agriculture technologies likewise indicates that technological complexity, knowledge, access to services, and financial capacity are interconnected elements of the adoption process [4].

From an economic perspective, information services can be viewed as institutions that reduce farmers' decision-making costs. Consequently, support programmes for resource-saving technologies should consider not only subsidies for the technology itself but also the provision of economic assessment and agronomic advisory services.

**5. Social and Behavioural Factors**

Farmers' attitudes toward technology, confidence in innovation, risk perception, the experience of other farmers, subjective norms, and perceived ability to use a technology influence adoption intentions. These factors shape economic decisions through psychological and social mechanisms.

Research on Conservation Agriculture shows that risk perception and social learning can influence farmers' technology adoption decisions [3]. Demonstration farms can therefore serve not only as centres for disseminating agronomic knowledge but also as mechanisms for reducing perceived economic risk. When farmers observe a technology being successfully used on another farm and gain confidence in its economic outcomes, barriers to adoption may decline.

These factors reflect the interaction of economic interests, social influence, and technological capacity in farmers' adoption decisions. In particular, farmers' attitudes toward innovation, confidence in the advantages of a technology, the experience of

other farmers, and their subjective assessment of their ability to use the technology shape the behavioural mechanisms underlying adoption decisions.

**6. Economic Effects of Environmental and Natural Factors**

Water scarcity, declining soil fertility, salinity, drought, and climate change can be considered external economic factors shaping demand for resource-saving technologies. For example, water scarcity increases the economic value of water-saving technologies because each unit of water saved has implications for production stability and cost optimization.

The World Bank has identified increasing water scarcity, declining water availability, and growing irrigation demand as important risks for Uzbekistan [1]. At the same time, reducing water losses in irrigation infrastructure can lower energy and operating costs. Thus, environmental constraints create demand for resource-saving technologies, while economic mechanisms translate this demand into investment decisions.

**Economic Mechanism of Resource-Saving Technology Adoption**

Based on the research findings, the farmer's decision to adopt a resource-saving technology can be represented through the following conceptual sequence: resource constraint → economic need for the technology → assessment of costs and benefits → assessment of investment risk → financial capacity → institutional support → knowledge and confidence in the technology → adoption decision → investment and implementation.

Within this mechanism, economic factors perform a central linking function. Environmental factors create the need for technology; information and knowledge shape understanding of its economic outcomes; financial institutions determine investment feasibility; and social and behavioural factors influence confidence in the decision. Therefore, the adoption of resource-saving technologies should be understood through the combined influence of these factors rather than through financial incentives alone.

The main scientific novelty of the study lies in systematizing the economic, financial-institutional, technological, knowledge-information, social-behavioural, and environmental factors influencing the adoption of resource-saving technologies under the conditions of Uzbekistan's grain production and substantiating their interrelated mechanism within the investment decision-making process of farm enterprises.

The novel aspect of the approach is that a resource-saving technology is interpreted not simply as an "efficient technology," but as an investment alternative involving specific costs, risks, financial constraints, and expected returns for the farmer. On this

basis, the conceptual mechanism "resource constraint → economic need → assessment of benefits and risks → financial capacity → institutional support → adoption and investment" is proposed.

The proposed conceptual approach enables the interrelated effects of economic, financial-institutional, technological, informational, and social factors in the implementation of resource-saving technologies to be considered as an integrated process. It explains farmers' adoption decisions not only through the relationship between costs and income, but also through financial capacity, technological readiness, access to information, and confidence in innovation.

**Conclusion**

The findings demonstrate that the adoption of resource-saving technologies in Uzbekistan's grain production cannot be explained solely by the availability of technological innovations. Farmers' adoption decisions are shaped by the interaction of economic, financial-institutional, technological, knowledge-information, social-behavioural, and environmental factors.

The analysis indicates that economic factors—particularly the costs of purchasing and implementing technologies, expected return on investment, production costs, and reductions in resource expenditures—play a central role in farmers' assessment of the economic attractiveness of technologies. However, economic attractiveness alone is not a sufficient condition for implementation. Farmers' financial capacity, access to credit and leasing, and the institutional conditions created by government also affect whether an investment decision can be realized.

The study also shows that the technical availability of a technology does not automatically imply its adoption. Technical services, spare parts, compatibility with local soil and climatic conditions, and the availability of knowledge required for using the technology determine the feasibility of implementation. At the same time, insufficient information and uncertainty regarding technological outcomes may lead farmers to perceive investment risks as higher.

Social and behavioral factors also emerge as important components of economic decision-making. Farmers' attitudes toward innovation, confidence in a technology, the experience of other farmers, and their perceived capabilities influence their assessment of the technology's economic value. Environmental factors, particularly water scarcity, drought, and soil conditions, act as external drivers that strengthen the economic need for resource-saving technologies.

Thus, the study substantiates resource-saving technology adoption as a multidimensional economic process that develops through the sequence of resource

need → assessment of economic benefits and costs → perception of investment risk → financial capacity → institutional and technological conditions → technology adoption.

From this perspective, the economic efficiency of resource-saving technologies is an outcome observed after their use begins, whereas the decision to implement the technology itself is determined by the farmer's economic interests, investment capacity, and ability to adopt the technology. This conclusion indicates that expanding resource-saving technologies in Uzbekistan's grain production requires attention not only to technological efficiency but also to the economic mechanisms underlying technology adoption.

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# EKISH MUDDATLARI VA ME'YORLARINI SOY NAVLARINING KO‘CHAT QALINLIGIGA TA'SIRI

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***Annotatsiya***. *Ushbu maqolada ekish muddatlari va ekish me’yorlarining soya navlari ko‘chat qalinligiga ta’siri bo‘yicha ma’lumotlar keltirilgan. Tajriba natijalari shuni ko‘rsatdiki, tadqiqotlar tahlil qilinganda ekish muddatlarini o‘simlikni ko‘chat qalinligiga ta’sir etganligi kuzatilgan. Soyani “Sevinch” navi erta muddatda ekilganda ko‘chat qalinligi ekish me’yorlariga tegishli ravishda 266,1; 348,8; 431,2 ming/gani tashkil etgan bo‘lsa, o‘rta muddatda ekilganda 269,4; 362,2; 433,4 ming/gani, kechki muddatda ekilganda 270,1; 353,5; 420,1 ming/gani tashkil etdi, ya’ni soyani ekish muddati 10 kunga kechiktirilganda 2,9-4,0 ming donaga, 20 kunga kechiktirilganda esa 4,0-4,8 ming donaga ko‘chatlarni ko‘p bo‘lganligi aniqlandi.*

***Kalit so‘zlar:*** *ekish muddatlari, soya navlari, ko‘chat qalinligi, ekish me’yorlari, "Sevinch", "Madad", o‘rta muddatda, amal davri, o‘simlik, hosildorlik, rentabellik darajasi.*

***Аннотация.*** *В статье представлена информация о влиянии сроков и норм посева на толщины всходов сортов сои. Результаты эксперимента показали, что при анализе исследований было отмечено, что сроки посадки влияют на толщины всходов растений. При раннем посеве толщина всходов составила 266,1; 348,8; 431,2 тыс./га, соответственно нормам посадки, при посеве в среднесрочный период-269,4; 362,2; 433,4 тыс./га, при посеве в поздний срок-270,1; 353,5; 420,1 тыс./га, т.е. было установлено, что при задержке сроков посева сои на 10 дней количество всходов составило 2,9-4,0 тыс. штук, а при задержке на 20 дней-4,0-4,8 тыс. штук.*

***Ключевые слова:*** *сроки посева, сорта сои, толщина всходов, нормы высева, «Севинч», «Мадад», среднесрочные, период действия, растение, урожайность, уровень рентабельности.*

***Annotation***. *The article provides information on the impact of sowing dates and rates on the thickness of soybean seedlings. The results of the experiment showed that when analyzing the research, it was noted that the timing of planting affects the thickness of plant seedlings. With early sowing, the thickness of seedlings was 266.1;*

*348.8; 431.2 thousand /ha, respectively, according to planting standards, with medium-term sowing-269.4; 362.2; 433.4 thousand /ha, with late sowing-270.1; 353.5; 420.1 thousand/ha, i.e. it was found that with a delay in sowing soybeans For 10 days, the number of seedlings was 2.9-4.0 thousand, and with a delay of 20 days-4.0-4.8 thousand.*

***Key words:*** *sowing dates, soybean varieties, germination thickness, seeding rates, "Sevinch", "Madad", medium-term, period of validity, plant, yield, profitability level.*

**Kirish**. Bugungi kunda dunyo mamlakatlarida soya o‘simligi qariyb 130 mln. gektar maydonda parvarish qilinmoqda. Dunyo bo‘yicha soyadan olinadigan yalpi don hosili bo‘yicha eng yuqori ko‘rsatkichlar Amerika Qo‘shma Shtatlarida 106,9 mln.tonna, Braziliyada 100,3 mln.tonna, Argentinada 58,5 mln. tonna, Xitoy Xalq Respublikasida 12,3 mln. tonna, Rossiya Federatsiyasida esa 2,8 mln. tonnani tashkil etib, yiliga o‘rtacha 370-380 million tonna soya doni yig‘ishtirib olinadi.

O‘zbekiston Respublikasi qishloq xo‘jaligini rivojlantirishning 2020-2030 yillarga mo‘ljallangan strategiyasida “...qishloq xo‘jaligini barqaror rivojlantirishda tabiiy resurslardan oqilona foydalanish, aholini oziq-ovqat xavfsizligini ta’minlash hamda atrof-muhitni muhofaza qilish” kabi masalalar ustuvor vazifalar sifatida belgilangan. Hoziri vaqtda soya yetishtiriladigan maydonlar hajmi qariyb 2 barobarga ortdi, joriy yildarespublikaning sug‘oriladigan 21 ming 154 gektar maydonida soya ekilib, 42 ming 390 tonna don hosili olish mo‘ljallanmoqda [1].

Shuningdek, “O‘zbekiston — 2030” strategiyasida Qishloq xo‘jaligida hosildorlik va rentabellik darajasini keskin oshirishmasalasi ustuvor vazifa etib belgilangan [2].

Respublikamizda hozirgi mavjud bo‘lgan navlar talabga mos kelsada, kundan-kunga o‘sib borayotgan aholi soni va uning iste’mol darajasini qanoatlantirish uchun turli noqulay sharoitlarga chidamli, yuqori hosil beradigan yangi navlarga talab kuchaymoqda. U asosiy yoki takroriy ekin sifatida o‘stirilsa, insonlarning oqsilga bo‘lgan talabi qondiriladi, chorvachilik, parrandachilik va baliqchilik uchun oqsilli ozuqa shuningdek, ekologik toza o‘simlik moyi ko‘payadi, tuproq sof biologik azot bilan boyib, unumdorligini saqlab qolish imkoni vujudga keladi [3].

**Asosiy qism.** Tajriba o‘tkazish sharoiti va metodikasi. “Madad” va “Sevinch” navlarining ekish muddatlari va me'yorlarini soya navlarining soya navlari ko‘chat qalinligiga ta'sirini o‘rganish bo‘yicha ilmiy-tadqiqot ishlari Toshkent viloyatining O‘rta Chirchiq tumanida joylashgan Sholichilik ilmiy tadqiqot institutining tajriba

dalalarida, o‘tloqi-botqoq tuproqlari sharoitida o‘tkazildi. Tajriba 18 ta variantdan iborat bo‘lib, xar bir variantning maydoni 240 $m^2$, hisobga olinadigan maydon 120 $m^2$ ni tashkil etdi. Tajriba bir yarusda, uch takrorlashda olib borildi. Bitta takrorlashning maydoni 4320 $m^2$, umumiy maydoni 1,30 gektarni tashkil etdi.

Tadqiqot o‘tkazilgan davrda soya navlarini ekishda havo va tuproqning harorati hamda tuproqning namligi hisobga olinib, ekishda havo harorati 18-20$^0$C, tuproqdagi harorat 12-14$^0$C bo‘lganda amalga oshirildi [4-6].

Tadqiqot tajribalari va natijalari. Soya navlarini ekish muddatlari va me’yorlarining o‘simlikning ko‘chat qalinligiga bevosita ta’siri kuzatildi.

1-jadval.

**Ekish muddatlari va me'yorlarining soya navlarining ko‘chat qalinligiga ta'siri, ming/dona**

| Variant № | Soya navlari | Ekish muddatlari | Ekish me'yori ga/ming dona | Amal davri boshida |
|---|---|---|---|---|
| 1 | Madad | 25.04-30.04 | 45 (280) | 251,1 |
| 2 | | | 60 (375) | 318,7 |
| 3 | | | 75 (465) | 392,6 |
| 4 | | 05.05-10.05 | 45 (280) | 252,8 |
| 5 | | | 60 (375) | 328,8 |
| 6 | | | 75 (465) | 413,1 |
| 7 | | 15.05-20.05 | 45 (280) | 255,9 |
| 8 | | | 60 (375) | 311,2 |
| 9 | | | 75 (465) | 419,1 |
| 10 | Sevinch | 25.04-30.04 | 45 (300) | 266,1 |
| 11 | | | 60 (400) | 348,8 |
| 12 | | | 75 (500) | 431,2 |
| 13 | | 05.05-10.05 | 45 (300) | 269,4 |
| 14 | | | 60 (400) | 362,2 |
| 15 | | | 75 (500) | 433,4 |
| 16 | | 15.05-20.05 | 45 (300) | 270,1 |
| 17 | | | 60 (400) | 353,6 |
| 18 | | | 75 (500) | 420,1 |

Olingan ma’lumotlarga ko‘ra, soyaning “Madad” navi birinchi muddatda (25.04-30.04) gektariga 45 kg ekilganda soyaning amal davri boshidagi ko‘chat qalinligi 251,1 ming/gani, gektariga 60 kg ekilgan 2-variantda 318,7 ming/donani, gektariga 75 kg

ekilgan 3-variantda 392,6 ming/gani tashkil etdi. Soya o‘rta muddatda(05.05-10.05)gektariga 45 kg ekilgan 4-variantda ko‘chat qalinligi 252,8 ming/ga, gektariga 60 kg/ga ekilgan 5-variantda 328,8 ming/ga, gektariga 75 kg ekilgan 6-variantda esa 413,1 ming/ga tashkil etdi. Soya kechki (15.05-20.05) muddatda ekilganda ekish me’yorlariga tegishli ravishda 255,9; 311,2; 419,1 ming/gani tashkil etdi (1-jadval).

Soyaning “Sevinch” navi bo‘yicha olingan ma’lumotlarga ko‘ra, ushbu nav birinchi muddatda (25.04-30.04) gektariga 45 kg ekilganda soyaning amal davri boshidagi ko‘chat qalinligi 266,1 ming/gani, gektariga 60 kg ekilgan 11-variantda 348,8 ming/donani, gektariga 75 kg ekilgan 12-variantda 431,2 ming/gani tashkil etdi.

Soya o‘rta muddatda(05.05-10.05)gektariga 45 kg ekilgan 13-variantda ko‘chat qalinligi 269,4 ming/ga, gektariga 60 kg/ga ekilgan 14-variantda 362,2 ming/ga, gektariga 75 kg ekilgan 15-variantda esa 433,4 ming/ga tashkil etdi. Soya kechki (15.05-20.05) muddatda ekilganda ko‘chat qalinligi ekish me’yorlariga tegishli ravishda 270,1; 353,6; 420,1 ming/gani tashkil etdi.

**Xulosa.** Tadqiqotlar natijalari tahlil etilganda ekish muddatlarini o‘simlikni ko‘chat qalinligiga ta’sir etganligi kuzatildi. Soyani “Sevinch” navi erta muddatda ekilganda ko‘chat qalinligi ekish me’yorlariga tegishli ravishda 266,1; 348,8; 431,2 ming/gani tashkil etgan bo‘lsa, o‘rta muddatda ekilganda 269,4; 362,2; 433,4 ming/gani. kechki muddatda ekilganda 270,1; 353,5; 420,1 ming/gani tashkil etdi, ya’ni soyani ekish muddati 10 kunga kechiktirilganda 2,9-4,0 ming donaga, 20 kunga kechiktirilganda esa 4,0-4,8 ming donaga ko‘chatlarni ko‘p bo‘lganligi aniqlandi. Xuddi shunday qonuniyat soyaning “Madad” navida ham aniqlandi.

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# UZUM BOSHLARINI QOPLASHNING XUSAYNE BELIY NAVI UZUM G‘UJUMLARI SIFATIGA TA’SIRINING KORRELYATSION BOG‘LIQLIGI

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***Annotatsiya.*** *Ushbu maqolada uzumning Xusayne beliy navi uzum boshlarini turli xil rangdagi qog‘oz va matoli qopchalar bilan g‘ujumlarning pisha boshlash davrida qoplashning uzum g‘ujumlari sifatiga ta’siri korrelyatsion bog‘liqligi tasvirlangan. Xusayne beliy navida nazorat variantini turli materialdan tayyorlangan qopchalar bilan solishtirilganda uzum g‘ujumlarining turli ko‘rsatkichlariga asosan oq qog‘oz qopcha sharoitida yuqori ijobiy korrelyatsiyaga ega bo‘ldi.*

***Kalit so‘zlar:*** *Korrelyatsiya, bog‘liqlik, Xusayne beliy, uzum, qoplash, qanddorlik, kislotalilik.*

***Аннотация.*** *В данной статье описана корреляционная связь между укрытием гроздей винограда сорта Хусайне белый бумажными и тканевыми мешочками различных цветов в начале созревания ягод и качественными характеристиками виноградных гроздей. По сравнению с контрольным вариантом использование мешочков, изготовленных из различных материалов, оказало различное влияние на качество гроздей винограда. Среди исследованных вариантов белые бумажные мешочки продемонстрировали наиболее сильную положительную корреляцию с оцениваемыми показателями качества гроздей винограда.*

***Ключевые слова:*** *корреляция, взаимосвязь, Хусайне белый, виноград, укрытие гроздей, сахаристость, титруемая кислотность.*

***Abstract.*** *This article describes the correlation between grape bagging clusters of the cv. Khusayne beliy with paper and fabric bags of different colors at the verasion and the quality characteristics of the grape berries. Compared with the control treatment, the use of bags made from different materials showed varying effects on grape berry quality. Among the tested treatments, white paper bags exhibited the strongest positive correlations with the evaluated quality parameters of grape clusters.*

***Keywords:*** *correlation, relationship, Khusayne beliy, grapes, bagging, sugar content, titratable acidity.*

**Kirish.** Organik uzumlar xalqaro miqyosda tobora ko‘proq sotilmoqda. Organik uzum ishlab chiqarishning asosiy printsipi mevalarni zararkunandalar va kasalliklardan himoya qilish uchun sintetik pestitsidlardan saqlashdir. Fizik nazorat chorasi sifatida, dala sharoitida har xil turdagi qopchalar bilan uzum boshlar qoplanishi baholandi [2]. Meva rivojlanishining dastlabki bosqichlarida uzumni yig‘ib olishdan oldin qoplash meva sifatini, hosildorligini va saqlanishini sezilarli darajada yaxshiladi va mevaning rang olish tezligini pasaytirdi, bu esa keyinchalik qopchani olib tashlash bilan ko‘paytirilishi mumkin edi [5] ammo mevaning boshqa jihatlariga, jumladan hasharotlar, qushlarning hujumi va kasalliklarga ta’siri noma’lum va ilgari o‘rganilmagan. Uzum boshlarini hosil pishishidan oldin qoplash meva sifatini fiziologik va patologik buzilishlarni kamaytirish va meva rangini yaxshilash, ularning bozor qiymatini oshirish, shuningdek, zararkunandalar va kasalliklarga qarshi kurashish orqali optimallashtirishi mumkin [3].

**Tadqiqot uslublari.** Tajribalar Gulbog‘ Burhon fermer xo‘jaligiga qarashli dala maydonlarida olib borildi. Fermer xo‘jaligi Toshkent viloyati Parkent tumanida joylashgan. Ushbu dala maydonlari Toshkent viloyatining shimoliy sharqiy qismida joylashgan. X.Ch.Bo‘riyev va boshqalarning [1], V.F.Moiseychenkoning [7] nomli uslubiy ko‘rsatmasi, R.Z. Sun va boshqalarning [4] hamda S.H. Zhou va boshqalarning usullari [6] asosida bajariladi.

*Korrelyatsiya bu belgilarning o‘zaro bog‘liqligi.* Korrelyativ bog‘liqlik sifat (morfologik) hamda miqdoriy belgilar bo‘yicha kuzatiladi. Korrelyatsiya koeffitsientlari -1 dan 1 gacha. Ijobiy qiymat qiymatlarning birgalikdagi o‘sishini, salbiy qiymat esa qarama-qarshi munosabatni ko‘rsatadi. Korrelyatsiya $r<0,33$ bo‘lganda zaif, $r = 0,3\text{-}0,66$ o‘rtacha, $r>0,66$ bo‘lsa kuchli hisoblanadi. 0 ga yaqin qiymat, shu jumladan nolning o‘zi ham korrelyatsiya yo‘qligini bildiradi.

**Tadqiqot natijalari.** Tadqiqot davomida Xusayne beliy navi uzum boshlarini turli xil rangdagi qog‘oz va matoli qopchalar bilan qoplash muddatlarining uzum g‘ujumlari sifatiga ta’siri va korrelyatsion bog‘liqligi ham o‘rganildi (1-jadval).

*1-jadval*

**Xusayne beliy navi uzum boshlarini turli xil rangdagi qog‘oz va matoli qopchalar bilan qoplashning korrelyatsiya koeffisiyentlari**

| Variantlar | Oddiy qog‘oz bilan himoyalash | Yashil qog‘oz qopcha | Sariq qog‘oz qopcha | Oq qog‘oz qopcha | To‘qilmagan oq matoli qopcha | To‘qilgan oq matoli qopcha | To‘qilgan qora matoli qopcha |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Uzum boshining umumiy og‘irligi, gr** | 0,76 | -0,34 | -0,4 | 0,95 | 0,58 | 0,42 | 0,28 |
| **Uzum g‘ujumlarining umumiy og‘irligi, gr** | 0,77 | -0,32 | -0,33 | 0,94 | 0,62 | 0,58 | 0,29 |
| **Uzum g‘ujumlarining umumiy soni, dona** | 0,29 | -0,1 | 0,45 | 0,79 | 0,53 | 0,77 | 0,23 |
| **1 dona g‘ujum vazni, gr** | -0,5 | -0,11 | -0,09 | 0,88 | 0,89 | 0,9 | 0,66 |
| **1 dona g‘ujum diametri, mm** | -0,43 | -0,17 | -0,27 | 1 | 0,92 | 0,9 | 0,37 |
| **G‘ujumlar qanddorligi, %** | 0,94 | -0,81 | -0,92 | 0,52 | 0,26 | 0,6 | -0,7 |
| **Umumiy kistlotalilik miqdori, g/l** | 0,56 | -0,65 | -0,9 | 0,13 | 0,17 | -0,07 | -0,47 |
| **Bir uzum boshi g‘ujumlarining quruq modda miqdori, gr** | 0,82 | 0,06 | -0,45 | 0,9 | 0,42 | 0,37 | 0,31 |
| **bir uzum boshi g'ujumidan olingan sharbat miqdori, ml** | 0,77 | -0,51 | -0,5 | 0,95 | 0,63 | 0,55 | 0,3 |

Uzum boshlariga turli xil qopchalar kiyilgan holatda olingan ko‘rsatkichlar nazorat varianti (oddiy qog‘oz bilan himoyalash) bilan taqqoslandi. Yashil qog‘oz qopcha kiyilganda nazoratga nisbatan deyarli barcha ko‘rsatkichlar salbiy qiymat oldi. Masalan, uzum boshining umumiy og‘irligi (r= –0,34) hamda g‘ujumlarning umumiy og‘irligi (r= –0,32) bo‘yicha o‘rtacha salbiy bog‘liqlik va g‘ujumlarning qanddorligi

(r= –0,81) koʻrsatkichi boʻyicha esa kuchli salbiy bogʻliqlik kuzatildi. Bu esa yashil qogʻoz qopchasi yorugʻlik va havoning oʻtishini cheklab, mevalarning normal rivojlanishini susaytirganini koʻrsatadi. Sariq qogʻoz qopchasi ta'sirida ham nazoratga nisbatan salbiy ta'sir kuzatildi. Ayniqsa, gʻujumlarning qanddorligi (r= –0,92) va umumiy kislotalilik (r= –0,90) koʻrsatkichlari sezilarli darajada pasaygan. Shu bilan birga, uzum gʻujumlarining soni (r= 0,45) nazoratga nisbatan biroz ijobiy ta'sir koʻrsatdi. Demak, sariq qopcha mevalarning shakllanishiga ozgina ragʻbat bergan boʻlsa-da, sifat koʻrsatkichlarini yomonlashtirgan. Oq qogʻoz qopchasi nazoratga eng yaqin natijalarni berdi. Uzum boshining umumiy ogʻirligi (r= 0,95), gʻujumlarning umumiy ogʻirligi (r= 0,94) va 1 dona gʻujum diametri (r= 1,00) shuningdek, quruq modda (r= 0,90), hamda sharbat (r= 0,95) koʻrsatkichlari boʻyicha juda kuchli ijobiy bogʻliqlikni koʻrsatdi. Qanddorligi boʻyicha nazoratga nisbatan r= 0,52 oʻrtacha ijobiy korrelyatsion bogʻliqlik kuzatildi. Bu holat oq qogʻoz yorugʻlikni yaxshi oʻtkazishi va optimal mikroiqlimni yaratishi bilan izohlanadi. Shuning uchun oq qopcha mevalarning shakllanishi va sifatini yaxshilashda samarali hisoblanadi. Toʻqilmagan oq matoli qopcha oʻrtacha natijalarni koʻrsatdi. Masalan, uzum gʻujumlarining umumiy ogʻirligi (r= 0,62) bilan oʻrtacha ijobiy, 1 dona gʻujum vazni (r= 0,89) va diametri (r= 0,92) kuchli ijobiy bogʻliqlikda boʻlishi aniqlandi. Shu bilan birga, gʻujumlarning qanddorligi (r= 0,26) kuchsiz ijobiy darajada boʻlib, meva sifatiga deyarli ta'sir qilmasligini koʻrsatdi. Toʻqilgan oq matoli qopcha ham yaxshi natija berdi. Masalan, 1 dona gʻujum vazni (r= 0,90), 1 dona gʻujum diametri (r= 0,90) va gʻujumlarning umumiy soni (r=0,77) kuchli ijobiy bogʻliqlikda boʻldi. Biroq, umumiy kislotalilik (r= –0,07) va ayrim sifat koʻrsatkichlari bilan salbiy bogʻliqlikda ekanligi kuzatildi. Toʻqilgan qora matoli qopcha eng past natijalarni qayd etdi. Aksariyat koʻrsatkichlar ijobiy boʻlsa-da, gʻujumlarning qanddorligi (r= –0,70) kuchli salbiy va umumiy kislotalilik boʻyicha (r= –0,47) oʻrtacha salbiy korrelyatsion bogʻliqlikni namoyon etdi. Bu esa qora matoning yorugʻlikni oʻtkazmasligi va meva rivojlanishini cheklab qoʻyishini bildiradi.

**Xulosa.** Tajriba natijalari shuni koʻrsatdiki, uzum boshlarini qoplashda qopchaning turi va materiali muhim ahamiyat kasb etadi. Oq qogʻoz qopcha va toʻqilmagan oq matoli qopcha eng yaxshi natija berib, gʻujumlarning quruq modda, sharbat, gʻujum soni va ogʻirligi kabi asosiy xoʻjalik belgilarini yuqori darajada saqladi. Rangli (yashil va sariq) qopchalar esa qand miqdorini kamaytirib, mevaning shirinlik darajasiga salbiy ta'sir koʻrsatdi. Shu bois, amaliyotda oq rangli qopchalardan foydalanish tavsiya etiladi.

## Foydalanilgan adabiyotlar ro‘yxati

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# 7. EDUCATION, PSYCHOLOGY, AND LEARNING TECHNOLOGIES

# BOSHLANG'ICH SINF O'QUVCHILARIDA EKOLOGIK MADANIYATNI SHAKLLANTIRISH

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***Annotatsiya.*** *Mazkur maqolada boshlang'ich sinf o'quvchilarida ekologik madaniyatni shakllantirish muammosi ilmiy-pedagogik nuqtai nazardan tahlil qilingan. Tadqiqotda ekologik ta'lim-tarbiyaning nazariy-metodologik asoslari, ekologik madaniyat tarkibiy qismlari hamda uni shakllantirishning pedagogik shart-sharoitlari yoritilgan. Maqola IMRAD (Kirish – Metodlar – Natijalar – Muhokama – Xulosa) tuzilishi asosida yozilgan bo'lib, tajriba-sinov ishlari davomida qo'lga kiritilgan natijalar jadval va sxemalar vositasida aniq va ixcham tarzda tasvirlangan. Tadqiqot natijalari boshlang'ich ta'lim tizimida ekologik tarbiya samaradorligini oshirishga xizmat qiladigan amaliy tavsiyalar bilan yakunlanadi.*

***Kalit so'zlar:*** *ekologik madaniyat, ekologik ta'lim, boshlang'ich sinf, tabiatga munosabat, ekologik tarbiya, atrof-muhit, pedagogik texnologiya, ekologik ong.*

***Annotation.*** *This article examines the problem of forming ecological culture in primary school students from a scientific-pedagogical perspective. The study addresses the theoretical and methodological foundations of ecological education, the structural components of ecological culture, and the pedagogical conditions for its formation. Written according to the IMRAD structure (Introduction – Methods – Results – Discussion – Conclusion), the article presents the results of experimental work clearly and concisely through tables and diagrams. The findings conclude with practical recommendations aimed at improving the effectiveness of ecological education in the primary education system.*

***Keywords:*** *ecological culture, ecological education, primary school, attitude toward nature, ecological upbringing, environment, pedagogical technology, ecological consciousness.*

***Аннотация****. В данной статье с научно-педагогической точки зрения рассматривается проблема формирования экологической культуры у учащихся начальных классов. В исследовании освещены теоретико-методологические основы экологического образования и воспитания, структурные компоненты*

*экологической культуры, а также педагогические условия её формирования. Статья написана на основе структуры IMRAD (Введение – Методы – Результаты – Обсуждение – Заключение), при этом результаты экспериментальной работы наглядно и лаконично представлены с помощью таблиц и схем. Результаты исследования завершаются практическими рекомендациями, направленными на повышение эффективности экологического воспитания в системе начального образования.*
***Ключевые слова:*** *экологическая культура, экологическое образование, начальные классы, отношение к природе, экологическое воспитание, окружающая среда, педагогическая технология, экологическое сознание.*

## *KIRISH*

Bugungi kunda insoniyat oldida turgan eng dolzarb muammolardan biri atrof-muhitning ifloslanishi, tabiiy resurslarning kamayib borishi va ekologik muvozanatning izdan chiqishi bilan bog'liq masalalardir. Ushbu global muammolarni bartaraf etishning eng samarali yo'llaridan biri – yosh avlodda ilk yoshlikdan boshlab ekologik madaniyatni shakllantirishdir. Zero, inson tabiatga bo'lgan munosabatini bolalik davridayoq shakllantirmasa, kelajakda uning atrof-muhitga nisbatan ongli va mas'uliyatli munosabatda bo'lishini kutish qiyin.

O'zbekiston Respublikasida ta'lim tizimini isloh qilish, jumladan, "Yashil makon" milliy loyihasi, atrof-muhitni muhofaza qilish va ekologik ta'limni takomillashtirishga qaratilgan davlat dasturlari boshlang'ich ta'lim bosqichida ekologik tarbiyaning ahamiyatini yanada oshirmoqda. Boshlang'ich sinf o'quvchilari psixologik jihatdan tabiatga qiziquvchan, taassurotlarga boy va tarbiyaviy ta'sirga ochiq bo'lgan davrni boshdan kechiradilar. Aynan shu davr ekologik bilim, ko'nikma va qadriyatlarni singdirish uchun eng qulay davr hisoblanadi.

Ekologik madaniyat tushunchasi pedagogika va psixologiya fanlarida keng o'rganilgan bo'lib, u insonning tabiatga nisbatan bilimlar, hissiy munosabat va amaliy xulq-atvor birligidan iborat integrativ sifat sifatida talqin etiladi. Ko'plab tadqiqotchilar (masalan, ekologik ta'lim sohasidagi mahalliy va xorijiy olimlar) boshlang'ich sinflarda ekologik madaniyatni shakllantirishning samarali yo'llarini izlab kelishgan, biroq bu jarayonni yaxlit pedagogik tizim sifatida tashkil etish, uning bosqichlari va vositalarini aniqlashtirish borasida hanuzgacha yechimini kutayotgan masalalar mavjud.

Ushbu tadqiqotning maqsadi – boshlang'ich sinf o'quvchilarida ekologik madaniyatni shakllantirishning pedagogik shart-sharoitlarini aniqlash, samarali metod va vositalarni ishlab chiqish hamda ularning amaliyotdagi samaradorligini tajriba-sinov

yo'li bilan tekshirishdan iborat. Tadqiqot vazifalari quyidagilardan iborat: ekologik madaniyat tushunchasining mohiyatini ochib berish; boshlang'ich sinf o'quvchilarining ekologik bilim darajasini aniqlash; ekologik tarbiya bo'yicha maxsus metodika ishlab chiqish va uni sinovdan o'tkazish; olingan natijalarni tahlil qilish asosida amaliy tavsiyalar ishlab chiqish.

Mavzuning dolzarbligini yana shu bilan izohlash mumkinki, zamonaviy bolalar tabiiy muhitdan ko'ra ko'proq raqamli texnologiyalar, gadjetlar va shahar sharoiti bilan o'ralgan holda voyaga yetmoqda. Bu esa ularning tabiat bilan bevosita muloqotini, ya'ni tabiiy hodisalarni kuzatish, o'simlik va hayvonlarga g'amxo'rlik qilish tajribasini sezilarli darajada kamaytirmoqda. Natijada bolalarda tabiatga nisbatan sun'iy, faqat kitob va ekrandan olingan bilimlarga asoslangan tasavvur shakllanadi, bu esa ekologik madaniyatning amaliy-xulq-atvor komponenti yetarlicha rivojlanmasligiga olib keladi. Shu sababli maktab, oila va jamiyat hamkorligida tashkil etiladigan maqsadli pedagogik ta'sir muhim ahamiyat kasb etadi. Tadqiqot muammosining ilmiy yangiligi shundaki, unda ekologik madaniyatni shakllantirish jarayoni alohida-alohida tadbirlar yig'indisi sifatida emas, balki bilim, munosabat va xulq-atvorni izchil bog'lovchi yaxlit pedagogik tizim sifatida ko'rib chiqiladi. Bundan tashqari, ishlab chiqilgan metodikaning samaradorligi real pedagogik tajriba-sinov sharoitida, miqdoriy ko'rsatkichlar asosida isbotlab beriladi, bu esa natijalarning amaliy ahamiyatini oshiradi.

## MATERIALLAR VA METODLAR

Tadqiqot 2025–2026 o'quv yilida umumta'lim maktablarining boshlang'ich sinflarida olib borildi. Tajriba-sinov ishlarida jami 84 nafar o'quvchi (2 ta 3-sinf) qatnashdi, ulardan 42 nafari tajriba guruhi, 42 nafari esa nazorat guruhi sifatida belgilandi. Tajriba guruhida ekologik madaniyatni shakllantirishga qaratilgan maxsus ishlab chiqilgan metodika – integrallashgan darslar, tabiat bilan bevosita muloqot, loyiha faoliyati va o'yin texnologiyalari qo'llanildi. Nazorat guruhida esa an'anaviy ta'lim dasturi asosida darslar olib borildi.

Tadqiqot jarayonida quyidagi ilmiy-pedagogik metodlardan foydalanildi (1-jadval):

| № | Metod nomi | Qo'llanish maqsadi |
|---|---|---|
| 1 | Kuzatish | O'quvchilarning tabiatga, o'simlik va hayvonlarga bo'lgan munosabatini tabiiy sharoitda aniqlash |

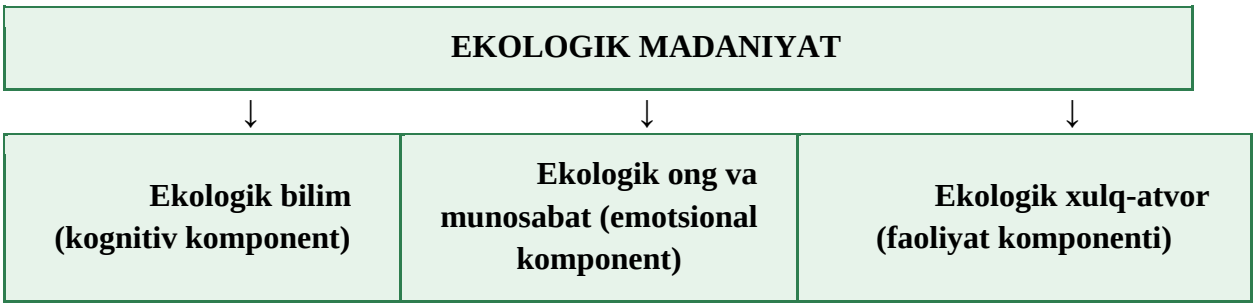
| | | |
|---|---|---|
| 2 | So'rovnoma va anketa | O'quvchilarning ekologik bilim darajasi va qiziqishlarini o'rganish |
| 3 | Pedagogik tajriba-sinov | Ishlab chiqilgan metodika samaradorligini tekshirish (tajriba va nazorat guruhlari) |
| 4 | Test topshiriqlari | O'quvchilarning ekologik bilim, ko'nikma va malakalarini baholash |
| 5 | Statistik tahlil | Olingan natijalarni miqdoriy jihatdan qayta ishlash va tahlil qilish |

1-jadval. Tadqiqotda qo'llanilgan metodlar

Tajriba-sinov ishlari uch bosqichda tashkil etildi: aniqlovchi (dastlabki diagnostika), shakllantiruvchi (maxsus metodika asosida o'quv jarayonini tashkil etish, 3 oy davomida) va nazorat (yakuniy diagnostika) bosqichlari. Har bir bosqichda o'quvchilarning ekologik bilim, munosabat va xulq-atvor ko'rsatkichlari test topshiriqlari va kuzatish varaqalari yordamida baholandi hamda uch darajaga (yuqori, o'rta, quyi) ajratildi.

**NATIJALAR**

Ekologik madaniyat murakkab, ko'p qirrali tuzilishga ega bo'lib, u uchta asosiy tarkibiy qismdan iborat ekanligi tadqiqot davomida asoslandi. Ushbu tarkibiy qismlarning o'zaro bog'liqligi quyidagi sxemada aks ettirilgan (1-sxema):




1-sxema. Ekologik madaniyatning tarkibiy qismlari

Tajriba-sinov ishlarining dastlabki bosqichida ikkala guruhda ham o'quvchilarning ekologik madaniyat ko'rsatkichlari deyarli bir xil darajada, ya'ni asosan o'rta va quyi darajada ekanligi aniqlandi. Shakllantiruvchi bosqichdan so'ng o'tkazilgan yakuniy diagnostika natijalari tajriba guruhida sezilarli ijobiy o'zgarishlarni ko'rsatdi (2-jadval):

| Ko'rsatkichlar | Tajriba guruhi | Tajriba guruhi | Nazorat guruhi | Nazorat guruhi |
|---|---|---|---|---|

| | (dastlab) | (yakunda) | (dastlab) | (yakunda) |
|---|---|---|---|---|
| Yuqori daraja (%) | 14,2 | 46,8 | 15,0 | 21,3 |
| O'rta daraja (%) | 38,5 | 41,0 | 39,1 | 44,6 |
| Quyi daraja (%) | 47,3 | 12,2 | 45,9 | 34,1 |

2-jadval. Tajriba va nazorat guruhlarida ekologik madaniyat darajalarining dinamikasi

Jadvaldan ko'rinib turibdiki, tajriba guruhida yuqori daraja ko'rsatkichi 14,2 foizdan 46,8 foizga, ya'ni deyarli 3,3 baravarga oshgan. Shu bilan birga, quyi daraja ko'rsatkichi 47,3 foizdan 12,2 foizga tushgan. Nazorat guruhida ham ma'lum darajada ijobiy o'zgarishlar kuzatilgan bo'lsa-da (yuqori daraja 15,0 foizdan 21,3 foizga oshgan), bu o'zgarishlar tajriba guruhidagiga nisbatan ancha sust bo'lgan. Bu esa ishlab chiqilgan metodikaning yuqori pedagogik samaradorligidan dalolat beradi.

Ekologik madaniyatni shakllantirish jarayonining bosqichma-bosqich tashkil etilishi quyidagi sxemada umumlashtirilgan (2-sxema):

**Nazariy tayyorgarlik** → **Amaliy-tajriba mashg'ulotlari** → **Loyiha va sayohatlar** → **Natija: ekologik madaniyat**

2-sxema. Ekologik madaniyatni shakllantirish jarayonining bosqichlari

Tadqiqot davomida shuningdek, o'quvchilarning tabiatga bo'lgan qiziqishi ortganligi, ekologik mavzudagi loyihalarda faol ishtirok etganligi, sinfda va maktab hovlisida tozalikka rioya qilish, o'simliklarni parvarish qilish kabi xulq-atvor ko'rinishlari kuzatuvchi o'qituvchilar tomonidan alohida qayd etildi.

## MUHOKAMA

Olingan natijalar boshlang'ich sinf o'quvchilarida ekologik madaniyatni shakllantirishda kompleks, ya'ni bilim, munosabat va xulq-atvorni birlashtirgan yondashuvning yuqori samaradorlik berishini tasdiqlaydi. Faqat nazariy bilim berish bilan cheklanish (an'anaviy ta'lim, nazorat guruhida qo'llanilgan usul) ekologik ongni shakllantirishda yetarli natija bermasligi, aksincha, amaliy faoliyat, tabiat bilan bevosita muloqot va loyiha ishlari orqali o'rganish ancha samarali ekanligi aniqlandi.

Bu natijalar ekologik ta'lim sohasidagi zamonaviy pedagogik nazariyalarga ham

mos keladi, unga ko'ra bola shaxsiy tajriba orqali olgan bilimlarini chuqurroq va uzoq muddat eslab qoladi. Shu bilan birga, tadqiqot natijalari o'qituvchining roli, ya'ni uning shaxsiy namunasi va ekologik masalalarga bo'lgan munosabati o'quvchilarga bevosita ta'sir ko'rsatishini ham ko'rsatdi.

Tadqiqotning cheklovlari sifatida namunaning nisbatan kichik hajmi (84 nafar o'quvchi) va faqat bitta hududdagi maktablarda o'tkazilganligini keltirish mumkin. Kelgusi tadqiqotlarda namunani kengaytirish, turli mintaqalar va yosh guruhlarini qamrab olish tavsiya etiladi. Shuningdek, ekologik madaniyatni shakllantirishda oila va jamoatchilikning roli alohida tadqiqot mavzusi bo'lishi mumkin. Amaliyotda qo'llash nuqtai nazaridan, olingan natijalar boshlang'ich sinf o'qituvchilariga quyidagi jihatlarga alohida e'tibor qaratishni taqozo etadi: birinchidan, darslarni faqat nazariy bayonot bilan cheklamasdan, o'quvchilarni bevosita kuzatish va tajriba faoliyatiga jalb etish; ikkinchidan, ekologik mavzularni boshqa fanlar (ona tili, matematika, tasviriy san'at) bilan integratsiyalashgan holda o'qitish; uchinchidan, sinfdan tashqari tadbirlar – ekologik ertaliklar, "Yashil dars", maktab bog'ida amaliy mashg'ulotlar kabi shakllardan muntazam foydalanish. Bunday yondashuv nafaqat bilim, balki barqaror ekologik odatlarning shakllanishiga xizmat qiladi.

**XULOSA**

O'tkazilgan tadqiqot natijalariga asoslanib, quyidagi xulosalarga kelish mumkin:

1. Boshlang'ich sinf davri o'quvchilarda ekologik madaniyatni shakllantirish uchun eng samarali va qulay davr hisoblanadi, chunki bu yoshdagi bolalar tabiatga nisbatan yuqori qiziqish va his-tuyg'u bilan yondashadilar.

2. Ekologik madaniyat bilim, munosabat va xulq-atvor kabi uchta o'zaro bog'liq komponentdan iborat bo'lib, uni shakllantirish jarayoni ushbu uchala yo'nalishni qamrab olishi zarur.

3. Integrallashgan darslar, amaliy-tajriba mashg'ulotlari, loyiha faoliyati va tabiat bilan bevosita muloqotga asoslangan metodika an'anaviy ta'limga nisbatan sezilarli darajada yuqori natija beradi.

4. Boshlang'ich ta'lim muassasalarida ekologik tarbiya ishlarini tizimli tashkil etish, o'qituvchilarning ekologik-pedagogik tayyorgarligini oshirish, o'quv dasturlariga amaliy-loyihaviy topshiriqlarni ko'proq kiritish tavsiya etiladi.

Xulosa qilib aytganda, boshlang'ich sinf o'quvchilarida ekologik madaniyatni shakllantirish nafaqat ta'lim tizimining, balki butun jamiyatning barqaror rivojlanishi va kelajak avlodning ekologik xavfsizligini ta'minlashning muhim omili hisoblanadi.

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# OLIY TA'LIMDA JISMONIY TARBIYA O'QITUVCHILARINING RAQAMLI KOMPETENTLIGINI RIVOJLANTIRISHDA SUN'IY INTELLEKT VOSITALARIDAN FOYDALANISHNING PEDAGOGIK-DIDAKTIK IMKONIYATLARI

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***Annotatsiya.*** *Maqolada oliy ta'limda jismoniy tarbiya o'qituvchilarining raqamli kompetentligini rivojlantirishda sun'iy intellekt vositalaridan foydalanish imkoniyatlari tahlil qilinadi. DigCompEdu va UNESCOning o'qituvchilar uchun SI kompetensiyalari doirasi jismoniy tarbiya fanining motor-faoliyat xususiyatlariga moslashtiriladi. SI vositalarining darsni rejalashtirish, videoanalitika, individualizatsiya, monitoring va refleksiyadagi funksiyalari tizimlashtirilib, "Maqsad–Ma'lumot–Tahlil–Talqin–Audit" sikliga asoslangan inson nazoratidagi integratsiya modeli taklif etiladi.*

***Kalit so'zlar:*** *jismoniy tarbiya, raqamli kompetentlik, sun'iy intellekt, DigCompEdu, videoanalitika, individualizatsiya, pedagogik monitoring, inson nazorati.*

***Аннотация.*** *В статье рассматриваются возможности использования искусственного интеллекта для развития цифровой компетентности преподавателей физического воспитания в высшем образовании. Подходы DigCompEdu и Рамки компетенций ЮНЕСКО по ИИ адаптируются к двигательной специфике физического воспитания. Систематизированы функции ИИ в планировании занятий, видеоаналитике, индивидуализации, мониторинге и профессиональной рефлексии. Предложена авторская модель интеграции под контролем человека, основанная на цикле «Цель–Данные–Анализ–Интерпретация–Аудит».*

***Ключевые слова:*** *физическое воспитание, цифровая компетентность, искусственный интеллект, DigCompEdu, видеоаналитика, индивидуализация, педагогический мониторинг, человеческий контроль.*

***Abstract.*** *The article examines the use of artificial intelligence for developing the digital competence of physical education teachers in higher education. DigCompEdu and UNESCO's AI Competency Framework for Teachers are adapted to the motor-activity specificity of physical education. AI functions in lesson planning, video analytics, personalisation, monitoring and professional reflection are systematised. A human-supervised integration model based on the Goal–Data–Analysis–Interpretation–Audit cycle is proposed as a conceptual framework for pedagogically responsible AI use.*

***Keywords:*** *physical education, digital competence, artificial intelligence, DigCompEdu, video analytics, personalisation, pedagogical monitoring, human oversight.*

## KIRISH

Raqamli transformatsiya ta'lim jarayonida faqat texnik vositalar sonining ortishi bilan emas, balki o'qituvchining rejalashtirish, o'qitish, baholash va refleksiya faoliyatining yangilanishi bilan tavsiflanadi. Generativ modellar, kompyuter ko'rishi va o'quv analitikasining ta'limga kirib kelishi raqamli kompetentlik mazmunini kengaytirib, o'qituvchidan algoritmik natijani tanqidiy talqin qilish, ma'lumotlarning ishonchliligini tekshirish va pedagogik javobgarlikni saqlashni talab etmoqda [3–5].

O'zbekistonda sun'iy intellektni rivojlantirish davlat siyosatining ustuvor yo'nalishlaridan biri sifatida belgilangan. 2024-yil 14-oktabrdagi PQ–358-son qaror bilan Sun'iy intellekt texnologiyalarini 2030-yilga qadar rivojlantirish strategiyasi tasdiqlangan, 2025-yil 22-oktabrdagi PF–189-son Farmonda esa ta'lim dasturlariga SIga oid bilim va ko'nikmalarni bosqichma-bosqich kiritish vazifalari belgilangan [1; 2]. Bu holat oliy ta'limdagi jismoniy tarbiya o'qituvchilarining kasbiy raqamli tayyorgarligiga yangi talablarni yuzaga keltiradi.

Jismoniy tarbiyada ta'lim natijasi harakat texnikasi, jismoniy yuklama, koordinatsiya, xavfsizlik va individual funksional imkoniyatlar bilan bog'liq. Shu sababli raqamli vositalarni qo'llash motor faoliyatni kuzatish, o'lchash va pedagogik talqin qilish metodikasi bilan uyg'unlashishi zarur. Maqolaning maqsadi — jismoniy tarbiya o'qituvchilarining raqamli kompetentligini rivojlantirishda SI vositalarining pedagogik-didaktik imkoniyatlarini tizimlashtirish va inson nazoratiga asoslangan integratsiya modelini asoslashdir.

## ASOSIY QISM

### Tadqiqot metodologiyasi

Tadqiqot nazariy-tahliliy xarakterga ega bo‘lib, xalqaro kompetensiya ramkalari, normativ-huquqiy hujjatlar va 2023–2026-yillarda e’lon qilingan ilmiy manbalar qiyosiy hamda kontent-tahlil qilindi. DigCompEdu doirasining kasbiy hamkorlik, raqamli resurslar, o‘qitish, baholash, o‘quvchini qo‘llab-quvvatlash va raqamli kompetentlikni rivojlantirish yo‘nalishlari UNESCOning inson markazli fikrlash, SI etikasi, SI pedagogikasi va kasbiy rivojlanish komponentlari bilan bog‘landi [3; 5].

**Natijalar va muhokama**

Tahlil shuni ko‘rsatadiki, jismoniy tarbiya o‘qituvchisining raqamli kompetentligi texnologiyani ishlata olish bilangina cheklanmaydi. Video yozib olish yoki generativ SIga so‘rov berish didaktik qiymatni o‘z-o‘zidan ta’minlamaydi. Raqamli vosita aniq pedagogik maqsadga xizmat qilganda, algoritmik natija o‘qituvchining kuzatuvi va metodik mezonlari bilan solishtirilganda hamda talaba uchun tushunarli qayta aloqaga aylantirilgandagina kasbiy kompetensiyaning tarkibiy qismiga aylanadi [6; 7].

SI vositalarining jismoniy tarbiyadagi asosiy funksiyalarini to‘rtta yo‘nalishda umumlashtirish mumkin. Birinchidan, generativ SI dars maqsadlari, mashq variantlari va metodik materiallarni moslashtirishda yordam beradi. Ikkinchidan, kompyuter ko‘rishi va videoanalitika harakat fazalari, trayektoriya va bajarilish dinamikasini kuzatishga imkon beradi. Uchinchidan, o‘quv analitikasi va adaptiv tizimlar individual topshiriq, progress va tezkor qayta aloqani tashkil etishga xizmat qiladi. To‘rtinchidan, dars natijalarini raqamli umumlashtirish o‘qituvchining refleksiv kasbiy rivojlanishini qo‘llab-quvvatlaydi [6; 8]. Barcha holatlarda yakuniy pedagogik qaror o‘qituvchi tomonidan qabul qilinishi lozim.

Individualizatsiya jismoniy tarbiyada alohida ahamiyatga ega, chunki talabalar tayyorgarligi, harakat tajribasi va o‘zlashtirish sur’ati bir xil emas. SI asosidagi analitika o‘qituvchi belgilagan mezonlar asosida mashq murakkabligini bosqichlashtirish, progressni vaqt bo‘yicha kuzatish va individual qayta aloqani shakllantirishga ko‘maklashadi. Biroq algoritm tomonidan tavsiya etilgan yuklama yoki topshiriq talabaning real holati va mashg‘ulot sharoitini to‘liq aks ettirmasligi mumkin. Shuning uchun texnologik tavsiya metodik hukmni almashtirmaydi, balki uni dalillar bilan boyitadi.

**1-jadval. Jismoniy tarbiyada SI vositalari va raqamli kompetentlikning o‘zaro bog‘liqligi**

| SI/raqamli vosita | Didaktik vazifa | O‘qituvchi nazorati |
|---|---|---|
| Generativ SI | Dars rejasini va topshiriqlarni moslashtirish | Mazmun, xavfsizlik va metodik moslikni tekshirish |

| | | |
|---|---|---|
| Videoanalitika | Harakat texnikasi va bajarilish dinamikasini tahlil qilish | Algoritmik xatoni pedagogik kuzatuv bilan solishtirish |
| O‘quv analitikasi | Progress, faollik va individual topshiriqlarni monitoring qilish | Maxfiylik, rozilik va baholash adolatliligini ta’minlash |
| SI asosidagi refleksiya | Dars natijalarini umumlashtirish va keyingi qarorlarni rejalashtirish | SI tavsiyasini tajriba va metodik mezonlar bilan baholash |

Jadval mazmuni SI vositasining qiymati uning texnik imkoniyatidan ko‘ra pedagogik vazifaga qanchalik asosli biriktirilganiga bog‘liqligini ko‘rsatadi. Shu bois raqamli kompetentlik “qaysi vositani biladi?” mezoni bilan emas, “qaysi pedagogik muammoni qaysi ma’lumot va mezon asosida hal qila oladi?” mezoni bilan baholanishi maqsadga muvofiq.

Raqamli kompetentlikni baholashda ham refleksiya muhim. DigCompEdu asosidagi SELFIEforTEACHERS vositasining 3218 nafar o‘qituvchi ishtirokidagi validatsiyasi tuzilmali o‘z-o‘zini baholash o‘qituvchining kuchli va rivojlantirilishi zarur bo‘lgan jihatlarini aniqlashga yordam berishini ko‘rsatgan [9]. Jismoniy tarbiya kontekstida bunday baholash umumiy raqamli ko‘nikmalar bilan bir qatorda harakat sifatini tahlil qilish, xavfsizlik, individual progress va ma’lumotlarni pedagogik talqin qilish indikatorlarini ham qamrab olishi lozim.

Jismoniy tarbiyada video, antropometrik yoki funksional ko‘rsatkichlar shaxsiy ma’lumot sifatida alohida ehtiyotkorlikni talab qiladi. UNESCO hujjatlarida inson markazli yondashuv, maxfiylik, pedagogik validatsiya va kasbiy agentlik tayanch prinsip sifatida belgilanadi [3; 4]. Demak, o‘qituvchi SI natijasini avtomatik hukm sifatida emas, qarorni dalillar bilan qo‘llab-quvvatlovchi yordamchi vosita sifatida qabul qilishi kerak.

Shu bilan birga, raqamli kompetensiya ramkalarini qat’iy texnologiyalar ro‘yxatiga aylantirish maqsadga muvofiq emas. McGarr bunday ramkalar kasbiy rivojlanishga yo‘nalish berishi bilan birga, texnologiyadan foydalanishni ortiqcha standartlashtirish xavfini ham yuzaga keltirishini ta’kidlaydi [10]. Shuning uchun jismoniy tarbiya o‘qituvchisining raqamli kompetentligi mavjud infratuzilma, pedagogik vaziyat, talaba ehtiyoji va o‘qituvchining professional avtonomiyasini hisobga oladigan moslashuvchan konstrukt sifatida qaralishi kerak.

**Mualliflik konseptual modeli** .SI bilan ishlashni pedagogik jihatdan tartibga solish uchun “Maqsad–Ma’lumot–Tahlil–Talqin–Audit” sikli taklif etiladi. Maqsad bosqichida o‘qituvchi aniq didaktik vazifani belgilaydi; Ma’lumot bosqichida faqat shu vazifa uchun zarur, ishonchli va qonuniy ma’lumot tanlanadi; Tahlilda SI vositasi

ma’lumotni qayta ishlaydi; Talqinda algoritmik natija talabaning tayyorgarligi, mashq sharoiti va metodik mezonlar bilan solishtiriladi; Auditda esa qarorning aniqligi, etikligi va pedagogik natijasi qayta tekshiriladi. Modelning afzalligi — uning muayyan platformaga bog‘lanmasligi va turli SI vositalarida insonning professional hukmini markazda saqlashidir.

## XULOSA

Oliy ta’limda jismoniy tarbiya o‘qituvchisining raqamli kompetentligini SI vositalaridan foydalanish ko‘nikmasi bilan tenglashtirish yetarli emas. Mazkur kompetentlik pedagogik maqsadni aniqlash, mos raqamli vosita va ma’lumotni tanlash, algoritmik natijani tanqidiy talqin qilish, individual qayta aloqa va monitoringni tashkil etish hamda etik-huquqiy mas’uliyatni saqlashning integrativ birligidan iborat.

Jismoniy tarbiyada SI vositalarining istiqbolli didaktik funksiyalari videoanalitika, individualizatsiya, progress monitoringi, dalillarga asoslangan baholash va kasbiy refleksiyada namoyon bo‘ladi. Biroq ularning samaradorligi inson nazorati, maxfiylik, algoritmik xatolarni tekshirish va pedagogik maqsadning ustuvorligi bilan belgilanadi. Taklif etilgan “Maqsad–Ma’lumot–Tahlil–Talqin–Audit” modeli jismoniy tarbiya o‘qituvchilarini SI bilan pedagogik jihatdan mas’uliyatli ishlashga tayyorlash uchun konseptual asos bo‘lib xizmat qilishi mumkin.

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# THE ROLE OF DIGITAL TECHNOLOGIES IN TEACHING ELECTRICAL ENGINEERING STUDENTS

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***Abstract.*** *This thesis examines the role and pedagogical potential of digital educational technologies in the training of Electrical Engineering students. It substantiates that the integration of artificial intelligence, virtual laboratories, simulation software, distance learning platforms, and interactive educational resources into the modern educational process contributes to strengthening students' theoretical knowledge, enhancing their practical skills, and developing their professional competencies. The study emphasizes that digital technologies create an innovative learning environment that promotes active learning, independent problem-solving, and effective preparation for the demands of the contemporary electrical engineering industry.*

***Keywords:*** *digital education, electrical engineering, professional competence, artificial intelligence, virtual laboratory, simulation.*

**Introduction.** In recent years, the rapid development of digital technologies has brought about significant transformations in the field of education. The need to overcome the limitations of traditional teaching methods while ensuring the continuity, accessibility, and flexibility of education has led to the emergence of a digital learning environment. Today, modern digital platforms, online courses, artificial intelligence systems, interactive learning tools, and multimedia resources are being widely integrated into the educational process. These approaches are particularly important in rapidly evolving technical fields such as Electrical Engineering, where continuous technological advancement requires innovative teaching and learning strategies [1].

The ongoing process of digital transformation has created a demand for new educational approaches in higher education institutions. In particular, the application of modern digital technologies in Electrical Engineering education has become one of the key factors in improving the professional training of future engineers. Alongside traditional teaching methods used in disciplines such as electrical power engineering, electrical engineering, electronics, and automation, the integration of digital

educational technologies significantly enhances the quality and effectiveness of the learning process. These technologies provide students with greater opportunities for interactive learning, practical experimentation, independent study, and the development of professional competencies required by modern industry [2].

**Main Part**. In today's era of globalization, digital technologies are developing at an unprecedented pace, requiring every sector, including education, to keep up with technological advancements. In an age characterized by the rapid generation and dissemination of information, the integration of digital technologies into the educational process has become a crucial factor in improving the quality of education and fostering socially active, highly skilled graduates. However, despite significant efforts, the quality of education has not always reached the expected level. Studies conducted by Kramarenko N.S., Kvashin A.Yu., Karakozova S.D., Uvarova A.Yu., and Akimova O.B. indicate that the digital transformation of educational institutions has been slow and uneven due to limited resources and insufficient digital literacy among educators. Consequently, many educational reforms implemented over the past decades have not achieved the anticipated outcomes, highlighting the need for more effective strategies in digital education [3–4].

The use of digital technologies has become increasingly relevant through the integration of cloud computing, high-speed Internet, smart digital devices, artificial intelligence algorithms, digital twins, the Internet of Things (IoT), and virtual and augmented reality technologies into the teaching and learning process. In Electrical Engineering education, these technologies enable students to model, analyze, and control complex electrical systems and equipment within virtual environments, thereby enhancing both their theoretical understanding and practical competencies. Furthermore, digital technologies facilitate access to remote laboratories, simulation software, and intelligent learning platforms, allowing students to conduct experiments safely and efficiently regardless of time and location.

The rapid advancement of digital technologies is also transforming the industrial sector by shifting manufacturing from standardized mass production toward digitalized, automated, and flexible production systems. As a result, Electrical Engineering graduates are expected to possess not only solid engineering knowledge but also advanced digital competencies, including the ability to work with smart manufacturing systems, industrial automation, digital control technologies, and intelligent monitoring systems. Therefore, integrating digital technologies into Electrical Engineering curricula has become an essential prerequisite for preparing competitive specialists

capable of meeting the demands of Industry 4.0 and the emerging Industry 5.0 paradigm [5].

The Role of Digital Technologies in Electrical Engineering Education

Digital technologies have become an integral component of modern Electrical Engineering education, providing innovative approaches to teaching, learning, and professional training. Their integration into the educational process enhances students' understanding of complex engineering concepts, strengthens practical skills, and improves problem-solving abilities. Unlike traditional teaching methods, digital technologies create interactive, flexible, and student-centered learning environments that support both theoretical and practical learning. Table 1

| Aspect | Description |
|---|---|
| Safe Practical Learning Environment | Digital technologies enable students to acquire practical skills in working with high-voltage networks and complex electrical equipment without being exposed to the risks associated with real-life electrical systems. Virtual laboratories and simulation software provide a safe environment for conducting experiments, troubleshooting faults, and practicing operational procedures. |
| Resource Efficiency | The use of virtual models and digital simulations of expensive electrical equipment and laboratory facilities significantly reduces the financial costs of purchasing, maintaining, and upgrading physical laboratory resources while ensuring high-quality practical training. |
| Visualization of Electrical Processes | Specialized software allows students to visualize otherwise invisible phenomena such as electric fields, current flow, voltage distribution, electromagnetic processes, and circuit behavior. This improves conceptual understanding and facilitates the learning of complex electrical engineering concepts. |

In our opinion, the integration of digital educational technologies into the teaching process of Electrical Engineering students plays a crucial role in significantly improving the quality of education. Virtual laboratories, simulation software, and intelligent digital learning tools foster students' independent thinking, analytical abilities, and engineering problem-solving skills. These technologies enable learners to apply theoretical knowledge in realistic virtual environments, thereby strengthening their practical competencies and professional confidence.

Moreover, digital educational technologies promote active learning, collaborative project work, and continuous self-directed learning, which are essential competencies for modern engineers. Consequently, the effective implementation of

these technologies contributes to the preparation of highly qualified, innovative, and competitive Electrical Engineering graduates who are capable of meeting the technological challenges and workforce demands of the digital economy and Industry 4.0 [6].

**Conclusion**. The use of digital educational technologies in the training of Electrical Engineering students is one of the important factors in improving the effectiveness of education. The integration of virtual laboratories, simulation software, distance learning platforms, and artificial intelligence technologies into the educational process contributes to the development of students' theoretical knowledge, practical skills, and professional competencies. In the future, the wider implementation of digital technologies in teaching Electrical Engineering disciplines will make it possible to prepare modern, competitive, and innovative-thinking specialists.

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# WRITING COMPETENCE OF PRE-SERVICE ENGLISH TEACHERS: STRUCTURAL COMPONENTS AND THEIR FUNCTIONAL INTERRELATION

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***Abstract.*** *This paper presents a theoretical analysis of the writing competence of pre-service English teachers and suggests a four-component framework consisting of linguistic, discourse-pragmatic, strategic, and reflective components. The linguistic component concerns accurate and suitable application of language resources. The discourse-pragmatic component involves organizing ideas coherently and adapting a text to its audience, intent, genre, and context. The strategic component encompasses planning, drafting, revision, and editing. The reflective component concerns learning from feedback and transferring that learning to later tasks. Writing proficiency is hence perceived as a cohesive professional framework founded on the functional interrelation of these elements.*

***Key words:*** *Writing proficiency; linguistic component; discourse-pragmatic component; strategic component; reflective component; pre-service English teachers.*

***Аннотация.*** *В данной статье представлен теоретический анализ письменной компетенции будущих учителей английского языка и предложена четырехкомпонентная модель, включающая лингвистический, дискурсивно-прагматический, стратегический и рефлексивный компоненты. Лингвистический компонент касается точного и уместного использования языковых ресурсов. Дискурсивно-прагматический компонент включает в себя последовательную организацию идей и адаптацию текста к аудитории, цели, жанру и контексту. Стратегический компонент охватывает планирование, написание черновика, пересмотр и редактирование. Рефлексивный компонент, представленный как авторское дополнение, касается обучения на основе обратной связи и переноса этого обучения на последующие задачи. Таким образом, письменная компетенция интерпретируется как интегрированная*

*профессиональная конструкция, сформированная посредством функциональной взаимосвязи этих компонентов.*

***Ключевые слова:*** *письменная компетенция, будущие учителя английского языка, лингвистический компонент, дискурсивно-прагматический компонент, стратегический компонент, рефлексивный компонент.*

***Annotatsiya.*** *Ushbu maqolada ingliz tili o'qituvchilarining yozma kompetentsiyasining nazariy tahlili keltirilgan va lingvistik, diskurs-pragmatik, strategik va refleksiv komponentlardan iborat to‘rt komponentli tizim taklif qilingan. Lingvistik komponent til resurslaridan aniq va to‘g‘ri foydalanish bilan bog‘liq. Diskurs-pragmatik komponent g‘oyalarni izchil tashkil etishni va matnni auditoriya, maqsad, janr va kontekstga moslashtirishni o‘z ichiga oladi. Strategik komponent rejalashtirish, loyihalash, qayta ko‘rib chiqish va tahrirlashni qamrab oladi. Mualliflik kengaytmasi sifatida kiritilgan refleksiv komponent fikr-mulohazalardan o‘rganish va ushbu o‘rganishni keyingi vazifalarga o‘tkazish bilan bog‘liq. Shuning uchun yozma kompetentsiya ushbu komponentlarning funktsional o‘zaro bog‘liqligi orqali shakllangan integral professional konstruksiya sifatida talqin qilinadi.*

***Kalit so‘zlar:*** *yozuv kompetensiyasi, bo‘lajak ingliz tili o‘qituvchilari, lingvistik komponent, diskursiv-pragmatik komponent, strategik komponent, refleksiv komponent.*

**Introduction.** Writing is crucial to the professional and scholarly development of prospective English educators. Future educators develop instructional plans, assignments, pedagogical guidelines, formal correspondence, conference papers, and scholarly writings. They must evaluate student writing and provide comments that facilitates growth. These activities necessitate more than an understanding of grammar. An author must select and organize concepts, contemplate the target audience, manage the writing procedure, and revisit the manuscript if the preliminary draft fails to fulfilll its purpose.

Hyland perceives second language writing as an endeavor that integrates language, text, compositional processes, intent, audience, and context (Hyland, 2003, pp. 18-25). He additionally refers to grammatical, discourse, sociolinguistic, and strategic competencies as essential tools for L2 authors (Hyland, 2003, p. 32). Classroom observation indicates that pupils familiar with grammatical rules may still struggle to articulate a coherent thesis, logically develop their thoughts, tailor a document for an audience, or incorporate comments in subsequent tasks. Frequently, the evaluation of drafts is limited to grammar, spelling, and punctuation.

Writing is multifaceted. There exist recognized frameworks that advocate for this. Bachman posits that communicative language proficiency is the interplay of linguistic skill, strategic competence, and contextual factors. He differentiates between organizational and pragmatic aspects and cautions that the elements in a diagram seem distinct, although in real language application, they interrelate with each other and the context (Bachman, 1990, pp. 84-88). The CEFR perceives linguistic, sociolinguistic, and pragmatic competencies as interrelated facets of language utilization (Council of Europe, 2020, pp. 129–141).

The aim of this research is to analyze the structure of pre-service English teacher's writing competence, to organize its primary elements, and to clarify their functional relationships. The research methodology encompasses theoretical analysis, comparative analysis, systematization, and conceptual synthesis. Writing competence is interpreted as an integrated professional construct consisting of linguistic, discourse-pragmatic, strategic, and reflective components. The reflective component is proposed as an authorial extension of existing models

**The Linguistic component**

The linguistic component includes the tools required for precise and clear written communication: mastery of syntax, extensive vocabulary, suitable vocabulary use, diversity in sentence construction, as well as spelling and punctuation. Linguistic proficiency within the CEFR framework is characterized by overall linguistic breadth, vocabulary diversity and mastery, grammatical precision, and orthographic accuracy (Council of Europe, 2020, pp. 129-136). A proficiency encompasses more than merely avoiding errors. It pertains to the breadth of vocabulary a writer can employ and their mastery over that vocabulary.

A piece of writing may have several evident mistakes yet remain grounded in basic structures, recurring phrases, and ambiguous terms. This type of writing is accurate in terms of phrase structure but falls short in conveying relationships or nuances of meaning. However, complexity is not an objective in and of itself; the use of language must align with the desired meaning and remain within the writer's grasp. a future teacher, linguistic competence serves an extra instructional purpose. The teacher must recognize the students' mistakes, explain the underlying reasons, propose suitable solutions, and create exercises for recurring issues.

**The Discourse-Pragmatic component**

Grammatically accurate sentences do not ensure a successful composition. Concepts should be interconnected, organized, and elaborated upon a fundamental theme. Bachman's textual proficiency encompasses the principles of linking statements

into a cohesive narrative thru coherence and rhetorical structure (Bachman, 1990, pp. 87-90). This facet of communication, within the current structure, is defined by a distinct central theme, paragraph consistency, logical advancement, cohesiveness, coherence, and sufficient backing.

The pragmatic component concerns the connection between the text and the communicative context. One must take into account the degree of detail, tone, substantiation, register, and structure appropriate for a communication to a friend, an elucidation for school students, a university dissertation, and a conference presentation. Hyland's genre-oriented perspective perceives writing as a means of conveying messages to readers for socially acknowledged objectives, rather than merely generating forms devoid of context (Hyland, 2003, pp. 18-25). The discourse-pragmatic element is characterized as the capacity to structure concepts into a cohesive narrative and to tailor that narrative to its audience, intent, genre, and situation. The practical characteristics of the CEFR encompass thematic development, coherence and cohesiveness, adaptability, and propositional accuracy (Council of Europe, 2020, p. 137-141).

This component facilitates performance and guidance for pre-serviceteachers. A teacher should be able to explain the reasons a paragraph composed of grammatically correct sentences may be challenging to comprehend. Feedback needs to address an unclear thesis, weak support, sudden shifts of topic, inappropriate register, and the overall communicative effect of the text, not only surface errors.

**The Strategic Component**

Writing begins with decisions taken prior to composing the initial sentence. The author examines the task, determines a goal, refines the subject, produces concepts, selects data, and formulates a suitable framework. Bachman's strategic competence connects linguistic knowledge to the demands of specific contexts thru evaluation, preparation, and implementation (Bachman, 1990, pp. 98-103).

The strategic component of this approach include task analysis, goal setting, brainstorming, outlining, drafting, use of reference resources, time management, revision, and editing. The CEFR also represents communicative techniques related to planning, execution, monitoring, and repair (Council of Europe, 2020, p. 33-35). It is essential to discern a meaningful distinction between revision and editing. Revision pertains to the thesis, supporting evidence, structural structure, and idea growth, while editing focuses on grammar, vocabulary, spelling, and punctuation. When both are reduced to the stage of proofreading, the argument may appear more coherent philosophically, however remains feeble.

Future educators are required to implement these tactics as well as instruct others in their application. They should break down intricate work into feasible segments, pinpoint areas where a learner struggles, and select assistance suitable for the issue. Input on the procedure is especially beneficial as it allows students to recognize the consequences of their choices while revisions remain feasible. Teacher-student discussions can reveal strengths and flaws and lead to a definitive revision strategy when students engage actively (Hyland, 2003, pp. 192-193).

**Reflective component**

The reflective component is introduced as an enhancement by the author. The learner's capacity to evaluate the writing process and the completed text, identify strengths and persistent issues, and utilize this understanding in subsequent tasks;

Did the text fulfilll its intended purpose?

Was the central concept evident and substantiated?

Is the target audience able to comprehend the logic?

Did any alterations occur during the revision process?

What advancements may be observed across various tasks?

This constitutes an analysis grounded in Schön's reflective approach. Reflection-in-action defines implicit knowledge and enables a practitioner to scrutinize the conceptualization of an issue and modify their actions as necessary (Schön, 1983, pp. 59-69). In the writing process, the student not only edits an unsuccessful passage but also considers the reasons for its failure, the choices that contributed to the issue, and what different approach could have been more effective. Correction addresses the immediate error; reflection transforms that occurrence into knowledge for subsequent actions.

Feedback does not automatically produce development. The present version is improved, although the lesson fails to be conveyed, as students might accept a revision without comprehending its necessity. Hyland advocates for peer feedback and introspective exercises in which authors articulate their attempts, successes, failures, and future intentions (Hyland, 2003, pp. 202-206). Self-assessment checklists, reflective notes, writing journals, error logs, peer-feedback forms, and portfolios may serve this function if they yield concrete objectives for the subsequent task. These practices enhance the capacity to provide constructive feedback and to contemplate pedagogical choices for aspiring educators.

**Functional Interrelation of the Components**

The four elements can be described individually for analytical reasons, although in practical writing, they do not function autonomously. Proper grammar cannot compensate for chaotic ideas or a lack of consideration for the audience. A thoroughly constructed argument may lack clarity if persistent lexical and syntactical issues obstruct comprehension. Ineffective planning results in the neglect of valuable concepts. Inadequate reflection allows for the recurrence of same issues. The quality of writing is consequently dictated by the organization of elements for a communicative objective.

The significance of each fluctuates during the writing process. Strategic proficiency is most apparent in task evaluation, objective formulation, concept development, and preparatory preparation before composition, whereas discourse-pragmatic awareness guides decisions regarding audience and genre. Linguistic tools influence meaning in the drafting process, while discourse-pragmatic proficiency structures meaning into paragraphs and broader portions. The writer use strategic and introspective methodologies to analyze comments and determine essential modifications to meaning, structure, or language during the revision phase. This distribution is not definitive, but rather comparative, as each additional component persists in functioning to some extent throughout the process.

The framework may also be provisionally associated with Design Thinking. Empathize focuses on the target audience; Define and Ideate pertain to articulating the writing challenge and brainstorming potential concepts; Prototype transforms those concepts into a preliminary text; Test and Reflect emphasize evaluation and enhancement. This mapping represents an authorial implementation rather than a categorization by Koh and associates. (Koh et al., 2015, pp. 109-110) aligns with their perspective that design encompasses the continual creation and enhancement of concepts, emphasizing that the caliber of the process holds equal significance to the end result. Its significance for composing for actual audiences is further reinforced by their focus on human-centricity, discernment, and introspection (Koh et al., 2015, pp. 4–5).

**Conclusion**

The writing proficiency of pre-service English teacherss cannot be adequately characterized by grammar, vocabulary, and spelling alone. The linguistic component enhances the precision and variety of the articulation. The discourse-pragmatic component structures meaning into a cohesive text suitable for its audience and intent. Strategic component encompasses the processes of planning, composing, revising, and editing. The reflective component enables students to evaluate experiences and use feedback in subsequent work.

The value of the four-component framework lies in the functional relationship it makes visible. Each element has a unique emphasis, although no single component is adequate independently. The distinct pre-services teachers must acquire the skills to enhance their own writing, comprehend student challenges, and make judicious instructional choices.

The framework may serve as theoretical basis for writing tasks, analytic assessment criteria, diagnosis of student needs, and writing instruction informed by Design Thinking. Nevertheless, it remains a theoretical proposition. The practical significance and the constraints of its elements ought to be examined thru empirical studies and classroom experimentation.

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# SHAXS XULQ-ATVORI DESTRUKTIV VA DEVIANT SHAKLLARINING OLDINI OLISHDA O‘Z-O‘ZINI NAZORAT QILISH FUNKSIYALARI VA ULARNING GENDER XUSUSIYATLARI

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***Annotatsiya.*** *Ushbu maqolada shaxs xulq-atvoridagi deviant va destruktiv shakllarning namoyon bo‘lishida o‘z-o‘zini nazorat qilish tizimidagi inhibitor, ya’ni to‘xtatuvchi funksiyalarning o‘rni hamda ularning gender spetsifikasi tahlil qilinadi. Tadqiqot xorijiy psixologik va kriminologik maktablarning fundamental nazariyalari va zamonaviy neyromorfologik (fMRT) tajribalar natijalariga tayanadi. Maqolada erkaklar va ayollarda impulsivlikni jilovlash, risk rag‘batiga javob reaksiyalari va sotsiomadaniy taqiqlarni qabul qilish mexanizmlari qiyosiy o‘rganilgan bo‘lib, olingan xulosalar shaxs xulq-atvorini korreksiya qilish va profilaktika tizimini takomillashtirishga xizmat qiladi.*

***Kalit so‘zlar:*** *o‘z-o‘zini nazorat qilish, inhibitor funksiyalar, gender xususiyatlari, deviant xulq-atvor, destruktivlik, impulsivlik, prefrontal qobiq, jinoyatning umumiy nazariyasi.*

***Abstract.*** *This article analyzes the role of inhibitory control functions within the self-regulation system in the manifestation of deviant and destructive behavioral patterns, alongside their gender specification. The study draws upon fundamental theories from foreign psychological and criminological schools, as well as the results of contemporary neuromorphological (fMRI) experiments. By comparatively examining the mechanisms of impulse inhibition, response to risk incentives, and the internalization of socio-cultural prohibitions in men and women, the findings serve to improve behavioral correction strategies and preventive frameworks.*

***Keywords:*** *self-control, inhibitory functions, gender differences, deviant behavior, destructiveness, impulsivity, prefrontal cortex, general theory of crime.*

***Аннотация.*** *В данной статье анализируется роль ингибиторных (тормозных) функций в системе самоконтроля при проявлении девиантных и деструктивных форм поведения личности, а также их гендерная специфика.*

*Исследование опирается на фундаментальные теории зарубежных психологических и криминологических школ, а также на результаты современных нейроморфологических (фМРТ) экспериментов. В работе проведен сравнительный анализ механизмов сдерживания импульсивности, реакций на риск-стимулы и восприятия социокультурных запретов у мужчин и женщин. Полученные выводы служат совершенствованию системы коррекции поведения личности и профилактических мер.*

***Ключевые слова:*** *самоконтроль, ингибиторные функции, гендерные особенности, девиантное поведение, деструктивность, импульсивность, префронтальная кора, общая теория преступности.*

**Kirish.** Zamonaviy differensial psixologiya, kriminologiya va ijtimoiy pedagogika oldida turgan eng dolzarb muammolardan biri — shaxs xulq-atvoridagi destruktiv va deviant tendensiyalarning etiologiyasini tushunish hamda ularning oldini olish mexanizmlarini ishlab chiqishdir. Jamiyatning jadal globallashuvi, raqamli makonning kengayishi va an’anaviy ijtimoiy institutlar ta’sirining zaiflashuvi sharoitida shaxsni salbiy ta’sirlardan va patologik impulslardan himoya qiluvchi asosiy qalqon uning ichki tizimi — o‘z-o‘zini nazorat qilish qobiliyatidir.

O‘z-o‘zini nazorat qilishning eng muhim komponenti uning inhibitor funksiyasi — taqiqlovchi, to‘xtatib qoluvchi nazorat hisoblanadi. Aynan mana shu funksiya inson ichida tug‘ilgan bir lahzalik agressiv impuls, qonunni buzishga bo‘lgan vasvasa yoki destruktiv xohish-istaklarni uzoq muddatli salbiy oqibatlarni anglash orqali sotsial to‘xtatib qoladi.

**Asosiy qism.** Uzoq yillar davomida kriminologiya va deviantologiya sohasida xulq-atvor og‘ishlari ko‘proq makroijtimoiy omillar, iqtisodiy yetishmovchilik, submadaniyatlar ta’siri bilan tushuntirib kelindi. Biroq, XXI asr psixologiyasidagi neyroimaging, ya’ni miyani fMRT orqali vizuallashtirish va uzoq muddatli kohort tadqiqotlar shuni ko‘rsatdiki, bir xil ijtimoiy muhitda o‘sgan, ammo jinsi turlicha bo‘lgan shaxslarning destruktiv qo‘zg‘atuvchilarga bo‘lgan ichki inhibitor reaksiyalari o‘rtasida tub farqlar mavjud.

Inhibitor nazorat tushunchasi psixologiyaga ham kognitiv, ham irodaviy jarayonlarning chorrahasi sifatida kirib kelgan. Kognitiv psixologiyada u “ijro etuvchi funksiyalar” tizimiga kiritiladi va shaxsning birinchi navbatda avtomatlashgan, instinktiv reaksiyalarini ongli ravishda bloklash qobiliyatini anglatadi.

Ushbu sohadagi fundamental metodologik asoslardan biri M. Gottfredson va T. Hirschi tomonidan ilgari surilgan “A General Theory of Crime” – “Jinoyatning umumiy nazariyasi” hisoblanadi[4]. Unga ko‘ra, har qanday deviant, delinkvent yoki jinoiy xulq-atvorning negizida shaxsda o‘z-o‘zini nazorat qilish darajasining pastligi yotadi.

Past o‘z-o‘zini nazorat qiluvchi shaxslarga quyidagi xususiyatlar xosdir:

- Darhol mukofot olishga intilish va kelajakni rejalashtira olmaslik;
- Vazifalarni intellektual emas, ko‘proq jismoniy yo‘l bilan hal qilishga moyillik;
- Tavakkalchilik va kuchli emotsional taassurotlarga bo‘lgan ochlik;
- Boshqalarning his-tuyg‘ulariga nisbatan egotsentrizm va empatiyaning pastligi.

Gender jihatidan olib qaralganda, ushbu nazariya asoschilari o‘g‘il bolalar va erkaklarda hayotning dastlabki bosqichlaridanoq past o‘z-o‘zini nazorat qilish elementlari ko‘proq namoyon bo‘lishini, bu esa ularni gender jihatidan deviant xulq-atvorga moyilligini ta’kidlaydilar.

Xorijiy differensial psixofiziologiyada deviantlikka qarshi kurashuvchi ikki bosqichli neyronal model qo‘llaniladi. Birinchi bosqich — qo‘zg‘alish, ya’ni tashqi stimullarga javoban miyaning emotsional markazlarida destruktiv impulsning tug‘ilishi. Ikkinchi bosqich — ingibitsiya, ya’ni prefrontal qobiq tomonidan ushbu impulsga cheklov qo‘yilishi.

Tadqiqotchi R. Piquero va uning hammualliflari o‘tkazgan cross-cultural – madaniyatlararo tajribalar shuni ko‘rsatdiki, qo‘zg‘alish darajasi erkak va ayollarda deyarli bir xil kechishi mumkin. Masalan, har ikkala jins vakillarida ham bir xil darajada kuchli jahl yoki agressiya qo‘zg‘atish mumkin, biroq ikkinchi bosqich — ya’ni impulsni jilovlovchi inhibitor to‘siqning ishlash kuchi va barqarorligida jiddiy gender assimetriyasi kuzatiladi[5].

Neyromorfolog olimlar E. Miller va J. Cohen o‘zlarining ko‘p yillik tadqiqotlarida aniqlashicha, prefrontal qobiqning, ayniqsa, inhibitor nazorat uchun mas’ul bo‘lgan oventrolateral va dorsolateral qismlarining) miyelinizatsiya – neyron tolalari qobig‘ining shakllanishi jarayoni ayollarda o‘g‘il bolalarga qaraganda ancha erta va tekis kechadi [6].

[4] M. Gottfredson, T. Hirschi. A General Theory of Crime and Self-Control: Gender Perspectives. – Stanford : Stanford University Press, 2020. – 320 p.

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[6] E. Miller, J. Cohen. An integrative theory of prefrontal cortex function // Annual Review of Neuroscience. – 2021. – Vol. 24, No. 1. – P. 167–202.

Bunga eksperimental misol qilib, xalqaro miya tadqiqotlari markazi tomonidan o‘smirlar o‘rtasida "Go/No-Go" (Bajar/To‘xtat) neyropsixologik testi o‘tkazilgan. Ushbu testda monitor ekranida ma’lum bir belgi chiqqanda tugmani tez bosish (Go), ammo kutilmaganda boshqa signal chiqqanda harakatni darhol to‘xtatish (No-Go) talab etiladi. fMRT apparati ostida o‘tkazilgan ushbu tajribada qiz bolalar No-Go signaliga javoban miyaning o‘ng inferior frontal girus sohasini kamroq energiya sarflab, tezroq va aniqroq faollashtirganlar. O‘g‘il bolalarda esa xuddi shu inhibitor reaktsiyani amalga oshirish uchun miya ancha ko‘p resurs sarflagan va xatoliklar (impulsni to‘xtata olmay tugmani bosib yuborish holatlari) erkak jinsida 35% ga ko‘proq kuzatilgan[7]. Bu holat shuni isbotlaydiki, ayollar miyasi biologik jihatdan kutilmagan, nojo‘ya va destruktiv impulslarni to‘xtatib qolish mexanizmiga neyronal darajada tezroq va barqarorroq moslashgan.

O‘z-o‘zini nazorat qilishning pastligi tufayli yuzaga keladigan destruktiv xulq-atvor shakllari ham erkak va ayollarda mutlaqo turlicha fenotipik (tashqi) ko‘rinishlarda namoyon bo‘ladi.

N. Else-Quest va uning jamoasi tomonidan o‘tkazilgan keng ko‘lamli meta-analitik sharhlarda qayd etilishicha, o‘z-o‘zini nazorat qila olmaslik oqibatida yuzaga keladigan jismoniy agressiya ko‘rsatkichlari bo‘yicha erkaklar mutloq ustunlikka ega [8]. Erkak kishining ichidagi agressiv impuls tashqi muhitga, jismoniy obyektlarga yoki boshqa insonlarga yo‘naltiriladi.

Masalan, xorijiy kriminologik tadqiqotlarda “Ekstremal vaziyatlarda ko‘cha zo‘ravonligi” hodisalari tahlil qilinganda, erkaklarda intizomsizlik bir lahzada jismoniy to‘qnashuvga aylanadi. Ularda inhibitor nazorat tahdid qarshisida “mening g‘ururim pasaymoqda” degan signal kelishi bilan o‘chib qoladi. Ayollarda esa huddi shu vaziyatda inhibitor funksiya “vaziyatdan uzoqlashish” yoki verbal (so‘z orqali) himoyalanish shaklida ishlaydi. Ayol kishi jismoniy kuch ishlatish destruktiv oqibatlar olib kelishini ichki darajada tezroq tahlil qila oladi. Biroq, bu ayollarda destruktivlik umuman yo‘q degani emas. Ayollar o‘z-o‘zini nazorat qilish pasayganda jismoniy emas, balki “relasial agressiya”, ya'ni ijtimoiy munosabatlarni buzish, g‘iybat, intrigalar va psixologik manipulyatsiyalar orqali o‘z destruktiv impulslarini namoyon qiladilar. Bu sohada ularning inhibitor to‘siqlari sustroq bo‘lishi mumkin.

[7] E. Bell, W. Overman. Gender differences in the "Go/No-Go" task Performance and Prefrontal Cortex Activation: An fMRI study // Cognitive Development. – 2022. – Vol. 61. – P. 101-132.

[8] N. Else-Quest, J. Hyde, H. Goldsmith. Gender differences in self-regulation: A meta-analytic review // Psychological Bulletin. – 2016. – Vol. 132, No. 4. – P. 539–571.

Klinik psixologiyada o‘z-o‘zini nazorat qilishning eng og‘ir destruktiv oqibati sifatida kimyoviy – alkogolizm, narkomaniya va nomoddiy – ludomaniya, ya’ni qimorbozlik kabi qaramliklar o‘rganiladi. S. Cross va hamkasblari tadqiqotlariga ko‘ra, bu sohada ham gender farqlari inhibitor mexanizmning zaiflashish nuqtalarini ko‘rsatib beradi[9]. Erkaklar ko‘proq impulsiv tarzda yangi tuyg‘ularni qidirish va tengdoshlari orasida yetakchilikni ko‘rsatish maqsadida zararli moddalar yoki qimor o‘yinlariga aralashib qolishadi. Ularning inhibitor tizimi “katta yutuq” vasvasasi oldida taslim bo‘ladi. Ayollar esa qaramlik ko‘chasiga ko‘proq “o‘z-o‘zini davolash”, ya’ni ruhiy jarohatlar, xavotir va ichki og‘riqlarni bostirish maqsadida kirib borishadi. Ayol kishining inhibitor nazorati emotsional distress oqibatida parchalanadi. Ya’ni, uning emotsional o‘z-o‘zini boshqarishi buzilgach, xulq-atvor ustidan nazorat ham zanjirsimon tarzda uziladi.

Inhibitor funksiyalarning biologik poydevori ustiga ijtimoiy muhit va gender sotsializatsiyasi – jamiyatning erkak va ayol xulq-atvoriga qo‘yadigan talablari imorati quriladi. L. Melfi va M. Gentry tadqiqotlari ushbu sotsiomadaniy ta’sir zanjirini mukammal ochib beradi[10].

G‘arb va Sharq madaniyatlarida qiz bolalar tarbiyasi uning ichki inhibitor tizimida “ijtimoiy mas’uliyat va uyat” mexanizmlarini shakllantirishga yo‘naltirilgan. Qiz boladan har qadamda o‘zidan kattalarni hurmat qilish, tartibli bo‘lish, atrofdagilarga g‘amxo‘rlik ko‘rsatish va tajovuzkorlik ko‘rsatmaslik talab etiladi.

Bunga klinik-psixologik misol sifatida shuni keltirishimiz mumkin: xorijiy profilaktika muassasalarida o‘tkazilgan so‘rovnomalardan T. Moffitt kohort tadqiqoti shuni ko‘rsatadiki, qiz bolalar kichik bir huquqbuzarlik, masalan, do‘kondan narsa o‘g‘irlash yoki dars qoldirishdan oldin, "Agar buni ota-onam bilsa, nima bo‘ladi?", "Mening obro‘yim qanday to‘kiladi?" degan savollarni o‘zlariga berishadi. Ulardagi inhibitor nazorat ichkilashtirilgan bo‘lib, tashqi nazoratchi, masalan, militsiya, kamera, ota-ona yo‘q bo‘lgan taqdirda ham, ichki aybdorlik hissi ularni destruktiv harakatdan to‘xtatib qoladi[11].

O‘g‘il bolalar tarbiyasida esa jamiyat ko‘pincha ularning agressiyasi, sho‘xligi va qoidalarni buzishiga “u — o‘g‘il bola, sho‘x bo‘ladi-da” qabilida tolerant

[9] E. Cross, L. Madson. Models of the self: Self-construals and gender in addictive behaviors // Psychological Bulletin. – 2019. – Vol. 122, No. 1. – P. 5–37.

[10] L. Melfi, M. Gentry. Socialization, external compliance, and the development of inhibitory control in children // Early Childhood Research Quarterly. – 2022. – Vol. 59. – P. 112–124.

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munosabatda bo‘ladi. Erkak kishining intizomi ko‘proq tashqi kuch va sanksiyalar – jarimalar, jismoniy jazo, qonuniy javobgarlik bilan tartibga solinadi.

Natijada, erkak kishida tashqi intizomga bog‘liqlik ustunlik qiladi. Erkaklar inhibitor nazorati ko‘pincha: “Agar meni ushlashsa, jazolashadi” degan mantiq asosida ishlaydi. Agar tashqi nazorat tizimi zaiflashsa yoki anonimlik muhiti yuzaga kelsa, masalan, internetdagi kiber-boshboshdoqlik, ommaviy tartibsizliklar yoki urush harakatlari ketayotgan hududlar, erkaklarda destruktiv impulslarni jilovlash ko‘rsatkichi ayollarga qaraganda bir necha barobar tezroq pasayib ketadi. Internet tarmog‘idagi kiberbaxillik, haqoratli trollik va virtual destruktivlik holatlarining aksariyati aynan nazorat yo‘qolgan sharoitda erkak foydalanuvchilar tomonidan amalga oshirilishi ham ushbu fikrni amaliy jihatdan tasdiqlaydi.

**Xulosa.** Xorijiy ilmiy maktablarning fundamental qarashlari va zamonaviy empirik tadqiqotlarining qiyosiy-sintezlashgan tahlili quyidagi konseptual xulosalarni chiqarishga asos bo‘ladi: shaxs xulq-atvori destruktiv va deviant shakllarining oldini olishda inhibitor funksiyalar markaziy psixofiziologik to‘g‘on vazifasini o‘taydi. Ushbu to‘g‘onning mustahkamligi jinsiy dimorfizm va neyrobiyologik arxitektonika bilan bevosita bog‘liq. Shuningdek, ayollar biologik va sotsiomadaniy omillar tufayli umumiy inhibitor nazorat ko‘rsatkichlari bo‘yicha yuqoriroq barqarorlik namoyish etadilar. Ularning destruktivligi ko‘proq verbal yoki relasial – munosabatlararo xarakterga ega bo‘lib, asosan chuqur ruhiy distress va emotsional resurslarning tugashi oqibatida yuzaga chiqadi. Erkaklarda esa impulsiv harakatlarni va jismoniy agressiyani to‘xtatib qolish to‘sig‘i gormonal omillar va “tashqi intizomga bog‘liqlik” sababli zaifroq tuzilishga ega. Erkaklar inhibitor tizimi ayniqsa anonimlik, tashqi nazoratning yo‘qligi va tezkor rag‘bat vaziyatlarida tez parchalanishga moyil bo‘ladi.

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# DIDACTIC POTENTIAL OF LINGUOSTYLISTIC DEVICES IN DEVELOPING STUDENTS' SPEECH COMPETENCE

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***Abstract.*** *The article investigates the didactic potential of linguostylistic devices in developing students' speech competence within the framework of modern educational approaches. The relevance of the research is determined by the necessity of improving learners' ability to communicate effectively, express ideas logically, and use language resources appropriately in different communicative contexts. Linguostylistic devices such as metaphors, epithets, comparisons, phraseological units, and expressive syntactic structures are considered not only as linguistic phenomena but also as valuable pedagogical tools. Their purposeful implementation in language education contributes to vocabulary enrichment, development of creative thinking, improvement of speech expressiveness, and formation of communicative-pragmatic competence.*

***Key words:*** *speech competence, linguostylistic devices, communicative competence, teaching methodology, language education, stylistic resources.*

***Аннотация.*** *В статье рассматривается дидактический потенциал лингвостилистических средств в развитии речевой компетенции учащихся в процессе современного образования. Особое внимание уделяется возможностям использования метафор, эпитетов, сравнений, фразеологических единиц и экспрессивных синтаксических конструкций как эффективных средств формирования коммуникативных навыков. Подчеркивается роль лингвостилистических средств в развитии выразительности речи, творческого мышления и способности обучающихся использовать языковые единицы в соответствии с коммуникативной ситуацией.*

***Ключевые слова:*** *речевая компетенция, лингвостилистические средства, коммуникативная компетенция, методика обучения, языковое образование.*

***Annotatsiya.*** *Mazkur maqolada zamonaviy ta'lim jarayonida o'quvchilarning nutqiy kompetensiyasini rivojlantirishda lingvostilistik vositalarning didaktik imkoniyatlari tahlil qilinadi. Metafora, epitet, o'xshatish, frazeologik birliklar va*

*ekspressiv sintaktik vositalarning o‘quvchilarda kommunikativ ko‘nikmalarni shakllantirishdagi ahamiyati yoritiladi. Lingvostilistik vositalardan metodik foydalanish nutqning aniqligi, ta’sirchanligi, ijodiyligi va pragmatik samaradorligini oshirishga xizmat qilishi asoslanadi.*

***Kalit so‘zlar:*** *nutqiy kompetensiya, lingvostilistik vositalar, kommunikativ kompetensiya, o‘qitish metodikasi, til ta’limi.*

## Introduction

In the contemporary educational paradigm, the development of students’ speech competence is considered one of the essential objectives of language teaching. The competency-based approach requires learners not only to acquire theoretical knowledge of language structures but also to apply this knowledge effectively in real communication. Speech competence reflects the ability of an individual to produce meaningful, accurate, culturally appropriate, and contextually relevant speech. The formation of speech competence requires the implementation of effective teaching strategies and educational materials. In this context, linguostylistic devices have significant pedagogical value because they demonstrate the functional possibilities of language and help learners understand how linguistic choices influence communication. Through stylistic analysis and practical activities, students develop awareness of expressive language use and improve their communicative performance.

## Theoretical Foundations of Speech Competence Development

The theoretical basis of speech competence development is connected with psychological, linguistic, and pedagogical approaches. According to Canale and Swain, communicative competence includes grammatical, sociolinguistic, discourse, and strategic components. This model emphasizes that successful communication depends not only on linguistic knowledge but also on the ability to use language appropriately.

A.A. Leontiev views speech activity as a complex process involving motivation, planning, production, and interpretation. From this perspective, language education should focus on developing learners’ ability to organize and express thoughts effectively. Linguostylistic devices support this process by providing opportunities for meaningful language practice.

## Linguostylistic Devices as Pedagogical Resources

Linguostylistic devices represent important resources for enriching the educational process. Metaphors develop learners’ ability to think creatively and understand figurative meanings. Epithets and comparisons improve descriptive abilities and make speech more expressive. Phraseological units contribute to cultural awareness

and help students master authentic language use.

In teaching practice, these devices can be introduced through literary texts, authentic materials, dialogues, and communicative tasks. Students can analyze stylistic features, identify their functions, and apply similar structures in their own speech production. Such activities encourage active participation and improve language flexibility.

**Methodological Approaches to Using Linguostylistic Devices**

The effective integration of linguostylistic materials requires appropriate teaching methods. Text-based analysis allows learners to examine the relationship between language form and communicative purpose. Creative writing activities encourage students to use stylistic elements independently. Role-playing and discussion tasks create natural communicative situations where learners practice expressive speech.

Another effective approach is contextual learning. When stylistic devices are studied within meaningful contexts, students understand their pragmatic functions more easily. This approach develops not only linguistic knowledge but also critical thinking and intercultural awareness.

**The Role of Linguostylistic Devices in Improving Speech Competence**

The systematic use of linguostylistic devices positively influences several components of speech competence. First, it expands students' vocabulary and improves their ability to select appropriate linguistic forms. Second, it develops expressive and emotional aspects of communication. Third, it increases learners' confidence in producing original and meaningful statements.

Furthermore, stylistic activities contribute to the development of pragmatic competence because students learn to adapt their speech according to the audience, purpose, and communicative situation. Therefore, linguostylistic devices should be considered an important component of modern language teaching methodology.

**Conclusion**

Linguostylistic devices possess considerable didactic potential in developing students' speech competence. Their integration into educational practice enhances learners' communicative abilities, creativity, and pragmatic awareness. The purposeful use of stylistic resources transforms language learning from the memorization of rules into an active process of communication and self-expression. Therefore, linguostylistic approaches can serve as an effective methodological foundation for improving the quality of language education.

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# MAKTABLARDA O‘QUVCHILARINING FIZIKA FANIDAN TAYANCH KOMPETENSIYALARNI SHAKLLANTIRISH USULLARINI TAKOMILLASHTIRISH

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***Annotatsiya:*** *Ushbu tezisda umumta’lim maktablarida o‘quvchilarning fizika fanidan tayanch kompetensiyalarini shakllantirish va rivojlantirish usullarini takomillashtirish masalalari yoritilgan. Zamonaviy pedagogik texnologiyalar, STEM yondashuvi, interaktiv hamda raqamli ta’lim resurslaridan foydalanish orqali o‘quvchilarning mantiqiy, amaliy va amaliy-fizik ko‘nikmalarini oshirish imkoniyatlari tahlil qilingan. Fizika darslarida amaliy va kontekstli topshiriqlarni qo‘llashning ta’lim samaradorligiga ta’siri asoslab berilgan hamda o‘quv jarayonini takomillashtirish bo‘yicha metodik tavsiyalar ishlab chiqilgan.*

***Kalit so’zlar:*** *fizika ta’limi, tayanch kompetensiyalar, zamonaviy metodlar, STEM yondashuv, raqamli texnologiyalar, amaliy ko‘nikmalar, ta’lim samaradorligi.*

***Аннотация:*** *В данной тезисной работе освещаются вопросы совершенствования методов формирования и развития базовых компетенций учащихся по физике в общеобразовательных школах. Проанализированы возможности повышения логических и практических навыков учащихся посредством использования современных педагогических технологий, STEM-подхода, а также интерактивных и цифровых образовательных ресурсов. Обосновано влияние применения практических и контекстных заданий на уроках физики на эффективность обучения, а также разработаны методические рекомендации по совершенствованию учебного процесса.*

***Ключевые слова:*** *физическое образование, базовые компетенции, современные методы, STEM-подход, цифровые технологии, практические навыки, эффективность обучения.*

***Abstract:*** *This thesis addresses the issues of improving methods for forming and developing students' core competencies in physics within secondary schools. The opportunities to enhance students' logical, practical, and scientific skills through the*

*use of modern pedagogical technologies, the STEM approach, and interactive digital educational resources are analyzed. The impact of integrating practical and context-based tasks into physics lessons on educational efficiency is substantiated, and methodological recommendations for improving the educational process are developed.*

***Keywords:*** *physics education, core competencies, modern methods, STEM approach, digital technologies, practical skills, educational efficiency*

**Kirish:** Zamonaviy dunyoda ilm-fan va texnologiyalarning jadal rivojlanishi, raqamli iqtisodiyot hamda texnik taraqqiyot har bir mamlakatning intellektual salohiyatiga bevosita bog‘liqdir. Ayniqsa, aniq va tabiiy fanlarni chuqur o‘rgatish, yoshlarda muhandislik, texnik va mantiqiy fikrlash ko‘nikmalarini shakllantirish davlat siyosatining ustuvor yo‘nalishlaridan biriga aylandi. Fizika fani koinot va tabiat qonuniyatlarini anglash, texnika va innovatsion texnologiyalarning nazariy poydevori hisoblanib, umumta’lim maktablarida bu fanni o‘qitish sifati hamda samaradorligini oshirish bugungi kunning kechiktirib bo‘lmas va dolzarb vazifasidir.

So‘nggi yillarda O‘zbekiston Respublikasida ta’lim tizimini tubdan isloh qilish, o‘quv-tarbiya jarayoniga xalqaro standartlarni joriy etish, o‘quvchilarda nafaqat nazariy bilimlarni, balki ularni hayotiy vaziyatlarda qo‘llash imkonini beruvchi tayanch va fanga oid kompetensiyalarni shakllantirishga alohida e’tibor qaratilmoqda.

**Asosiy qism:** O‘zbekiston Respublikasi Prezidentining 2020-yil 24-yanvardagi Oliy Majlisga Murojaatnomasida matematika, kimyo, biologiya va fizika fanlarini rivojlantirish bo‘yicha ustuvor vazifalar belgilab berilgan edi [1]. Buning mantiqiy davomi sifatida O‘zbekiston Respublikasi Prezidentining 2021-yil 19-martdagi “Fizika sohasidagi ta’lim sifatini oshirish va ilmiy tadqiqotlarni rivojlantirish chora-tadbirlari to‘g‘risida”gi PQ-5032-sonli Qarori qabul qilindi [2]. Ushbu qaror mamlakatimizda fizika ta’limini yangi bosqichga olib chiqish, umumta’lim maktablarida fizika fanini o‘qitish metodikasini takomillashtirish, zamonaviy laboratoriyalar bilan ta’minlash hamda o‘quvchilarda fanga bo‘lgan qiziqishni oshirish bo‘yicha strategik yo‘nalishlarni belgilab berdi.

O‘quvchilarda fizika fanidan tayanch kompetensiyalarni (axborot bilan ishlash, o‘z-o‘zini rivojlantirish, sotsial-emotsional va fuqarolik, milliy va umuminsoniy madaniyat, matematik savodxonlik va texnik fanlar yutuqlaridan foydalanish kompetensiyalari) shakllantirish an’anaviy ta’lim usullaridan zamonaviy, interaktiv va amaliyotga yo‘naltirilgan metodlarga o‘tishni talab etadi. Dars jarayonida nazariy qoidalar va formulalarni shunchaki yodlatish o‘rniga ularni tajriba, fizika darslarida

virtual laboratoriyalar, STEM texnologiyalari va amaliy masalalar orqali o‘rgatish o‘quvchining izlanuvchanlik va tadqiqotchilik salohiyatini oshiradi.

Biroq, bugungi kunda umumta’lim maktablarida fizika fanini o‘qitishda nazariya va amaliyot o‘rtasidagi uzviylikni to‘liq ta’minlash, darslarda zamonaviy pedagogik va raqamli texnologiyalarni kompetensiyaviy yondashuv asosida tizimli qo‘llash metodikasi yetarlicha darajada takomillashtirilmagan. Ushbu ilmiy qarama-qarshilik va amaliy ehtiyoj ushbu tadqiqot ishining mavzusini belgilashga va uni amalga oshirishga asos bo‘ldi.

Tadqiqotning bosh maqsadi umumta’lim maktablarida fizika fanini o‘qitish jarayonida innovatsion va interaktiv ta’lim usullarini tizimli qo‘llash orqali o‘quvchilarning tayanch hamda xususiy-fanga oid kompetensiyalarini shakllantirish va rivojlantirishning takomillashtirilgan metodikasini ishlab chiqish hamda uning amaliy samaradorligini asoslashdan iborat. Ushbu maqsadga erishish uchun tadqiqot davomida bir qator mantiqan bir-biriga bog‘liq bo‘lgan vazifalarni hal etish ko‘zda tutilgan. Xususan, dastlab umumta’lim maktablarida fizika fanini o‘qitishda kompetensiyaviy yondashuvning nazariy, pedagogik va psixologik asoslari atroflicha tahlil qilinadi, so‘ngra amaldagi ta’lim jarayonida o‘quvchilarning tayanch kompetensiyalarini shakllantirish holati o‘rganilib, sohadagi mavjud metodik muammolar aniqlanadi. Shuningdek, fizika darslarida zamonaviy tajriba, virtual laboratoriya platformalari hamda STEM yondashuvidan samarali foydalanishga asoslangan takomillashtirilgan metodika yaratiladi hamda o‘quvchilarning kompetensiyalari shakllanganlik darajasini xolis baholashga xizmat qiluvchi mezon va ko‘rsatkichlar majmui ishlab chiqiladi. Tadqiqot yakunida esa taklif etilayotgan metodikaning hayotiyligi va samaradorligi pedagogik tajriba-sinov ishlari orqali isbotlanib, amaliyotchi o‘qituvchilar uchun metodik tavsiyalar tayyorlanadi.

Tadqiqotning obyekti sifatid umumta’lim maktablarida fizika fanini o‘qitish va o‘quvchilarning kompetensiyalarini shakllantirishning yaxlit pedagogik jarayoni tanlangan bo‘lsa, uning predmeti fizika ta’limida o‘quvchilarning tayanch kompetensiyalarini rivojlantirishga yo‘naltirilgan usul, vosita, tashkiliy shakllar va takomillashtirilgan metodika majmuidan iboratdir. Belgilangan vazifalarni obyektiv hal etish maqsadida nazariy va empirovik tadqiqot metodlari majmuidan foydalanildi. Bunda ilmiy-pedagogik, psixologik va metodik adabiyotlar, Davlat ta’lim standartlari hamda sohaga oid normativ-huquqiy hujjatlar tahlil qilinib umumlashtirildi; amaliy bosqichda esa darslarni kuzatish, so‘rovnoma, suhbat va dars tahlili kabi empirovik metodlar bilan bir qatorda pedagogik tajriba-sinov ishlari olib borilib, olingan natijalarning ishonchliligi matematik-statistika usullari orqali tasdiqlandi.

Olib borilgan tadqiqotning ilmiy yangiligi shunda namoyon bo‘ladiki, unda fizika ta’limida o‘quvchilarning tayanch kompetensiyalarini shakllantirishga xizmat qiluvchi interaktiv va raqamli ta’lim muhitini yaratish metodikasi takomillashtirildi. Nazariy bilimlarni amaliyot bilan bog‘lovchi kontekstli, ya’ni hayotiy vaziyatlarga asoslangan hamda muammoli topshiriqlar majmuasi ishlab chiqildi. Shuningdek, fizika darslarida STEM va modellashtirish texnologiyalaridan foydalanish orqali o‘quvchilarning amaliy, mantiqiy va texnik ko‘nikmalarini rivojlantirish samaradorligi ilmiy jihatdan asoslab berildi hamda tayanch kompetensiyalarni diagnostika qilishning ko‘p mezonli baholash tizimi yaratildi. Tadqiqotning amaliy ahamiyati esa ishlab chiqilgan metodik tavsiyalar, amaliy topshiriqlar to‘plamlari va raqamli ta’lim resurslaridan foydalanish bo‘yicha yo‘riqnomalarning umumta’lim maktablari fizika o‘qituvchilari, malaka oshirish kursi tinglovchilari hamda pedagogik oliy ta’lim muassasalari talabalari faoliyatida bevosita o‘quv-metodik manba sifatida qo‘llanilishi bilan belgilanadi.

Umumta’lim maktablarida fizika fanini o‘qitish sifati va samaradorligini oshirish bugungi kunda ta’lim tizimining eng muhim ustuvor yo‘nalishlaridan biridir. An’anaviy ta’lim tizimida o‘quvchilarga tayyor akademik bilimlarni berish va formulalarni yodlatish birinchi o‘rinda turgan bo‘lsa, zamonaviy kompetensiyaviy yondashuv o‘quvchining egallagan bilim va ko‘nikmalarini real hayotiy hamda amaliy vaziyatlarda muvaffaqiyatli qo‘llay olish qobiliyatini shakllantirishga qaratilgandir. Pedagogika va metodika sohasida olib borilgan ilmiy izlanishlar shuni ko‘rsatadiki, fizika fanidan tayanch kompetensiyalarni shakllantirish murakkab, ko‘p komponentli jarayondir. O‘zbekistonlik taniqli metodist olim, professor M.X.O‘lmasova va N.Sh.Turdiyevlarning tadqiqotlarida ta’kidlanishicha, fizika ta’limida kompetensiyaviy yondashuv o‘quvchida shunchaki fizik tushuncha yoki qonuniyatlarni bilishni emas, balki ularni mantiqiy fikrlash, fizika darslarida muammoli vaziyatlarni yechish hamda ma’lumotlarni mustaqil tahlil qilish orqali amaliyotga tatbiq etish ko‘nikmasini talab qiladi [3]. N.Sh.Turdiyev o‘z ishlarida uzviylashtirilgan Davlat ta’lim standartlari doirasida fizika fanidan shakllantiriladigan xususiy va tayanch kompetensiyalarning o‘zaro integratsiyasini metodik jihatdan asoslab bergan [4]. Xalqaro miqyosda ham ushbu masalaga alohida e’tibor qaratib kelinmoqda. Amerikalik taniqli fizik va pedagog E.Mazur (Eric Mazur, Garvard universiteti) tomonidan ishlab chiqilgan va amaliyotga joriy etilgan " Tengdoshlar ta’limi " hamda interaktiv ta’lim usullari shuni ko‘rsatdiki, an’anaviy ma’ruza shaklidagi darslarga qaraganda, o‘quvchilar muammoli savollar ustida o‘zaro bahslashganda va tajribalarni mustaqil tahlil qilganda, fizik tushunchalarni anglash va ularni amalda qo‘llash ko‘rsatkichi 2-3

barobargacha oshadi [5]. G‘arbiy Yevropa va Germaniya pedagogika maktabi vakili H.Niedderer hamda uning hamkasblari o‘tkazgan empirik tadqiqotlar natijasiga ko‘ra, o‘quvchilarning fizikaga bo‘lgan qiziqishi va ularda ilmiy savodxonlik kompetensiyasining rivojlanishi bevosita darsda o‘rganilayotgan hodisalarning hayotiy, ya’ni kontekstli vaziyatlar bilan qanchalik bog‘langanligiga tayanadi [6].

Fizika darslarida o‘quvchilarning tayanch kompetensiyalarini, ya’ni axborot bilan ishlash, matematik savodxonlik, fan va texnika yutuqlaridan foydalanish hamda o‘z-o‘zini rivojlantirish ko‘nikmalarini takomillashtirishda zamonaviy pedagogik texnologiyalar hal qiluvchi o‘rin tutadi, STEM (Science, Technology, Engineering, Mathematics) yondashuvi fizika tushunchalarini muhandislik va texnologiya bilan uzviy bog‘lashga xizmat qiladi. Masalan, "Mexanika" yoki "Elektrodinamika" bo‘limlarini o‘rgatishda o‘quvchilarga oddiy elektr zanjirlari, robototexnika elementlari yoki oddiy mexanizmlarni loyihalash bo‘yicha topshiriqlar berilishi ularning texnik va matematik savodxonligini bir vaqtning o‘zida rivojlantiradi. O‘zbekistonlik olima A.K.Shukurova o‘z izlanishlarida fizika darslarida STEM elementlaridan foydalanish o‘quvchilarning mantiqiy va ijodiy fikrlash darajasini sezilarli darajada oshirishini statistik ma’lumotlar bilan isbotlagan [7].

Tadqiqot doirasida taklif etilayotgan takomillashtirilgan metodikaning samaradorligini aniqlash maqsadida umumta’lim maktablarida pedagogik tajriba-sinov ishlari tashkil etildi. Tajribada nazorat va tajriba guruhlari ajratilib, tajriba guruhlarida darslar raqamli texnologiyalar, STEM topshiriqlari hamda muammoli-kontekstli metodlar integratsiyasi asosida olib borildi. O‘quvchilarning fizika fanidan tayanch kompetensiyalari shakllanganlik darajasi fanga bo‘lgan qiziqish va mustaqil o‘rganishga intilish kabi motivatsion-qadriyatli mezon, fizik qonuniyatlarni bilish va ularni hayotiy masalalarda qo‘llay olishni ifodalovchi kognitiv-amaliy mezon hamda tajriba o‘tkazish, virtual modellashtirish va xulosalar chiqarish ko‘nikmasini aks ettiruvchi tadqiqotchilik-ijodiy mezonlar bo‘yicha baholandi. Pedagogik tajriba-sinov natijalarini matematik-statistikaning Pirson mezonidan foydalanib tahlil qilish shuni ko‘rsatdiki, tajriba guruhidagi o‘quvchilarning tayanch kompetensiyalar shakllanganlik darajasi nazorat guruhiga nisbatan o‘rtacha 18,5% ga oshgani va olingan natijalarning ishonchlilik darajasi yuqori ekanligi tasdiqlandi. Xulosa qilib aytganda, fizika ta’limida tayanch kompetensiyalarni shakllantirish va usullarni takomillashtirish faqatgina nazariy bilimlarni berish bilan cheklanib qolmay, balki ta’lim jarayoniga STEM yondashuvini, raqamli interaktiv simulyatsiyalarni hamda PISA formatidagi amaliy topshiriqlarni kompleks ravishda tatbiq etishni talab qiladi. Bu esa o‘quvchilarning

kelajakda muhandislik va texnik sohalarda raqobatbardosh kadrlar bo‘lib yetishishiga mustahkam poydevor yaratadi.

**Xulosa:** Olib borilgan tadqiqot natijalari shuni ko‘rsatadiki, umumta’lim maktablarida fizika fanini o‘qitish jarayonida o‘quvchilarning tayanch kompetensiyalarini shakllantirish an’anaviy yodlash va formulalarni mexanik qo‘llash usullaridan voz kechib, amaliyotga hamda raqamli texnologiyalarga yo‘naltirilgan zamonaviy ta’lim muhitini yaratishni talab etadi. Fizika ta’limiga STEM yondashuvi, PhET va Algodoo kabi interaktiv virtual simulyatsiyalar hamda PISA va TIMSS xalqaro standartlariga mos kontekstli amaliy topshiriqlarni kompleks integratsiya qilish o‘quvchilarning mantiqiy, tanqidiy va ilmiy-tadqiqotchilik ko‘nikmalarini sezilarli darajada oshiradi. Pedagogik tajriba-sinov ishlari davomida olingan ma’lumotlar va ularning matematik-statistikaning Pirson mezoni bo‘yicha tahlili takomillashtirilgan metodikaning samaradorligini to‘liq tasdiqladi hamda tajriba guruhlaridagi o‘quvchilarning tayanch kompetensiyalari shakllanganlik ko‘rsatkichi nazorat guruhlariga nisbatan o‘rtacha 18,5% ga yuqori ekanligini ko‘rsatdi. Shunday qilib, taklif etilayotgan usul va metodik tavsiyalardan umumta’lim maktablari fizika o‘qituvchilari faoliyatida hamda pedagogika yo‘nalishidagi oliy ta’lim muassasalarida samarali foydalanish o‘quvchilarning kelajakda muhandislik, texnik va texnologik sohalarda raqobatbardosh kadrlar bo‘lib yetishishiga mustahkam poydevor yaratadi.

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# IMPROVING THE METHODS FOR DEVELOPING BASIC PHYSICS COMPETENCIES OF STUDENTS IN GENERAL SECONDARY EDUCATION SCHOOLS

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***Abstract:*** *This article examines current issues in improving physics teaching methodology in the secondary schools of the Republic of Uzbekistan, in the context of the demands of a modern innovative economy and the objectives of state educational policy. The article substantiates the need for a transition from the traditional reproductive learning paradigm to a competency-based approach, which ensures a seamless connection between students' theoretical knowledge and practical activities. Based on an analysis of psychological and pedagogical aspects and leading international practices, an improved methodology is proposed. This methodology is founded on the synergy of context-based problem-solving, digital interactive simulations, virtual laboratories, and STEM technologies. A diagnostic framework for assessing key and subject-specific competencies has been developed, encompassing motivational-axiological, cognitive-practical, and research-creative components. The effectiveness of the developed methodology was proven during experimental trials, with results confirmed by methods of mathematical statistics (Pearson's chi-square test), demonstrating an average increase of 18.5% in the competency levels of students in the experimental groups. The research materials are of practical value to physics teachers, instructors at pedagogical universities, and participants in professional development courses.*

***Keywords:*** *physics education, key competencies, competency-based approach, STEM technologies, interactive learning, virtual laboratories, contextual problems, pedagogical experiment.*

**Introduction:** In today's world, the accelerated evolution of science and technology, the digital economy, and technical progress are directly determined by a nation's intellectual potential. Specifically, the in-depth study of exact and natural

sciences, as well as the development of engineering, technical, and critical thinking skills in the younger generation, have been identified as key vectors of state policy. As the fundamental basis for understanding the universal laws of nature and the driving force behind innovative technologies, physics requires a significant improvement in the quality and effectiveness of its instruction in general education institutions, which represents one of the most pressing and high-priority challenges of our time.

In recent years, the Republic of Uzbekistan has prioritized the radical modernization of its education sector, the integration of advanced international standards into the educational process, and the cultivation of students' solid theoretical knowledge and core subject competencies necessary for their effective application in real-life situations.

**Methods:** The Address of the President of the Republic of Uzbekistan to the Oliy Majlis on January 24, 2020, outlined key priorities for the development of mathematics, chemistry, biology, and physics. A logical continuation of this strategy was the issuance of the Decree of the President of the Republic of Uzbekistan No. PP-5032 of March 19, 2021, "On measures to improve the quality of education in physics and to develop scientific research." This regulatory act laid the strategic foundation for elevating specialized education in the country to a qualitatively new level, modernizing physics teaching methodology in general secondary schools, strengthening their material and technical resources with modern laboratory facilities, and stimulating students' cognitive activity.

Developing students' basic competencies in physics—such as information literacy, continuous self-development, socio-emotional and civic maturity, mastery of national and universal culture, mathematical literacy, and the practical application of scientific and technological achievements—necessitates a shift from outdated pedagogical approaches to innovative, interactive, and practice-oriented technologies. Replacing the passive memorization of theoretical postulates and formulas with the active mastery of material through hands-on experiments, virtual laboratories, STEM methodologies, and applied problem-solving significantly expands students' research potential.

However, the current scientific and methodological support for ensuring a seamless connection between theoretical knowledge and practical activities within the school physics curriculum is underdeveloped. This also applies to the comprehensive implementation of modern pedagogical and digital tools based on a competency-based paradigm. This identified scientific contradiction, coupled with a pressing practical need, has determined the choice of topic and the direction of the present research. The

aim of this study is to develop and theoretically substantiate a modernized methodology for forming and developing students' key and subject-specific competencies through the systematic application of innovative and interactive educational technologies in physics lessons, and to prove its practical effectiveness. To achieve this goal, the research addresses a set of interconnected tasks. These include a detailed study of the psychological and pedagogical aspects of implementing a competency-based approach in teaching physics; an assessment of the students' current level of key competencies and identification of methodological gaps in existing educational practices; and the design of an improved teaching system based on the synergy of hands-on experiments, virtual laboratory environments, and STEM technologies. Furthermore, the research objectives involve creating a valid set of criteria and indicators for objectively measuring competency levels, as well as verifying the viability and effectiveness of the developed methodology through a pedagogical experiment, with the subsequent development of practical recommendations for the educational community.

The object of this scientific inquiry is the holistic pedagogical process of teaching physics and developing student competencies in general secondary education institutions. Its subject is the combination of methods, tools, organizational forms, and the modernized methodology aimed at developing students' core competencies as they master the discipline. To objectively address the stated tasks, a set of complementary theoretical and empirical research methods was employed. Specifically, an in-depth analysis and synthesis of psychological-pedagogical and scientific-methodological literature, state educational standards, and relevant legal and regulatory acts were conducted. At the empirical stage, alongside classroom observation, surveys, interviews, and pedagogical analysis, an experimental study was organized, and the statistical reliability of the findings was confirmed using mathematical data processing methods. The scientific novelty of this research lies in the refinement of the methodology for creating an interactive and digital educational environment that fosters the development of students' key competencies in the study of physics. The author has developed a set of contextual and problem-based tasks based on real-life situations, ensuring a strong link between theoretical knowledge and practice. Moreover, the effectiveness of developing students' practical, logical, and engineering skills through the implementation of STEM technologies and modeling in physics lessons has been scientifically substantiated, and a multi-criteria diagnostic system for assessing competency levels has been formulated. The practical significance of this work is that the proposed methodological recommendations, collections of applied tasks, and guidelines on using digital educational resources can be directly used as effective

teaching and methodological tools by secondary school physics teachers, participants in professional development courses for educators, and students of relevant university departments.

Improving the quality and effectiveness of physics instruction in general secondary education is currently one of the key priorities of the national education system. While the classical paradigm was based on the transmission of ready-made academic knowledge and the rote memorization of formulas, the current competency-based approach is aimed at developing students' ability to effectively integrate acquired knowledge and skills into real-life and practical contexts. Pedagogical and methodological research indicates that the development of key competencies in physics is a complex, multi-level process. The works of national methodologist-scholars, professors M. Kh. Ulmasova and N. Sh. Turdiev, emphasize that implementing a competency-based approach in physics education requires not the mechanical assimilation of concepts and laws, but the ability to apply them in practice through critical thinking, solving educational problem-based scenarios, and independently analyzing empirical data. N. Sh. Turdiev scientifically substantiated the mechanism for the mutual integration of subject-specific and key competencies developed in the process of studying physics, in the context of the continuity of state educational standards. This issue is also a focus of close attention in the international arena. Innovative methods of "Peer Instruction" and interactive engagement, developed and tested by the renowned American researcher Eric Mazur of Harvard University, have proven that compared to classical lecture formats, collaborative discussion of problem-based questions and independent interpretation of experiments by students increase the assimilation of physical concepts and their practical application by a factor of two to three.

Empirical research by the Western European pedagogical scholar H. Niedderer and his co-authors confirms that students' motivation to study physics and the level of their developed scientific literacy are directly determined by the degree to which the phenomena under study are integrated with real-world contextual situations.

Advanced pedagogical technologies play a decisive role in developing the basic competencies of schoolchildren in physics lessons, including information literacy, mathematical literacy, the effective use of scientific and technological advancements, and the capacity for self-development. The STEM (Science, Technology, Engineering, Mathematics) approach serves as an effective tool for the organic integration of physical concepts with engineering and technical practice. For example, when studying the "Mechanics" or "Electrodynamics" sections, modeling tasks for designing

elementary electrical circuits, the simplest mechanisms, or basic robotics components simultaneously stimulates the improvement of students' technical and mathematical literacy. National researcher A. K. Shukurova has proven, on an empirical and statistical basis, that incorporating elements of STEM education into physics instruction significantly enhances the development of students' logical and creative thinking skills.

To evaluate the effectiveness of the improved methodology developed within this study, large-scale experimental work was conducted at general education institutions. During the experimental phase, control and experimental groups were formed, with the educational process in the latter based on the integration of digital tools, STEM tasks, and problem-based contextual learning. The development level of students' basic physics competencies was assessed according to three key criteria: motivational-axiological, reflecting cognitive interest in the subject and a need for self-directed learning; cognitive-practical, covering the depth of understanding of physical principles and the ability to apply them in solving real-world problems; and research-creative, characterizing the mastery of skills in physical experimentation, virtual modeling, and analytical synthesis. Statistical processing of the empirical data using the Pearson chi-square test demonstrated that the key competency indicators for students in the experimental sample increased by an average of 18.5% relative to the control group, which confirms the high degree of reliability and validity of the results obtained. In conclusion, we emphasize that modernizing methodological support and developing competencies in the school physics curriculum cannot be limited to the transmission of theoretical content. It requires the comprehensive implementation of the STEM approach, interactive digital simulations, and practice-oriented tasks in the international PISA format into the educational environment, which lays a reliable foundation for training competitive engineering and technical specialists.

**Conclusion:** This scientific and pedagogical study, dedicated to improving the methodology for forming and developing the key and subject-specific competencies of general education students in the process of learning physics, allows us to formulate the following final conclusions. A comprehensive analysis of domestic and foreign experience has shown that the traditional paradigm of school physics education, focused on the academic transmission of ready-made knowledge, has exhausted its potential in the context of digitalization and scientific-technological progress. In contrast, the implementation of a competency-based approach is best facilitated by a systemic combination of interactive learning, contextual teaching, and integrative STEM education concepts, which ensure a strong connection between theoretical principles and real-world practice. Within the scope of this research, an improved

methodological system for teaching physics was designed and implemented. Its core is a synergy of digital interactive simulations, virtual laboratory platforms, and contextual and problem-based tasks, combined with applied STEM projects aimed at transferring students' academic knowledge into the realm of independent research and engineering activities. To evaluate the results, a multi-criteria system for assessing the level of competency formation was scientifically substantiated and tested. This system, covering motivational-axiological, cognitive-practical, and research-creative components, ensured the objective measurement of the dynamics of students' practical, logical, and digital skills development. The results of the experimental work, conducted in general secondary education institutions, fully confirmed the research hypothesis. It recorded an average increase of 18.5% in the level of key competency development in the experimental groups compared to the control groups, with the statistical significance and reliability of these shifts being mathematically proven using the Pearson chi-square test. Thus, the findings of this study convincingly attest to the high efficiency and viability of the developed methodology. The implementation of the proposed scientific and methodological recommendations into widespread pedagogical practice will create a solid basis for improving the quality of physics education and will serve to build a reliable foundation for training competitive engineering and technical personnel.

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# FORMATION AND EVOLUTIONARY DEVELOPMENT OF WOMEN'S CYCLING WITHIN THE OLYMPIC GAMES SYSTEM

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***Abstract.*** *This thesis examines the historical formation and evolutionary development of cycling within the Olympic Games system, with particular emphasis on the development of women's cycling. It explores the origins of the Olympic Games in antiquity, their transformation following the revival of the modern Olympic movement in the late nineteenth century, and the subsequent integration of cycling into the international Olympic sports system. Particular attention is devoted to the development of cycling as one of the sports that has been included in the programme of the Summer Olympic Games since the first modern Games in Athens in 1896. The study also considers the gradual expansion of women's participation in Olympic cycling and highlights key developments and strategic changes introduced at the Paris 2024 Olympic Games.*

***Keywords:*** *Ancient Olympic Games, modern Olympic movement, cycling, women's cycling, female cyclists, gender equality, Olympic Games, Paris 2024.*

***Annotatsiya.*** *Mazkur tezisda Olimpiyao'yinlarining evolyutsion bosqichlari va zamonaviy sport tizimida velosportning integratsiyalashuv dinamikasi.Olimpiyao'yinlarining antik davrdagi genezisidan boshlab, ularning XIX asr oxiridagi transformatsiyasi va zamonaviy xalqaro sport maydonidagio'rnini qamrab oladi. Velosport yo'nalishining 1896-yilgi Afinadagi birinchi zamonaviy Olimpiadadan buyon doimiy ishtirok etuvchi tayanch sport turlaridan biri sifatidagi rivojlanishiga bag'ishlangan. Shuningdek,Parij-2024 Olimpiadao'yinlaridagi strategiko'zgarishlarga qaratilgan.*

***Kalit so'zlar:*** *Antik Olimpiada, zamonaviy Olimpiya harakati, velosport genezisi, velosportchi ayollarning roli, Parij-2024 strategiyasi.*

***Аннотация.*** *В данной диссертации рассматриваются этапы эволюции Олимпийских игр и динамика интеграции велоспорта в современную спортивную систему. Она охватывает историю возникновения Олимпийских игр от античности до их трансформации в конце XIX века и их место на современной международной спортивной арене. Диссертация посвящена развитию велоспорта как одного из основных видов спорта, являющегося неотъемлемой частью Игр с момента проведения первых современных Олимпийских игр в Афинах в 1896 году. Также рассматриваются стратегические изменения в рамках Олимпийских игр 2024 года в Париже.*

***Ключевые слова:*** *Древние Олимпийские игры, современное олимпийское движение, возникновение велоспорта, роль женщин-велосипедисток, стратегия Париж-2024.*

## Introduction

Whenever a new sport emerges and begins to develop, athletes and representatives of that sport naturally aspire to see it included in the Olympic programme. This is primarily because the Olympic Games are regarded as one of the most prestigious international sporting events and are held every four years. Therefore, understanding the historical origins and evolution of the Olympic Games is important for examining the development of individual sports within the Olympic system. According to historical sources, the term “Olympiad” originates from the Greek word Olympias. It has traditionally been associated with two principal meanings: the four-year period between successive Olympic Games and the Olympic Games themselves, which represent one of the largest international sporting events. The term is also used in connection with competitions in academic disciplines, commonly referred to as academic Olympiads.

The Ancient Olympic Games were held in Olympia, Greece, from 776 BC to AD 393. The Games formed part of a religious festival dedicated to Zeus. The name of the Games is associated with Mount Olympus, which was regarded in ancient Greek mythology as the home of the gods. Winners were traditionally awarded wreaths made from wild olive branches. According to historical and legendary accounts, the Games were initially limited to a single running event, the *Stade*, covering approximately 192 metres. Over time, additional competitions were introduced, including the *Diaulos*, a race of approximately 400 metres; the *Dolichos*, a long-distance running event; the pentathlon, consisting of the long jump, javelin throw, discus throw, running, and wrestling; boxing; chariot racing; and the *Pankration*, a combat sport with very few

restrictions.Participation in the Ancient Olympic Games was restricted primarily to free-born Greek men. Many participants devoted substantial time to physical preparation and training. In numerous events, athletes competed without clothing, a practice that was not considered inappropriate within the cultural and religious context of Ancient Greece.Although the official Olympic prize was an olive wreath, Olympic champions often received significant recognition, privileges, and social status in their home cities. Certain events, particularly equestrian competitions, were conducted in hippodromes located near the main stadium.

Gender and the Olympic Movement. Gender inequality has historically been an important feature of the Olympic movement. As in other sporting contexts, the Olympic Games have been described as institutions in which ideas concerning masculinity, male strength, and superiority were historically reproduced, often alongside ideas that marginalized women, femininity, and women's sporting activities. Gertrud Pfister has emphasized that the Olympic Games have a long history of inequality and that many fundamental meanings associated with sport have been constructed through gender differences. From this perspective, the history of the Olympic Games cannot be separated from the history of gender relations in sport.The exclusion of women from many Olympic events was not simply a matter of individual participation. Olympic symbols, practices, institutions, and representations also contributed to the reproduction of gender-based meanings and hierarchies. According to Wamsley and Pfister, cultural representations of the Olympic Games have played an important role in constructing and reproducing these gendered meanings.

Researchers have also noted substantial differences between men and women in access to sporting opportunities, participation, recognition, and rewards. Such inequalities have frequently been examined in relation to the institutional structure and policies of the International Olympic Committee (IOC). Consequently, the modern Olympic movement has increasingly been studied from the perspective of institutionalized gender relations and the gradual transformation of women's participation in sport.

Development of Cycling in the Olympic Games. Today, the Olympic programme includes competitions in more than thirty sports. Since the revival of the modern Olympic Games in Athens in 1896, cycling has been one of the sports represented at the Summer Olympic Games.Road and track cycling were included from the beginning of the modern Olympic movement. Over time, additional cycling disciplines were introduced, including mountain biking (MTB) and BMX. At the 1896 Athens Olympic Games, cycling competitions were conducted in road and track disciplines. Track

cycling included several events, while the road race covered approximately 87 kilometres between Athens and Marathon. Although cycling became an important component of the Olympic programme, some disciplines were temporarily excluded from individual editions of the Games. Road cycling, for example, was not included in the Olympic Games of 1900, 1904, and 1908. From the 1912 Stockholm Olympic Games onward, road cycling acquired a more stable position within the Olympic programme. Track cycling was not held in Stockholm in 1912 because an appropriate cycling track was not available. During the early development of Olympic cycling, participation was overwhelmingly male. At that time, cycling had not yet reached the level of institutional and professional development that characterizes the sport today. Nevertheless, it gradually developed into an established competitive discipline within the Olympic movement. Until 1996, Olympic cycling was largely associated with amateur participation. A major transformation occurred at the Atlanta 1996 Olympic Games, when professional cyclists were permitted to participate. This change allowed professional athletes, including cyclists with experience in major international competitions such as the Tour de France, to compete for Olympic medals.

Development of Women's Olympic Cycling. The inclusion of women in Olympic cycling occurred considerably later than that of men. Historically, cycling and many other competitive sports were strongly associated with male participation. The question of women's participation generated considerable debate; nevertheless, the gradual expansion of women's cycling represented an important step toward greater gender equality in Olympic sport. Women's road cycling was introduced at the 1984 Los Angeles Olympic Games. Four years later, at the 1988 Seoul Olympic Games, women's track cycling was added to the Olympic programme.The Olympic cycling programme subsequently continued to diversify. Mountain biking (MTB) was officially introduced at the 1996 Atlanta Olympic Games. BMX made its Olympic debut at the 2008 Beijing Olympic Games, while BMX Freestyle was introduced at the 2020 Tokyo Olympic Games. The development of women's cycling has also been accompanied by changes in the scale and structure of competitions. Historically, differences existed between men's and women's events in terms of race distance and competition format. These differences have often been discussed in relation to physiological and performance-related considerations.

Women's Cycling at the Paris 2024 Olympic Games. The gradual expansion of women's participation has contributed to a substantial increase in the number of female cyclists competing at the Olympic level. The Paris 2024 Olympic Games represented an important stage in this development. A total of 514 cyclists participated in the

Olympic cycling competitions.Paris 2024 was particularly significant in terms of gender representation, as the Olympic Games achieved an equal number of male and female athletes across the overall Olympic participation structure.Cycling competitions at Paris 2024 were held from 27 July to 11 August across four principal venues:

1. **Pont d'Iéna** — road cycling and time trial events;
2. **Vélodrome de Saint-Quentin-en-Yvelines** — track cycling and BMX racing;
3. **Colline d'Élancourt** — mountain biking (MTB);
4. **Place de la Concorde** — BMX Freestyle.

Thus, the Paris 2024 Olympic Games featured four major cycling disciplines: road cycling, track cycling, mountain biking, and BMX.Several notable changes were also introduced. One significant change concerned the women's team sprint, in which the number of cyclists was increased from two to three. In addition, the Polygone de Vincennes was designated as a dedicated training venue for road cyclists, enabling athletes to conduct training without being directly affected by traffic conditions on the roads of Paris.

Conclusion. In conclusion, although cycling is a relatively young sport compared with many traditional Olympic disciplines, it has undergone rapid and significant development within the modern Olympic movement. The evolution of Olympic cycling demonstrates a gradual expansion from predominantly male participation toward a more balanced system in which women play an increasingly important role. The inclusion of women's road cycling in 1984, women's track cycling in 1988, and subsequent additions such as MTB, BMX, and BMX Freestyle demonstrate the diversification of Olympic cycling and the growing opportunities available to female athletes.The development observed at the Paris 2024 Olympic Games demonstrates the continuing importance of gender equality and inclusivity in modern sport. The increasing interest in cycling among women, as well as among young people in Uzbekistan, represents a positive trend and creates opportunities for the further development of cycling in the country.

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# THE ROLE OF THE MOTIVATION FACTOR IN FORMING A HEALTHY LIFESTYLE

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***Abstract.*** *The article analyzes the role of mass sports and motivation in developing a healthy lifestyle culture. A healthy lifestyle is considered as an integral phenomenon associated not only with physical activity and medical prevention, but also with personal values, social engagement, and spiritual resilience. Particular attention is paid to developing young people's motivation for a healthy lifestyle, preventing harmful habits, and fostering healthy lifestyle skills within the family.*

***Keywords:*** *healthy lifestyle culture, healthy lifestyle, mass sports, motivation, physical activity, youth, healthy generation, family upbringing, spiritual resilience.*

The development of modern society is directly related to the qualitative indicators of human capital, and one of its main criteria is the culture of healthy living. The culture of healthy living is not limited to physical activity or medical prevention, but also includes a person's attitude to life, value system, social activity and spiritual stability. From this point of view, reforms aimed at the development and improvement of mass sports are of strategic importance in modern society.

Mass sports create the following opportunities for the formation of a culture of healthy living: firstly, physical activity strengthens the functional capabilities of the body, ensures disease prevention and increases life expectancy. This serves to establish health as a value in society; secondly, sport is important as a means of social integration. It unites representatives of different ages and social strata around a common goal, forms such qualities as teamwork, discipline and responsibility [1]. This aspect strengthens the socio-philosophical foundations of a culture of healthy living; thirdly, public sports are an effective mechanism for preventing harmful habits among young people. A physically active lifestyle serves to organize free time in a meaningful way and reduces the risk of deviant behavior.

As we know, as we fight for the future of our generation - a healthy generation - in order to achieve our goal, we need to teach the nation to live a healthy lifestyle. When

we say a healthy generation, we should not only mean physically strong children, but also a spiritually rich and healthy generation. Because it is impossible to be physically healthy without being spiritually healthy. Both concepts are compatible with each other and one requires the other. A nation that has both a physically and spiritually healthy generation cannot be broken. As we set as our main goal the formation of a physically healthy, highly spiritual and united nation based on a single national idea, we must teach it to live a healthy lifestyle.

If we talk about the role of the motivation factor in the formation of a healthy lifestyle, first of all, the term motivation, by its content, is to motivate a person to engage in a certain activity, justify and explain its importance. In particular, in the problem of forming a healthy lifestyle, the motivation factor is aimed at explaining to people why they should live a healthy lifestyle, and why they should choose an unhealthy lifestyle [2].

When assessing the role of the motivation factor in the process of forming a healthy lifestyle among the population, it is necessary to pay attention to the presence of three main elements in each person that are necessary for analyzing their daily life activities. In particular, in each person: the presence of knowledge about a healthy lifestyle; the presence of a firm belief that living a healthy lifestyle can make a person healthy and prolong his life; the presence of a consistent effort to live a healthy lifestyle, etc.

From a theoretical point of view, this triangle can be formed in different variants in people's everyday life. The internal need of each person to strengthen his health determines his practical actions on this path. Accordingly, all factors can be divided into: those who live a hygienically correct and justified lifestyle, that is, a healthy lifestyle; those who live an unhealthy lifestyle that is not medically justified [3]. However, none of these can give a person true health and longevity. Finally, humanity has acquired a reliable tool on this path. This is a healthy lifestyle. We consider it necessary to develop motivation in the formation of a healthy lifestyle.

Motivation is a stimulus to action; it means such meanings as a dynamic process of the psycho-physiological plan, a means of controlling human movement, organization, activity and endurance.

Motivation depends on feelings, and confidence on reason. Motivation gives a person the opportunity to choose, but at the same time does not force him to do something. He actively does this work, guided by his inner feelings.

In the real practice of teaching and organizing a healthy lifestyle, it is important to identify the most effective methods and techniques for forming motivation at different

stages of growth [4]. When choosing motivation methods, it is necessary to take into account the following aspects that are closely related to each other and are integrally manifested in the formation of cognitive and health-improving activities in the field of a healthy lifestyle: emotional, cognitive, volitional, social. The model of the functioning of the will consists of the interrelation of emotional, cognitive and volitional processes, which, being integrated, form the motivation of a person. At the same time, it shows that these processes do not develop equally in children and adults. In children, emotional organizers are most strongly developed, cognitive and volitional processes are still poorly differentiated, and as they grow older, they occupy an increasingly larger place in the structure of the person, while at the same time the importance of emotional factors does not disappear [5].

Since a healthy and long life is an eternal dream of mankind, the main task of any society is to make this dream of mankind come true, that is, to create conditions for people to be healthy and live long.

One of the main directions of a healthy lifestyle is active movement, that is, engaging in sports, which has been passed down to us from our ancestors from generation to generation. Uzbek national wrestling is one of them. In this sport, Bakovul, if a wrestler is moving weaker, begins to speak words of praise about him in order to further increase his strength. As a result, the competition lasts a long time in a very intense struggle. Bakovul's praise for wrestlers is called motivation. In some cases, music also helps athletes motivate.

If we look at young people in particular, they choose a hero for themselves from movies, TV series, or literature they have read, and pay special attention to his speech, gait, and even clothing, trying to imitate that hero. We can also observe motivation in this area [6].

According to research scientists, motivation serves as a factor that increases a person's power in the eyes of others, while on the other hand, motivation is manifested through the impression a person receives from whom or from what.

In order to shed light on the topic of improving motivation in shaping a healthy lifestyle, when analyzing the educational methods of our wealthy ancestors and the educational secrets of ancient Eastern peoples, it is clear that today, parents, having some position, try to make their children grow up without tiring them. However, parents are indifferent to their children's daily routine and do not pay attention to proper nutrition, that is, they do not give enough money for their children's nutrition, do not pay attention to the fact that walking is the initial stage of health, but instead hire a driver to take them to school, buy the latest technology knowing that it is harmful to

human health, and spend a lot of money on their children who do not care about their own health after graduating from school or higher education, leading their children to unhappiness. The reasons for this are as follows: such children are more likely to become addicted to drugs; various diseases as a result of not paying attention to the daily routine; improper formation of the figure as a result of not engaging in physical education; neglect of the daily routine, that is, neglect of proper nutrition, leads to excess weight gain; improper use of the latest technology leads to various ideas alien to our spirituality; addiction to harmful habits; lack of responsibility for a healthy lifestyle [7]. If we conclude from the above, the role of forming a healthy lifestyle in a person's life, like upbringing, begins first with the family.

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# ЗНАЧЕНИЕ ВОСПИТАТЕЛЬНОЙ РАБОТЫ В ФОРМИРОВАНИИ СОЦИАЛЬНОЙ АДАПТАЦИИ КУРСАНТОВ К ПЕДАГОГИЧЕСКОМУ ПРОЦЕССУ

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***Аннотация.*** *В данной статье с теоретико-педагогической точки зрения проанализированы роль и значение воспитательной работы в формировании социальной адаптации курсантов к педагогическому процессу в военном образовательном учреждении.*

*Обосновано, что адаптация курсанта к новой образовательной среде, военному коллективу, установленному распорядку дня, требованиям воинской дисциплины, взаимоотношениям военной службы и профессиональным ценностям является сложным и многофакторным процессом.*

*Духовно-нравственные, военно-патриотические, коллективные, профессиональные и социально-коммуникативные направления воспитательной работы характеризуются как важные средства, обеспечивающие эффективную адаптацию курсантов к педагогической среде. Также приведены педагогические условия, критерии и практические рекомендации, служащие эффективной организации социальной адаптации курсантов.*

***Ключевые слова:*** *курсант, социальная адаптация, педагогический процесс, воспитание, воспитательная работа, военное образование, коллектив, военная дисциплина, профессиональная идентификация, педагогическая поддержка.*

Одним из приоритетных направлений современной педагогики является воспитание молодого поколения, являющегося будущим нашего завтрашнего дня, как сильной воли, энергичной, инициативной, обладающей широким мировоззрением и глубокими интеллектуальными знаниями, гармонично развитой личности, способной мобилизовать свои знания, потенциал и практическую деятельность на благо народа.

Адаптация курсанта к новой образовательной среде, воинскому коллективу, установленной дисциплине, требованиям преподавателей и командиров формируется не только через передачу знаний, но и через целенаправленную воспитательную работу. Воспитательный процесс развивает у курсанта такие качества, как воинская дисциплина, ответственность, сплоченность, взаимное уважение, осознание профессионального долга, самостоятельность и социальная активность.

В частности, воспитательная работа в социальной адаптации курсантов выполняет следующие задачи:

адаптирует курсанта к ценностям и нормам военно-образовательного учреждения;

формирует навыки нахождения своего места в коллективе и эффективного общения;

помогает психологически адаптироваться к строгому распорядку дня, дисциплине и высоким требованиям;

обеспечивает формирование профессиональной и военной идентичности;

укрепляет стойкость к трудностям, самоконтроль и чувство ответственности;

создает условия для участия курсанта в педагогическом процессе в качестве активного субъекта.

Воспитательная работа, проводимая при определении особенностей социальной адаптации курсантов к педагогическому процессу, имеет важное значение как средство целевого педагогического воздействия, обеспечивая усвоение ими социальной среды образовательного учреждения, ценностей военного коллектива, требований военной дисциплины и норм профессиональной деятельности. В процессе воспитательной работы у курсантов формируются такие качества, как социальная активность, ответственность, сплоченность, коммуникативная компетентность и профессиональная устойчивость.

Поэтому проводимая воспитательная работа является одним из основных педагогических условий, обеспечивающих успешную социальную адаптацию курсантов к педагогическому процессу.

В произведении Абу Насра Фараби "Город добродетельных людей" достижение человеком совершенства связано с его сотрудничеством с другими людьми. Согласно точке зрения Фараби, человек не может полностью

реализовать свои природные возможности в одиночку; он достигает высокого совершенства в сотрудничестве с другими.

При применении данной идеи в военно-образовательной среде можно увидеть, что адаптация курсанта к педагогическому процессу является не только результатом индивидуального обучения, но и процессом взаимодействия с коллективом курсантов, командирами, педагогами и общей социальной средой образовательного учреждения. Воспитательная работа, проводимая с этой точки зрения, является важным фактором, формирующим у курсантов сотрудничество, взаимную ответственность и социальную солидарность.

В педагогических взглядах Абу Али ибн Сины особое место в развитии человека отводится социальной среде и воспитанию. По его мнению, нравственные качества человека не даются в готовом виде, а формируются под влиянием среды, привычек и воспитания. Ибн Сина утверждает, что жизнь и деятельность человека в обществе основаны на взаимном сотрудничестве. Особенно примечательно, что он акцентирует внимание на социальной значимости образования в коллективе, а не на индивидуальном образовании. Обучающиеся учатся на поведении, опыте и действиях друг друга. Этот взгляд позволяет теоретически обосновать значение взаимоотношений между сверстниками, занятий в составе подразделения и воспитательных мероприятий в адаптации курсантов к военному коллективу.

В узбекском педагогическом мышлении произведение Абдуллы Авлони "Туркий гулистон ёхуд ахлоқ" считается важным историческим источником, освещающим вопрос воспитания. Авлони связывал нравственность и воспитание с духовным совершенством человека, социальной ответственностью, трудолюбием, честностью и занятием достойного места в обществе. В произведении наряду с образованием особо подчеркивается необходимость формирования у человека хорошего поведения и социальных качеств. Эти его взгляды имеют важное значение в обосновании необходимости формирования у курсантов таких личностно-социальных качеств, как патриотизм, ответственность, воинская дисциплина, верность долгу и сплоченность, не ограничиваясь предоставлением знаний в воспитании.

Педагогическая среда военного образовательного учреждения характеризуется взаимным единством обучения и боевой деятельности, строгим распорядком дня повседневной деятельности, субординацией, воинской дисциплиной, коллективным сосуществованием и высоким уровнем личной

ответственности. Поэтому процесс адаптации курсанта одновременно охватывает несколько направлений:

Во-первых, осуществляется учебно-педагогическая адаптация. Курсант адаптируется к новым дисциплинам, методам обучения, учебной нагрузке, системе самостоятельной подготовки и контроля знаний;

Во-вторых, происходит социально-психологическая адаптация. Курсант устанавливает межличностные отношения в новом коллективе, учится сотрудничать с однокурсниками, оказывать взаимную помощь и конструктивно разрешать разногласия;

В-третьих, формируется военно-служебная адаптация. При этом усваиваются требования внутреннего распорядка, дисциплины воинской службы, субординации, воинской этики и безусловного выполнения поставленных задач. В исследовании курсантов военного образования в системе Вооруженных Сил Узбекистана также подчеркивается, что социальная адаптация связана с принятием новых норм, ценностей, воинской дисциплины, иерархии и профессиональной этики. [8].

В-четвертых, происходит процесс профессиональной адаптации. Курсант начинает осознавать себя будущим младшим командиром, воспринимает социальную значимость, ответственность военной профессии и предъявляемые к ней требования. Таким образом, социальная адаптация заключается не только в привыкании курсанта к определенному порядку, но и охватывает его личностную и профессиональную идентификацию.

Воспитательная работа в военном учебном заведении является важным средством педагогического управления адаптацией курсанта к новой среде. Их первая функция - ценностно-направляющая. Вновь принятый курсант может первоначально воспринимать многие требования военного учебного заведения как внешнее обязательство. Целенаправленное воспитательное воздействие, выражая содержание и социальную значимость этих требований, служит превращению дисциплины, долга, чести, патриотизма, ответственности и коллективизма во внутренние убеждения курсанта.

Вторая задача — социально-коммуникативная функция. Коллективные беседы, групповые занятия, духовно-просветительские мероприятия, спортивные соревнования, встречи, посвященные военным традициям, отношения наставника и ученика укрепляют взаимодействие и сотрудничество курсантов. В результате курсант начинает чувствовать себя равноправным и ответственным членом коллектива.

Третья задача — мотивационная функция. Особенно в начальный период обучения у курсанта могут возникнуть усталость, переоценка трудностей или неуверенность в выбранной профессии под влиянием нового порядка и высоких требований. В этот период личный пример офицеров и педагогов, разъяснение профессиональной перспективы, знакомство с военными традициями и жизнью достойных офицеров укрепляют внутренню мотивацию курсанта. В современных исследованиях военной педагогики формирование положительной мотивации курсанта к военной службе показано как одно из важных педагогических условий адаптации.

Четвертая задача — профилактическая и коррекционная функция.

Не все курсанты адаптируются к новой среде с одинаковой скоростью. У некоторых курсантов могут возникнуть трудности с общением, внутреннее беспокойство, неуверенность в своих силах, отчуждение от коллектива или дисциплинарные проблемы. Поэтому важно раннее выявление таких случаев и оказание индивидуальной воспитательной помощи на основе сотрудничества педагогов, командиров и психологов.

А коллективное воспитание развивает у курсантов взаимное доверие, дружескую помощь, сплоченность и коллективную ответственность. Однако влияние коллектива не должно превращаться в средство ограничения индивидуальности личности. Желательно, чтобы высокая требовательность в военном коллективе сочеталась с уважением к личности курсанта и развитием его способностей.

В результате анализа мы считаем, что для эффективного формирования социальной адаптации курсантов необходимо обеспечить следующие педагогические условия.

Во-первых, необходимо изучить социально-психологические и мотивационные особенности каждого курсанта в период поступления в образовательное учреждение. Это позволяет педагогу и командиру определить, какой курсант больше нуждается в поддержке.

Во-вторых, с первого курса должна быть последовательно налажена система наставничества и педагогического сопровождения. В исследованиях, изучающих адаптацию курсантов в военно-учебных заведениях, также предлагается организовать адаптацию на этапах диагностики и последующей преобразовательно-педагогической поддержки [9].

В-третьих, необходимо превратить курсанта в активного субъекта воспитания, а не в пассивный объект. Для этого важно дать курсантам

определенные задачи и ответственность в коллективе, проявить инициативу, создать возможность для участия в социальных и образовательных проектах.

В-четвертых, необходимо создать позитивную социально-психологическую среду. Хотя воинская дисциплина требует высоких требований, следует учитывать достоинство курсанта, его личное мнение и потребность в справедливом обращении.

В-пятых, деятельность коллектива педагогов, командиров, психологов и курсантов должна быть скоординирована. Потому что противоречивые требования, предъявляемые к курсанту различными субъектами, могут снизить эффективность воспитательного воздействия.

Для эффективного обеспечения адаптации курсантов воспитательная работа должна быть организована как система, гармонично сочетающая военно-патриотическое, духовно-нравственное, профессиональное, социально - коммуникативное и дисциплинарное воспитание. При этом особое значение имеют индивидуальный подход, наставничество, коллективная деятельность, личный пример, положительная психологическая среда и сотрудничество педагога-командира-психолога.

В заключение следует отметить, что воспитательная работа является не вспомогательным средством, ускоряющим адаптацию курсанта к военно-образовательной среде, а системным педагогическим механизмом, обеспечивающим его личностное, социальное и профессиональное развитие. Целенаправленная и научно обоснованная воспитательная деятельность способствует формированию младшего командира, сознательно принимающего воинскую дисциплину, способного эффективно работать в коллективе, осознающего свой профессиональный долг и ответственность, устойчивого в моральном и волевом отношении.

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# TALABALAR HUQUQIY MADANIYATINI OSHIRISHDA INNOVATSION PEDAGOGIK YONDASHUVLAR

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***Annotatsiya :*** *Ushbu maqolada oliy ta'lim muassasalari talabalarida huquqiy madaniyatni shakllantirish va yuksaltirishning nazariy-metodologik hamda amaliy jihatlari atroflicha tadqiq etilgan.An'anaviy ta'limdan zamonaviy, innovatsion va kompetensiyaviy ta'lim paradigmalariga o'tish zarurati ilmiy tahlil qilingan. Maqolada keys-stadi (Case-study), loyihaviy ta'lim interaktiv simulyatsiyalar, virtual sud jarayonlari kabi zamonaviy pedagogik texnologiyalarni huquqiy ta'lim jarayoniga integratsiya qilish mexanizmlari ishlab chiqilgan. Shuningdek, talabalar huquqiy madaniyatining kognitiv, motivatsion-qadriyatli va faoliyatga oid komponentlarini baholash mezonlari va pedagogik modeli taklif etilgan.*

***Kalit so'zlar:*** *Huquqiy madaniyat, huquqiy ong, innovatsion pedagogika, kompetensiyaviy yondashuv, keys-stadi, loyihaviy ta'lim, raqamli ta'lim, virtual simulyatsiya, huquqiy nigilizm, faol fuqarolik pozitsiyasi, oliy ta'lim.*

## KIRISH

Zamonaviy bosqichda O'zbekiston Respublikasida amalga oshirilayotgan keng ko'lamli demokratik islohotlar, qonun ustuvorligini ta'minlash hamda fuqarolik jamiyatini rivojlantirishning tub mazmuni har bir fuqaroning, xususan, yoshlarning yuksak huquqiy madaniyatiga tayanadi. Yangi O'zbekistonning Taraqqiyot strategiyasida hamda O'zbekiston Respublikasi Konstitutsiyasida belgilangan inson huquqlari va erkinliklarini ta'minlashga doir ustuvor vazifalar jamiyatning intellektual qatlami bo'lmish oliy ta'lim muassasalari (OTM) talabalari o'rtasida huquqiy tarbiya va ta'lim tizimini tubdan takomillashtirishni talab etadi.Bugungi kunda jahonda kechayotgan global globallashuv, axborot texnologiyalarining jadal rivojlanishi va turli g'oyaviy-mafkuraviy xatarlarning ortib borishi sharoitida talaba yoshlar shaxsida huquqiy ong va huquqiy madaniyatni shakllantirish oddiy bilim berish doirasidan chiqib, ijtimoiy xavfsizlik va barqarorlikning muhim omiliga aylanmoqda. Oliy ta'lim

tizimida tayyorlanayotgan har bir mutaxassis, o'z yo'nalishidan qat'i nazar, mustaqil va ongli ravishda qonunlarga rioya etishi, o'z huquq va majburiyatlarini anglashi, jamiyatda sodir bo'layotgan huquqiy jarayonlarga xolis va mas'uliyat bilan munosabat bildira olishi zarur.

Biroq, amaliyot ko'rsatishicha, an'anaviy ta'lim usullari — ya'ni bir tomonlama ma'ruza va qonun matnlarini shunchaki yodlatishga asoslangan pedagogik yondashuvlar zamonaviy talabalarning qiziqishlari, psixologik xususiyatlari va dinamik dunyoqarashiga to'liq javob bera olmayapti. An'anaviy metodlar natijasida olingan bilimlarning hayotiy vaziyatlar va amaliyot bilan uzviy bog'lanmasligi talabalarda huquqiy passivlik, befarqlik va ba'zi hollarda huquqiy nigilizm (qonunlarga mensimay qarash) hodisasining saqlanib qolishiga olib kelmoqda.Ushbu muammoning yechimi ta'lim jarayoniga **innovatsion pedagogik yondashuvlar**ni — kompetensiyaviy, interfaol, shaxsga yo'naltirilgan hamda raqamli texnologiyalarga asoslangan metodlarni keng va tizimli ravishda joriy etishdan iboratdir. Innovatsion pedagogika talabani faqatgina axborotni qabul qiluvchi obyektdan, axborotni tahlil qiluvchi, mustaqil mulohaza yurituvchi va huquqiy qarorlar qabul qila oladigan ta'lim jarayonining subyektiga aylantiradi. Shu sababli, talabalar huquqiy madaniyatini oshirishda innovatsion pedagogik yondashuvlarning nazariy-metodik asoslarini ishlab chiqish va amaliyotga tatbiq etish o'ta dolzarb ilmiy-pedagogik muammo hisoblanadi.

## ASOSIY QISM

Xususan, ayni damda talabalarning huquqiy madaniyatini oshirishga qaratilgan va amaliyotda o’z samarasini berib kelayotgan bir nechta metodlar quyida keltirib o’tiladi:

***A)*** Keys-stadi (Case-study) — Huquqiy situatsion masalalar yechimi.Keys-stadi metodi real hayotiy va huquqiy ziddiyatli hodisalarni aks ettiruvchi muammoli topshiriqlarga (keyslarga) asoslanadi.

**Keysni amalga oshirish algoritmi:**

1. *Tanishuv:* Talabalarga aniq hayotiy huquqiy keys taqdim etiladi (masalan: mehnat shartnomasini noqonuniy bekor qilish, iste'molchi huquqlarining buzilishi yoki intellektual mulk o'g'irligi).
2. *Muammoni identifikatsiya qilish:* Mashg'ulot ishtirokchilari mazkur situatsiyadagi huquqbuzarlik va huquqiy kolliziyani aniqlaydilar.
3. *Qonunchilik tahlili:* Talabalar qonunlar va normativ hujjatlardan foydalanib, tomonlarning huquqiy pozitsiyasiga baho beradilar.

4. *Muqobil yechimlar va taqdimot:* Kichik guruhlar o'z yechimlarini taklif etadilar va munozara (debata) o'tkazadilar.

***B)*** Loyihaviy ta'lim texnologiyasi (Project-Based Learning — PBL)

Loyihaviy ta'lim talabalardan muayyan ijtimoiy-huquqiy muammoni hal etishga qaratilgan uzoq vaqtli tadqiqot yoki ijtimoiy loyihani amalga oshirishni talab qiladi.Misol uchun loyiha quyidagi mavzularini keltirish mumkin:

- "Universitetda talabalar akademik halolligi kodeksini ishlab chiqish va targ'ib qilish"
- "Iste'molchilarning raqamli makondagi huquqlarini himoya qilish bo'yicha vizual qo'llanma yaratish"
- "Yoshlar o'rtasida korrupsiyaga qarshi immunitetni shakllantirish bo'yicha hududiy aksiya rejasini tuzish"

***C)*** Sokratcha bahs-munozara va muammoli ma'ruza:

Avtoritar usuldagi tekis ma'ruzalardan voz kechilib, muammoli va savol-javobli ma'ruzalar tashkil etiladi. O'qituvchi tayyor tasdiqlarni aytmaydi, balki talabalarga javobi bir ma'noli bo'lmagan huquqiy va axloqiy savollarni beradi (masalan: "Sun'iy intellekt yaratgan mualliflik obyekti uchun javobgarlik kimning zimmasida?"). Bu talabalarni faol mantiqiy fikrlashga va o'z nuqtai nazarini huquqiy asoslashga majbur qiladi.

**XULOSA**

Xulosa qilib aytganda, talabalarning huquqiy madaniyatini oshirish zamonaviy ta’lim tizimining muhim vazifalaridan biridir. Huquqiy bilimlarni shunchaki nazariy jihatdan yetkazish bilan bir qatorda, talabalarda qonunlarga hurmat, huquq va majburiyatlarini anglash, huquqiy mas’uliyatni his etish hamda kundalik hayotda huquqiy bilimlardan to‘g‘ri foydalanish ko‘nikmalarini shakllantirish zarur. Mazkur jarayonda innovatsion pedagogik yondashuvlardan samarali foydalanish ta’limning mazmuni va sifatini oshirishga xizmat qiladi.Interfaol metodlar, muammoli ta’lim, keys-stadi, munozara va debatlar, rolli o‘yinlar, loyiha asosida o‘qitish hamda axborot-kommunikatsiya texnologiyalaridan foydalanish talabalarning huquqiy masalalarga nisbatan qiziqishini kuchaytiradi. Bunday yondashuvlar orqali talabalar huquqiy vaziyatlarni mustaqil tahlil qilish, o‘z fikrini asoslash, huquqiy qarorlar qabul qilish va mavjud muammolarga qonuniy yechim topish kompetensiyalarini rivojlantiradilar.

Shuningdek, talabalarning huquqiy madaniyatini yuksaltirishda ta’lim muassasasi, oila va jamiyat hamkorligini kuchaytirish, huquqiy targ‘ibot ishlarini zamonaviy raqamli platformalar asosida tashkil etish hamda real hayotiy misollar bilan

boyitish muhim ahamiyatga ega. Innovatsion pedagogik texnologiyalarni huquqiy ta’lim jarayoniga tizimli ravishda joriy etish natijasida huquqiy jihatdan savodli, faol fuqarolik pozitsiyasiga ega, qonun ustuvorligini qadrlaydigan va jamiyat oldidagi mas’uliyatini anglaydigan yoshlarni tarbiyalash imkoniyati kengayadi.Demak, innovatsion pedagogik yondashuvlar talabalarning nafaqat huquqiy bilimlarini, balki ularning huquqiy tafakkuri, huquqiy faolligi va huquqiy madaniyatini shakllantirishning samarali vositasi hisoblanadi. Shu sababli oliy ta’lim jarayonida mazkur yondashuvlardan maqsadli va izchil foydalanish bugungi kunning dolzarb pedagogik vazifalaridan biri sifatida namoyon bo‘ladi.

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# OLIY TA’LIM MUASSASALARIDA RAQOBATBARDOSH MUTAXASSISLARNI SHAKLLANTIRISHDA LIDERLIK TAMOYILLARI

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***Annotatsiya.*** *Mazkur maqolada oliy o‘quv yurtlarida kadrlar tayyorlash sifatini oshirishda foydalaniladigan yo‘llarni izlash haqida so‘z boradi. Ijtimoiy-madaniy sohada raqobatbardosh mutaxassisni shakllantirishda yyetakchilik moslashuvchan, faol, ijodiy fazilatlarni oshirishning eng muhim shartiga aylanadi. Maqolada yetakchilik fazilatlarini rivojlantirishning tashkiliy va pedagogik shartlari, bosqichlari, texnologiyalari ko'rib chiqiladi.*

***Kalit so`zlar:*** *Liderlik, kasbiy kompetentsiya, shaxsiy fazilatlar, kasbiy malaka. oliy ta’lim, ta'lim jarayoni, kasbiy tayyorgarlik. pedagogik texnologiyalar, innovatsiya, moslashuvchanlik. motivatsiya, shaxsiy kompetentsiya, pedagogik qo‘llab-quvvatlash.*

***Аннотация.*** *В статье рассматриваются пути повышения качества подготовки кадров в высших учебных заведениях. В социально-культурной сфере формирование конкурентоспособного специалиста рассматривается через призму развития лидерских качеств, таких как адаптивность, активность и творческий подход. В работе анализируются организационно-педагогические условия, этапы и современные технологии формирования лидерских качеств.*

***Ключевые слова:*** *Лидерство, профессиональная компетентность, личностные качества, профессиональная квалификация, высшее образование, образовательный процесс, профессиональная подготовка, педагогические технологии, инновации, адаптивность, мотивация, личностная компетентность, педагогическая поддержка.*

***Abstract.*** *The article explores ways to improve the quality of personnel training in higher education institutions. In the socio-cultural sphere, the formation of a competitive specialist is viewed through the development of leadership qualities such as adaptability, activity, and creativity. The study analyzes the organizational and pedagogical conditions, stages, and modern technologies for developing leadership traits.*

***Keywords:*** *Leadership, professional competence, personal qualities, professional qualification, higher education, educational process, professional training, pedagogical* technologies, innovation, adaptability, motivation, personal competence, pedagogical support.

Zamonaviy sharoitda mutaxassislarga bo'lgan talab raqobatbardoshlik bilan ta'minlanadi - bu professional malakali, harakatchan, tez moslasha oladigan va professional muammolarni optimal hal qila oladigan mutaxassisning ajralmas xususiyati. Raqobatbardosh mutaxassisni shakllantirishning eng muhim omili - bu kasbiy kompetentsiyani doimiy ravishda oshirishni, ichki salohiyatni rivojlantirishni ta'minlaydigan shaxsiy fazilatlarni rivojlantirishdir.

Bugungi kunda zamonaviy ta'lim sharoitida yetakchilik-voqelikni o'zgartiruvchi sub'ektning, shu jumladan o'zining maqsadli faoliyati darajasini aks ettiruvchi shaxsiy sifat sifatida alohida ahamiyatga egami?

Ijtimoiy-madaniy faoliyatda (IMF) yetakchilik kasbiy jihatdan muhim sifat sifatida qaraladi. IMF mutaxassisi tomonidan insoniy-ijodiy, madaniy-rivojlantiruvchi funksiyalarni amalga oshirish, madaniyat olamiga, ijodning turli sohalariga jalb qilish orqali boshqalarning rivojlanishini rag'batlantirishga qaratilgan o'zaro ta'sir jarayonida professionalning ustunligini nazarda tutadi.

Rahbarlik muammosi falsafiy va tarixiy (V. Y. Bolshakov, E. V. Osipova va boshqalar), siyosiy (G. A. Avsinova, A. A. Kochetkov, E. V. Kudryashova va boshqalar), ijtimoiy-psixologik (T. A. Bendas, A., V. Veber, A. L. Vershov, A. V. Petrovskiy va boshqalar), iqtisodiy (I.I. Druker, O. V. Lukashova, D. V. Xant va boshqalar), texnologik (J. Adair, A. G. Zolotova, O. G. Sudareva va boshqalar) jihatlari juda yaxshi o'rganilgan..

Zamonaviy sharoitda yetakchining ijtimoiy-siyosiy, iqtisodiy, madaniy jarayonlarni boshqarishdagi roli va mas’uliyatining kuchayishi munosabati bilan yetakchilikni hodisa sifatida o‘rganish tor funksional, texnologik yondashuv doirasidan chiqib ketadi. Mutaxassis rahbarlarni tayyorlash yetakchilikka aksiologik yondashuvni asoslashni talab qiladi. Rahbarlarda shaxsga bo'lgan munosabatni qadriyat sifatida belgilovchi insonparvarlik, ma'naviy-axloqiy pozitsiyani shakllantirish, "oldinga borish" va "orqada qolish" jarayoni katta ahamiyatga ega; yetakchilik vositalaridan mas'uliyat bilan foydalanish, ayniqsa bu shaxslararo o'zaro ta'sir doirasiga tegishli bo'lsa, uning ahamiyati yanada ortadi.

Yetakchilik fazilatlarini shakllantirishning dolzarbligi kasbiy ta'lim nazariyasi va amaliyotida mavjud bo'lgan bir qator qarama-qarshiliklarni bartaraf etish zarurati bilan

bog'liq bo'lib, yetakchilikka boshqalar ustidan ustunlik sifatida an'anaviy munosabat va yetakchilik fazilatlaridan foydalanishga asoslangan zamonaviy yondashuv, ham boshqalarning individual xususiyatlarini rivojlantirishni rag'batlantirish, shuningdek, shaxsiy va kasbiy o'zini o'zi rivojlantirish, yetakchilik fazilatlariga bo'lgan talab va yosh mutaxassislar o'rtasidagi zaif sharoitlarda yetakchilik qobiliyatiga bo'lgan talab darajasiga yetadi. Ijtimoiy-madaniy sohada yetakchilarga bo'lgan ehtiyoj va kasbiy tayyorgarlik jarayonida bo'lajak mutaxassislar shaxsining yetakchilik yo'nalishini shakllantirishga qaratilgan pedagogik texnologiyalarning yetishmasligi o'rtasidagi tashabbusning deyarli ko`zga ko`rinmasligi, passiv hayotiy pozitsiyada namoyon bo'ladi.

Mutaxassislar tayyorlash sifatiga talab ortib borayotgan bir sharoitda raqobatbardoshlikni ta’minlash sharti sifatida universitetda liderlik fazilatlarini rivojlantirish muammosini hal etish amaliy qiziqish uyg‘otadi.Yetakchilik maqomi mutaxassisning individual va shaxsiy xususiyatlari va kasbiy malakasi bilan ta'minlanadi.

Ijtimoiy-madaniy faoliyat nazariyasi va amaliyotini tahlil qilish asosida mutaxassis-rahbarning kasbiy kompetentsiyasining tarkibiy qismlari quyidagilardan iborat ekanligi aniqlandi: pedagogik, gumanitar, madaniy, shaxsiy kompetentsiya.

Pedagogik kompetentsiya. ijtimoiy-madaniy texnologiyalarga ega bo'lish, shaxsni rivojlantirish uchun pedagogik shart-sharoitlarni yaratish qobiliyati, uning ijodiy salohiyatini namoyon qilish, pedagogik yo'naltirilgan va tashkil etilgan faoliyatni amalga oshirish qobiliyati kabilarni o'z ichiga oladi. Pedagogik kompetentsiya ta'sirning qadriyat-axloqiy darajasini, kasbiy faoliyat shakllari va usullarini tanlashni tartibga soluvchi me'yorlarga rioya qilishni, muloqotning pedagogik uslubini ta'minlaydi.

Gumanitar bilimlar malakasi o'zining kasbiy va shaxsiy salohiyatini boshqa birovning manfaati uchun ro'yobga chiqarishga tayyorligida namoyon bo'ladi; shaxsning psixofiziologik xususiyatlarini, uning ehtiyojlari va ularni qondirish usullarini bilish. o'zaro ta'sir jarayonida yuzaga keladigan vaziyatlarni hal qilish qobiliyati, o'zining, boshqa odamlarning, butun jamiyatning manfaati va rivojlanishiga qaratilgan kasbiy va shaxsiy ma'nolarni egallash kabilarni o'z ichiga oladi.

Mutaxassis rahbarning madaniy kompetensiyasi ijtimoiy hayot jarayonlari va hodisalarini ongli ravishda idrok etish, ijtimoiy moslashuv va psixologik harakatchanlikni namoyon etish, jamiyat hayotida samarali ishtirok etish imkonini beradigan bilim, ko‘nikma, malaka va qadriyat yo‘nalishlari majmuida ifodalanadi.

Shaxsiy kompetentsiya o'z-o'zini qurishda, o'ziga nisbatan, o'z xususiyatlari va fazilatlariga nisbatan transformativ faoliyatning namoyon bo'lishida namoyon bo'ladi. Shu ma'noda, yetakchilik maqomiga erishish o'zini o'zi anglash jarayoni bilan bir xildir

OTM da liderni shakllantirish texnologiyasi quyidagi bosqichlarni o'z ichiga oladi

• ta'lim faoliyatiga moslashish, kasb olamiga kirish, motivatsiyani shakllantirish, yetakchilikka bo'lgan ehtiyoj bilan bog'liq moslashish.

• protsessual, o'z-o'zini hurmat qilish, o'ziga ishonch, liderlikni oshirishga yordam beradigan kasbiy bilim, ko'nikma va malakalarni egallashni ta'minlash:

• shakllantiruvchi, o'quv va darsdan tashqari faoliyat jarayonida yetakchi rollarni sinab ko'rishga qaratilgan jarayon;

• amaliy faoliyatni amalga oshirish jarayonida kasbiy bilim, ko‘nikma, malaka, yetakchilik fazilatlarini shakllantirsh imkonini beruvchi faoliyatga asoslangan.

Liderlik fazilatlarini shakllantirish texnologiyalarini joriy etish quyidagi shartlar bajarilgan taqdirda mumkin bo'ladi

1. Liderlik fazilatlarini rivojlantirish jarayonining yaxlitligini ta'minlovchi o'quv va darsdan tashqari faoliyatning birligi.

2. IMF mutaxassisining o'zini-o'zi anglash maydoni sifatida universitetning madaniy-ma'rifiy muhitini optimallashtirish

3. Talabalarni ilmiy-tadqiqot, o‘quv-izlanish, badiiy-ijodiy, madaniy va bo‘sh vaqtni o‘tkazish faoliyatiga jalb etish.

4. Ta'lim jarayonini individuallashtirish, har bir talaba uchun individual ta'lim traektoriyasini shakllantirish.

5. Pedagogik qo'llab-quvvatlash, talabalarning malakasini oshirish jarayonida psixologik-pedagogik yordam ko'rsatish va qo'llab-quvvatlash

# ARTIFICIAL INTELLIGENCE AND EDUCATION: OPTIMIZING COGNITIVE LOAD IN MATHEMATICAL BIOLOGY AND BIOINFORMATICS USING ALPHAPOLD AND LLMS

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***Abstract:*** *This paper examines how artificial intelligence - specifically Large Language Models (LLMs) and AlphaFold - can serve as digital assistants in mathematical biology and bioinformatics education. Because these complex fields place a heavy cognitive load on students, we apply Cognitive Load Theory to show how AI can act as a collaborative partner to reduce unnecessary mental strain. While AI helps students grasp complex models more easily, over-relying on it carries ethical risks, often described as the "stochastic parrot" effect. Ultimately, this study highlights the need for critical thinking and proposes a new teaching model based on human-machine collaboration.*

***Keywords:*** *Mathematical biology, Bioinformatics, Artificial Intelligence, Cognitive Load Theory, AlphaFold, LLMs, Stochastic Parrots.*

***Annotatsiya:*** *Ushbu maqolada matematik biologiya va bioinformatika darslarida sun'iy intellektdan (xususan, LLM va AlphaFold modellaridan) raqamli ko'makchi sifatida foydalanish imkoniyatlari o'rganiladi. Bu fanlarning murakkabligi talabalarga katta kognitiv yuklama beradi. "Kognitiv yuklama nazariyasi"ga tayangan holda, tadqiqotimiz sun'iy intellekt qanday qilib ortiqcha aqliy zo'riqishni kamaytirishi va murakkab modellarni tushunishni osonlashtirishini tahlil qiladi. Shu bilan birga, neyrotarmoqlarga ko'r-ko'rona ishonishning xavflari ("stoxastik to'tiqushlar" effekti) ko'rib chiqilib, talabalarda tanqidiy fikrlashni o'stirish muhimligi ta'kidlanadi. Yakunda inson va mashina hamkorligiga asoslangan yangi ta'lim modeli taklif etiladi.*

***Kalit so'zlar:*** *Matematik biologiya, bioinformatika, sun'iy intellekt, kognitiv yuklama nazariyasi, AlphaFold, LLM, stoxastik to'tiqushlar.*

***Аннотация:*** *В статье рассматривается использование искусственного интеллекта (в частности, LLM и AlphaFold) в качестве цифровых помощников*

*при обучении математической биологии и биоинформатике. Поскольку эти сложные дисциплины создают высокую когнитивную нагрузку на студентов, мы опираемся на «Теорию когнитивной нагрузки», чтобы показать, как ИИ может снизить умственное напряжение и облегчить понимание сложных моделей. Однако слепое доверие ИИ несет в себе этические риски, известные как эффект «стохастических попугаев». В работе подчеркивается важность развития критического мышления и предлагается новая модель обучения, основанная на сотрудничестве человека и машины.*

***Ключевые слова:*** *Математическая биология, биоинформатика, искусственный интеллект, теория когнитивной нагрузки, AlphaFold, LLM, стохастические попугаи.*

## 1. Introduction

The 21st century has witnessed an unprecedented explosion of high-dimensional molecular, cellular, and omics profiling data in the biological sciences[1, 7]. This data-rich environment has driven the rapid expansion of mathematical biology and bioinformatics, fields that promise to extract actionable knowledge from complex biological systems[1, 2]. However, educating the next generation of specialists in these interdisciplinary domains presents a significant pedagogical challenge. Students are required to simultaneously master complex biological processes, such as genomics and protein folding, alongside advanced computational algorithms and mathematical modeling[11].

According to Cognitive Load Theory, learning such complex, biologically secondary knowledge places a heavy burden on the limited capacity of human working memory[8]. In mathematical biology, the "element interactivity" - the number of interacting elements of information that a learner must process simultaneously is extremely high. For instance, understanding the mathematical principles behind biological sequence analysis or manipulating complex equations requires the simultaneous processing of multiple interdependent variables, leading to a massive intrinsic cognitive load[8]. When this intrinsic cognitive load exceeds the working memory capacity of novice learners, it becomes exceedingly difficult to build coherent mental models, often resulting in rote learning rather than deep comprehension[6, 8].

To address these cognitive bottlenecks, artificial intelligence (AI) has emerged as a transformative collaborative tool in education, shifting the paradigm from independent human effort to "augmented intelligence" where human and machine capabilities are strategically combined[5, 12]. The integration of student-facing AI

applications, functioning as digital collaborative agents, offers exceptional potential to personalize instruction and scaffold student learning[4, 12].

Specifically, Large Language Models (LLMs) such as ChatGPT can act as intelligent tutoring agents that help optimize cognitive load by providing step-by-step solutions, generating practice problems, and explaining complex bioinformatics code. Furthermore, domain-specific deep learning breakthroughs, such as AlphaFold, have revolutionized structural bioinformatics by predicting three-dimensional protein structures with atomic accuracy[3]. For students, interacting with AlphaFold provides direct access to high-level structural models without requiring them to navigate the computational intractability of traditional thermodynamic simulations from scratch.

However, integrating these digital agents into the educational process is not without epistemological and ethical risks. AI language models have been critically characterized as "stochastic parrots" that stitch together linguistic forms based on probabilistic data without any grounded understanding of meaning or communicative intent[12, 13]. This raises concerns about students over-relying on unverified, machine-generated information, which can negatively impact their critical thinking and problem-solving skills.

Therefore, this paper aims to explore the didactic potential of human and digital agent collaboration in mathematical biology and bioinformatics education. By applying Cognitive Load Theory, we analyze how tools like AlphaFold and LLMs can be utilized to optimize extraneous and intrinsic cognitive loads, while emphasizing the critical need to develop students' analytical skills to navigate the risks of AI integration safely.

## 2. Cognitive Load Theory in Biomathematics Education

This study employs a theoretical and analytical methodology based on Cognitive Load Theory (CLT) to evaluate the pedagogical integration of artificial intelligence agents in interdisciplinary education. CLT, extensively developed by John Sweller, posits that human cognitive architecture consists of a highly limited working memory and a virtually unlimited long-term memory. The acquisition of complex, biologically secondary knowledge - such as advanced mathematics, programming, and bioinformatics - places a significant burden on this limited working memory[8].

In the context of mathematical biology, the concept of "element interactivity" is particularly crucial. Element interactivity refers to the number of interacting elements of information that a learner must process simultaneously to understand a concept. Biomathematics inherently possesses exceptionally high element interactivity, as students must constantly integrate abstract biological phenomena (e.g., genomic sequences, protein structures) with complex computational algorithms and

mathematical equations[8]. According to CLT, if these interacting elements are not incorporated into a cohesive schema stored in long-term memory, the intrinsic cognitive load becomes overwhelmingly high for novice learners. Just as novice chess players struggle because they lack the large repertoire of move configurations (schemas) held by grandmasters, biomathematics students face cognitive overload when attempting to process biological and mathematical variables simultaneously from scratch.

To address this, our methodological approach analyzes how digital agents can function as cognitive collaborators. Learning complex subjects requires the acquisition of large numbers of schemas incorporating these interacting elements. When educational formats are inefficient, they generate extraneous cognitive load, which distracts learners and uses up valuable working memory capacity[8]. By integrating AI tools like Large Language Models (LLMs) and AlphaFold into the curriculum, we hypothesize that these digital agents can take over routine computational tasks, provide immediate step-by-step code explanations, and accurately visualize 3D models[3, 4].

Through this theoretical lens, the digital agent acts as a scaffolding mechanism. It minimizes extraneous cognitive load and helps optimize the processing of intrinsic cognitive load. Consequently, this optimization allows students to allocate their limited working memory resources directly toward schema construction and deep comprehension of mathematical biology concepts, rather than being bogged down by syntax errors or visualization difficulties[4, 8].

## 3. Integrating Digital Agents into Biomathematics Education

The application of Cognitive Load Theory to mathematical biology education reveals that digital agents can serve as powerful cognitive collaborators. Our analysis focuses on two distinct types of artificial intelligence tools: AlphaFold for structural bioinformatics and Large Language Models (LLMs) like ChatGPT for computational problem-solving.

**3.1. AlphaFold as a Structural Bioinformatics Agent** Predicting the three-dimensional structure that a protein will adopt based solely on its amino acid sequence has been a major open research problem for over 50 years[3]. Traditional physical approaches rely on thermodynamic or kinetic simulations of protein physics, which are highly challenging and computationally intractable for moderate-sized proteins. AlphaFold revolutionized this field by utilizing deep neural networks and multiple sequence alignments (MSAs) to predict protein structures with atomic accuracy[3].

From an educational perspective, introducing AlphaFold as a digital agent fundamentally transforms the learning experience. Previously, students had to expend massive cognitive effort understanding the heuristic systems and complex

mathematical physics equations required for protein folding simulations. By integrating AlphaFold, the digital agent handles the computationally heavy graph inference problems in 3D space[3]. This shifts the student's cognitive load from the extraneous task of executing mathematical simulations to the intrinsic task of analyzing the biological and functional implications of the accurately predicted 3D structures. Students can now directly observe how amino acid sequences correlate with complex intertwined homomers or zinc-binding sites, accelerating their schema acquisition in structural biology.

**3.2. Large Language Models (LLMs) as Computational Tutors** Mathematical biology heavily relies on programming and data analysis. For biology students, learning complex programming languages (e.g., Python, R) alongside biological concepts creates an overwhelming cognitive burden. LLMs, which are trained on massive amounts of text data to generate human-like responses, can act as personalized computational tutors[4].

Recent research demonstrates the efficacy of LLMs in computing education, where models like GPT-3 have been successfully employed to generate code explanations and step-by-step solutions. When a biomathematics student struggles with a bioinformatics algorithm, an LLM can provide immediate, tailored feedback, explain complex code snippets, and generate targeted practice problems[4]. This collaborative interaction minimizes the extraneous cognitive load caused by syntax errors and unfamiliar programming environments. Consequently, the learner can allocate their limited working memory to understanding the core mathematical models underlying the biological data, rather than being frustrated by coding mechanics. Ultimately, LLMs facilitate a personalized learning environment where the machine and the student share the problem-solving process, leading to a deeper comprehension of interdisciplinary concepts[4].

## 4. Epistemological and Ethical Risks of Digital Agents

Despite the significant advantages of integrating AlphaFold and Large Language Models (LLMs) into biomathematics education, this human-machine collaboration introduces profound epistemological and ethical challenges. As learners increasingly rely on digital agents to navigate complex biological data and mathematical algorithms, the risks of cognitive deskilling, misinformation, and algorithmic bias must be critically evaluated.

**4.1. The Epistemological Illusion: "Stochastic Parrots"** A fundamental risk in utilizing LLMs like ChatGPT for educational purposes stems from the illusion of comprehension. AI language models have been accurately characterized as "stochastic

parrots" - systems that haphazardly stitch together sequences of linguistic forms based on probabilistic data without any grounded understanding of meaning, real-world context, or communicative intent[13]. Because these models generate highly fluent and coherent text, human interlocutors are predisposed to impute meaning where there is none, mistakenly assuming that the AI possesses actual reasoning capabilities. In mathematical biology, this can be particularly dangerous. A student might ask an LLM to explain a complex differential equation modeling population genetics or to write a bioinformatics script for genomic sequencing. The model may output a response that is syntactically flawless but scientifically flawed. If students treat the digital agent as an infallible oracle rather than a probabilistic tool, they risk absorbing fundamental misconceptions.

**4.2. Over-reliance, Hallucinations, and Cognitive Deskilling** The effortless generation of answers and code by digital agents can negatively impact students' critical thinking and problem-solving skills[4]. While Cognitive Load Theory advocates for reducing extraneous load to facilitate learning, completely bypassing the "productive struggle" required to build complex mental schemas can lead to cognitive laziness. Furthermore, LLMs frequently generate "fake and plausible information"[9]. The ability of these models to produce convincingly written but unverified output makes it difficult for novice learners to distinguish between real knowledge and machine hallucinations. If biomathematics students rely too heavily on these models without actively verifying the veracity of the provided information, the educational goal of deep comprehension is completely undermined[4, 9].

**4.3. Ethical Concerns, Bias, and Data Privacy** Beyond cognitive risks, the deployment of AI in education introduces significant ethical dilemmas, particularly concerning algorithmic bias and data privacy[10]. Large language models are trained on massive, uncurated datasets from the Internet, which inherently encode hegemonic viewpoints and societal biases. When digital agents generate text, they run the risk of reproducing and even amplifying the biases present in their input data[13]. In bioinformatical research, relying on biased algorithms could inadvertently lead to skewed data interpretations or discriminatory models in healthcare applications. Additionally, the continuous interaction with intelligent tutoring systems raises critical questions regarding "dataveillance" - the mass collection and processing of students' personal and behavioral data without fully informed consent[10]. Addressing these concerns requires the immediate development of AI literacy among students, ensuring they understand how algorithms operate, how biases manifest, and how to maintain epistemological vigilance.

## 5. Conclusion

The integration of digital agents into mathematical biology and bioinformatics education represents a critical paradigm shift. By utilizing tools such as AlphaFold for structural predictions and Large Language Models (LLMs) for computational problem-solving, educators can effectively manage the high intrinsic cognitive load associated with these interdisciplinary fields. These AI collaborative agents minimize extraneous cognitive load, enabling students to transition from rote learning of computational syntax to deep comprehension of complex biological systems.

However, as highlighted by the "stochastic parrots" concept, over-reliance on AI carries significant epistemological risks, including the uncritical acceptance of machine hallucinations and the amplification of algorithmic biases. To responsibly harness the power of AI, educational institutions must prioritize AI literacy, data ethics, and critical thinking within their curricula.

Ultimately, the goal is not to replace the human element in education but to foster human-machine collaborative intelligence. By redesigning pedagogical strategies to emphasize critical evaluation and ethical collaboration, mathematical biology programs can equip future specialists to safely and effectively leverage the unprecedented capabilities of digital agents.

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# 8. PHILOLOGY, ARTS, AND CULTURAL STUDIES

# BADIIY MATNNI ANGLASH VA TALQIN QILISHDA OLAM MANZARASINING AHAMIYATI

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***Annotatsiya.*** *Mazkur tezisda badiiy matnni anglash va talqin qilish jarayonining kognitiv xususiyatlari, matn mazmunining retsipient bilimlari bilan aloqasi hamda konseptual va lisoniy olam manzarasining ushbu jarayondagi o‘rni yoritiladi. Shuningdek, badiiy matnda umuminsoniy, milliy va individual-mualliflik qarashlarining o‘zaro uyg‘unlashuvi hamda pretsedent hodisalarning matn interpretatsiyasidagi ahamiyati tahlil qilinadi.*

***Annotation.*** *This thesis highlights the cognitive characteristics of the process of perception and interpretation of the artistic text, the relationship of the content of the text with recipient knowledge, and the role of the conceptual and linguistic world landscape in this process. The artistic text also analyzes the harmonization of universal, national and individual-author views and the importance of precedent phenomena in textual interpretation.*

***Аннотация.*** *В данном тезисе освещаются когнитивные особенности процесса осмысления и интерпретации художественного текста, связь содержания текста со знанием реципиента и роль концептуальной и языковой картины мира в этом процессе. Также в художественном тексте анализируется взаимосвязь общечеловеческих, национальных и индивидуально-авторских взглядов и значение прецедентных явлений в интерпретации текста.*

***Kalit so‘zlar:*** *badiiy matn, anglash, interpretatsiya, retsipient, konseptual olam manzarasi, lisoniy olam manzarasi, milliy olam manzarasi, individual-mualliflik olam manzarasi, pretsedent hodisa, kognitiv jarayon.*

***Keywords:*** *artistic text, comprehension, interpretation, receptionist, conceptual universe landscape, linguistic universe landscape, national universe landscape, individual-author universe landscape, precedent phenomenon, cognitive process.*

***Ключевые слова:*** *художественный текст, восприятие, интерпретация, реципиент, концептуальная картина мира, языковая картина мира, национальная картина мира, индивидуально-авторская картина мира, прецедентное явление, познавательный процесс.*

**Kirish**

Badiiy matnni tushunish jarayoni unda qo‘llangan lisoniy birliklarning bevosita ma’nosini anglash bilan cheklanmaydi. Retsipient matndan qabul qilinayotgan yangi axborotni o‘zining avvalgi bilimlari, tajribasi va mavjud tasavvurlari bilan bog‘laydi. Shu tariqa matnda ifodalangan ma’lumotlar saralanadi, ular orasidan mazmunni shakllantirish uchun muhim bo‘lgan jihatlar ajratib olinadi. Retsipient diqqatining muayyan axborotga yo‘naltirilishi esa matn mazmunini anglash va keyingi talqin jarayonining izchil kechishiga xizmat qiladi.[1.104-110]

Badiiy matn orqali insonning borliq haqidagi qarashlari hamda dunyoni idrok etish tarzi namoyon bo‘ladi. Insonning olam haqidagi umumlashgan bilimlari va tasavvurlari konseptual olam manzarasini tashkil etadi. Mazkur tasavvurlar til vositasida ifodalanib, lisoniy shaklga ega bo‘ladi. Shu sababli badiiy matn nafaqat muayyan voqea-hodisani tasvirlaydi, balki unda muallif va jamiyatning borliq haqidagi qarashlari, qadriyatlari hamda munosabatlari ham o‘z aksini topadi.[2.23]

**Asosiy qism**

Matnni anglash va interpretatsiya qilish o‘zaro yaqin, biroq mazmunan farqlanuvchi jarayonlardir. Anglashda retsipient matnda mavjud bo‘lgan lisoniy birliklarning mazmunini o‘zlashtiradi hamda ular o‘rtasidagi semantik-sintaktik munosabatlarni aniqlash orqali umumiy mazmunni shakllantiradi. Interpretatsiya esa ushbu jarayonning yanada chuqur bosqichi bo‘lib, bunda matndagi axborot shaxsning mavjud bilimlari, tajribasi va olam haqidagi tasavvurlari bilan bog‘lanadi. Natijada matnning bevosita ifodalangan mazmunidan tashqari, undan kelib chiqadigan qo‘shimcha ma’nolar ham anglanadi.[3.464]

Badiiy matnning o‘ziga xosligi shundaki, unda qo‘llangan poetik va tasviriy vositalar retsipientning nafaqat aqliy, balki emotsional-baholash faoliyatini ham faollashtiradi. O‘quvchi matn mazmunini o‘zining individual qarashlari, jamiyatda shakllangan qadriyatlar va baholash mezonlari bilan qiyoslaydi. Shu jihatdan badiiy matn interpretatsiyasi matn doirasidagi axborotni anglashdan tashqari, uni real hayot, inson tajribasi va ijtimoiy-madaniy muhit bilan bog‘lash jarayonini ham qamrab oladi.[4.56-65]

Lisoniy olam manzarasining shakllanishida umumiy insoniy tajriba bilan bir qatorda muayyan xalqning milliy-madaniy tajribasi ham muhim o‘rin egallaydi. Har bir xalqning tili uning tarixiy tajribasi, urf-odatlari, qadriyatlari va dunyoqarashiga xos jihatlarni aks ettiradi. Shu bois badiiy matnda umuminsoniy mazmun milliy-madaniy xususiyatlar bilan birgalikda namoyon bo‘lishi mumkin. Lisoniy va milliy olam

manzarasini o‘zaro bog‘liq hodisalar sifatida ko‘rish badiiy matn mazmunining madaniy qatlamlarini chuqurroq ochishga imkon beradi.[5.260]

Badiiy matnni tahlil qilishda individual-mualliflik olam manzarasi ham alohida ahamiyatga ega. Muallif borliqni mavjud milliy va umuminsoniy qarashlar asosidagina emas, balki o‘zining shaxsiy tajribasi, dunyoqarashi va munosabati orqali ham aks ettiradi. Natijada badiiy asarda uch xil mazmuniy qatlam — umuminsoniy, milliy va individual-mualliflik qarashlari o‘zaro birlashadi. Ayniqsa, milliy-madaniy mazmundagi asarlarda real borliq haqidagi bilimlar xalqning dunyoqarashi va muallifning individual bahosi bilan uyg‘unlashadi.

Badiiy matn interpretatsiyasida pretsedent hodisalarni anglash ham muhim kognitiv jarayonlardan biridir. Bunday hodisalarni to‘g‘ri tushunish uchun retsipient matnda bevosita ifodalanmagan, biroq mazmunni ochishga xizmat qiluvchi qo‘shimcha bilimlarni xotirada faollashtirishi kerak. Bunda matn bilan bog‘liq ekstralingvistik aloqalarni tiklash, avvalgi bilim va tajribadan foydalanish hamda zarur axborotni o‘z vaqtida esga olish talab etiladi.[6.20-28]

Pretsedent hodisaning anglanishi natijasida retsipient tasvirlangan vaziyatning o‘ziga xos mental modelini shakllantiradi. Mazkur model har bir shaxsda uning bilim darajasi, hayotiy tajribasi, dunyoqarashi va individual xususiyatlariga qarab turlicha namoyon bo‘lishi mumkin. Muallif tomonidan matn tarkibida berilgan ayrim ishoralar va mazmuniy ko‘rsatmalar esa retsipient e’tiborini muhim nuqtalarga yo‘naltirib, interpretatsiya jarayonini yengillashtiradi.[7.56]

Shunday qilib, badiiy matnni anglash va interpretatsiya qilish bir-biri bilan uzviy bog‘liq bo‘lgan murakkab kognitiv jarayon hisoblanadi. Bu jarayonda lisoniy axborot bilan bir qatorda retsipientning avvalgi bilimlari, konseptual olam haqidagi tasavvurlari, milliy-madaniy tajribasi va individual qarashlari ham faol ishtirok etadi. Badiiy matnning mazmuni aynan shu omillarning o‘zaro ta’siri natijasida to‘liqroq namoyon bo‘ladi.

**Xulosa.**

Badiiy matn insonning olamni anglash va baholash jarayonini lisoniy shaklda aks ettiruvchi murakkab tuzilma sifatida namoyon bo‘ladi. Uning mazmunini chuqur anglash uchun matnning lisoniy qurilishi bilan bir qatorda konseptual, milliy-madaniy va individual-mualliflik qatlamlarini ham hisobga olish zarur. Retsipientning matnni o‘z bilimlari va tajribasi bilan bog‘lab talqin qilishi natijasida badiiy asarning intellektual, emotsional va estetik mazmuni yanada to‘liq ochiladi.

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# CULTURAL DIFFUSION IN THE AGE OF GLOBALIZATION

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***Abstract.*** *This study examines the diffusion of cultural practices in the context of globalization and explores how global interconnectedness influences the transformation, adaptation, and preservation of local cultures. Drawing on Appadurai's theory of cultural "scapes," World Culture Theory, and the concepts of cultural homogenization, hybridization, and glocalization, the study analyzes the major mechanisms through which cultural practices circulate across national and geographical boundaries. Particular attention is given to the roles of media and technology, tourism, international trade, and global sports. The analysis demonstrates that cultural diffusion is not a one-directional process of cultural replacement. Rather, global influences interact with local traditions, producing cultural convergence, hybrid forms, localized adaptations, and, in some cases, resistance to external influences. The study concludes that globalization simultaneously creates pressures toward cultural standardization and opportunities for the renewal and international visibility of local traditions. Cultural diffusion should therefore be understood as a dynamic process of interaction between global and local forces.*

***Keywords:*** *globalization, cultural diffusion, cultural hybridization, cultural homogenization, glocalization.*

## Introduction

Since the world is becoming more globalized, finance, international relations, and societies are becoming more connected. Because of the media, people can discover everywhere and take in new cultural traditions worldwide. Global culture is not spread equally and can move in various directions. It involves learning to blend in, to get

comfortable, and occasionally to speak out due to the growing world connections. It is not globalization that mainly causes cultures to mix; rather, it gives those differences a chance to survive.

Scholars are still debating the methods and effects of cultural diffusion. It is claimed by many that the influence of Western society is replacing local cultures, due to globalization (Barber, 1995; Holton, 2000). Experts in the field believe that globalization allows people to express ideas internationally while keeping their local traditions (Tomlinson, 1999). It shows that traditions spread worldwide for many reasons, not only to include Western values, but also to create a mixture of cultures (Appadurai, 1997).

The study aims to determine whether globalization is causing cultures to disappear, or if it instead brings together and varieties of cultures. Going further with this question cannot be limited to theories alone. It decides how individuals or groups see themselves, celebrate traditions, and exchange information with people abroad. As societies talk and blend, their traditions and the ways people behave will adjust in different ways. There is the exchange of cultures in big cities, markets worldwide, and on the internet. From this, the essay explains the different impacts of globalization on national identities globally.

Its importance comes from revealing how globalization leads to both positive and negative cultural changes. How cultural diffusion works and what effects it gives insight into how cultures are built by influences at different levels. To approach these dynamics step by step, the essay is divided into three main sections. The first part of the text examines important theories, for example, Appadurai's Scapes and World Culture Theory, and explains concepts like cultural homogenization and hybridization. Because of the theory, it is easier to explain the routes by which cultures spread from one group to another. In this part, the study discusses how media, technology, tourism, and international trade play a main role in spreading culture worldwide. It examines the outcomes brought by these mechanisms, especially as they involve global convergence, local change, and resistance. Overall, they show that cultural diffusion results from the negotiation of identities and traditions among different places and people worldwide. By joining these parts of the analysis, the essay describes how cultural practices are spread, altered, and sometimes remain resistant in the context of globalization.

**Theoretical Framework**

For cultural diffusion to be well understood, theories must show how practices are shared and altered among different people and societies. When it comes to cultural circulation in the world, globalization does put things into motion, but the precise routes

and results differ. Three theoretical views on cultural exchange are explored in this section: Appadurai's Scapes, World Culture Theory, and the conflict between Cultural Homogenization and Hybridization. These frameworks help show how the diffusion process combines standardized global practices with local adaptations.

In Modernity at Large (1997), Arjun Appadurai described scapes, which are the varied circuits through which cultural stuffs travel across the globe. He points out that the world has five main "scapes": ethnoscapes, technoscapes, mediascapes, ideoscapes, and financescapes. They represent the way that people, inventions, representations, ideas, and money travel across countries, shaping different cultures. Ethnoscapes, like those seen when immigrants, refugees, and tourists move to a new place, bring their traditions and influence the culture in that place. The United Kingdom reflects how different cuisines come together as migration happens. Culinary traditions from around the world are brought to London and New York by immigrants and gradually become part of life there. Indians living in the US and UK have helped spread Indian celebrations like Diwali all over the world, as have Bollywood movies. In addition, the Chinese living in Southeast Asia have continued their customs, changing local practices and helping to observe Chinese New Year globally. Thanks to the global movement, these cultural changes are evident in BRICS nations, where cultural exports play a big role in shaping the rest of the world.

As for technoscapes, technology and communication advances have made it quick for cultural traditions to move around the globe. Driven by online platforms, microfinance is now reaching more people worldwide, leading to wider acceptance of ideas about financial independence and the value of community support (Yunus, 2008). With digital banking, rural communities in Southeast Asia and Africa can now connect to international banking networks, making their cultural entrepreneurship practices known to the world. Mediascapes and ideoscapes help spread cultural stories to more people. Because of mediascapes, people from many parts of the world get to celebrate Halloween in their ways and root for foreign TV shows. Meanwhile, ideoscapes help distribute concepts such as democracy, human rights, and gender equality around the globe. Such "scapes" are related and have an impact on each other; as a result, cultures are shared across borders and diffuse globally. Many people point to the Arab Spring as a perfect example of how global media and digital networks can rally people worldwide for a common goal.

According to Appadurai, culture flows freely, unlike in John Boli and Frank Lechner's World Culture Theory (2005), where they underline its planned and formalized operations. This study claims that globalization results in a worldwide

culture due to the cooperation of global companies, networks, and NGOs. This means that these institutions promote values in human rights, environmental preservation, and enhancing education everywhere. Education standards are widespread across the world. UNESCO and other organizations create standards that influence the policies of countries' education systems (Boli & Thomas, 1997). How global institutions lead on sustainable development and environmental protection highlights the role they have in shaping world values. Moreover, since English is used for business and diplomacy across the world, it implies that common educational and communication standards are growing (Phillipson, 2008). They believe that the shift works to bring together separate local cultures instead of replacing them. Nevertheless, every society makes an effort to both adapt to milestone shifts worldwide and still hold on to its conventions. For example, worldwide actions on gender equality or caring for the environment may be customized to match the culture of specific nations. The theory underlines that global governance plays a big role in how cultures connect, meanwhile, Appadurai notices that it is more like a movement of ideas and goods.

Cultural diffusion also depends on the ongoing interaction between cultural homogenization and hybridization. While some people maintain that globalization results in the spread of just one main Western culture, others believe this process creates different, combined forms of culture. The essence of "McWorld" by Benjamin Barber (1995) is that Western brands and culture are widespread today and frequently followed everywhere. Many believe that this process takes away the unique features of each area and unifies them into a single standard. Nevertheless, other stories highlight how people worldwide blend their traditions into new things that are particular to their place. Hybridization is widespread in both the music and movie industries across the world. Nollywood movies work with both Nigerian culture and techniques from elsewhere (Haynes, 2011). Similarly, Bollywood movies mix culture from India with Western movie techniques to please viewers nationally and internationally. In addition, musical collaborations across the world between Africans and Western artists help to blend rather than simply mix cultures. In all, Appadurai's Scapes, World Culture Theory, and the theories of homogenization and hybridization help explain how cultures move, change, and last in a globalized age. They allow us to examine how cultural practices spread, change, and sometimes resist merging with global practices.

**Mechanisms of Cultural Diffusion**

Cultural practices are brought from one place to another by several mechanisms that support their movement. Through these mechanisms, local ways and global values come together and sometimes become the same. Media and technology, tourism,

international trade, and global sports are the most important ways in which cultures spread around the world due to globalization. Each of these vectors affects the routes of culture exchange by shaping them and revealing both unifying and combining effects.

As media and technology improve, cultural practices from one region spread quickly to the rest of the world. In Appadurai's view (1997), technology and media play major roles in making cultural symbols move fast and far. With mediascapes, cultural stories are quickly shared across the world and can change local traditions into something global. For example, the Olympic Games broadcast all over the world represent and exchange different cultures. Once every four years, this competition allows people worldwide to see and appreciate the cultures of many countries (Tomlinson, 1999). Because of the media's wide range, cultural symbols can now influence and be known across the globe (Appadurai, 1997). This means technology is also involved in how people actively take part in cultural sharing. According to Bail, Brown, and Wimmer (2019), Google searches represent changing cultural interests. The authors highlight that search history reveals trends in cultural ideas and can reflect current changes in the global cultural scene. The use of technology allows traditions to be made available globally and may even be reinvented along the way.

Taking part in tourism helps to spread different cultural practices among people. Valdivielso-Navarro argues (2024) that cultural diffusion from tourism leads to a state he refers to as "Touristocracy," where cultures are adapted to suit foreigners. One can see this trend clearly in Paris, Dubai, and Barcelona, where local customs and architecture are selected to reach a global market. In these metropolitan areas, traditions are sometimes used to sell them to tourists in a way that appears authentic to outsiders (MacCannell, 1976). By way of example, Parisian style and French meals are examples of how tourism elevates local traditions to global status as symbols of elegance and luxury. Major cities worldwide are the best places to observe how cultures come together. In Holton's (2000) view, global cities host not only economic activities, but also draw cultures from the world. London's Chinese New Year celebration and Toronto's Diwali event demonstrate the way local festivals are shared with the world. Urban events shaped by a city's diversity reveal how tourism and urban living promote the sharing of cultures.

Global trade allows cultural products from different places to become valuable products all over the world. The shared beliefs and habits in global consumer trends are called "world culture" by Boli and Lechner (2005). Corporations such as McDonald's, Starbucks, and Coca-Cola are both significant companies and symbols of Western ways

that value being efficient and convenient. This is what scholar Barber meant when he used the term "McWorld" (1995) to describe how global capitalism influences cultures across the globe. At the same time, international trade encourages cultural mixes. As explained by Tomlinson (1999), globalization mixes the traditions of many nations with global trends. They serve vegetarian versions in India, like the McAloo Tikki, and continue to highlight their worldwide brand. Changing food products from a global brand to local needs is an example of glocalization. California roll is a good example of how a familiar Japanese dish gets adapted to please a broader audience.

The example of football is one of many that reveals how culture moves across the world. Coming from England, this sport is played all over the world and is demonstrated by the FIFA World Cup. In Adam (2016), the book explores how football moved from its roots in Britain to become essential in Argentina and Germany. In these countries, football joins people together, boosts community spirit, and shows what the nation represents. Robertson and Giulianotti (2009) state that football is a place of "glocalization" where global rules are shaped by people in different countries. Using players from different regions of the world, European clubs improve their game and overall quality. Moves of athletes and the sharing of culture suggest that football both blends cultures and allows every region to keep its customs.

Global culture is shaped in great part by media, technology, tourism, trade, and world sports. They lead to the spread of common culture worldwide, but also allow culturally different things to merge. The study points out that global influence is not just about ruling, but about how people adjust, keep their own identities, and borrow from others.

**Consequences of Cultural Diffusion**

Globalization causes the spread of cultural practices to other places, resulting in many changes to people's cultures. They show how much certain places have taken on new customs and ways of life, along with how strongly their traditions have been maintained. Looking at these results is key to learning how globalization impacts different cultures. There are three main areas of impact when cultures diffuse: Global Cultural Convergence, Cultural Hybridization and Glocalization, and Cultural Resistance and Local Adaptations.

Increasingly, people in different places are adopting similar ways and products influenced by American and European cultures. Holton (2000) believes that globalization results in the replacement or concealment of local customs by global standards. For example, there are popular Western cultural symbols and crazes for certain products that are found all over the world. In practice, the rise of Hollywood

influences all over the world allows its values and way of living to spread easily, even influencing entertainment in other countries (Tomlinson, 1999).

Global cultural convergence is also visible in the educational system. How Western-style education is spreading in new economies indicates its impact on the rest of the world. Many people are learning and studying English, even in countries where the language is not spoken. The move suggests that Turkey wants to align its education with the standards used in the West, and also with global rules of the economy and politics. Furthermore, global business practices underline this merging. Because corporate ethics, business practices, and managerial thinking are shared worldwide, this suggests a growing interest in Western-style economics. In addition to improving economic aspects, these organizations are also changing culturally to match global standards to succeed in the international market (Holton, 2000). Yet, some researchers like Barber (1995) have said that the rise of global brands is making local cultures disappear. The critique describes how forces of global culture can lead to both similarity and loss of distinct regional traditions.

Rather than homogenization, both cultural hybridization and glocalization underline the combination of worldwide and local cultures. Tomlinson (1999) argues that globalization brings together influences from across the globe with existing traditions. Local music scenes incorporating instruments and language from their area create cultural music that both pleases their people and attracts worldwide listeners.

Running with Appadurai's (1997) concept of "scapes," one can see that these flows are often adaptive and unpredictable. The same is true for celebrations such as Oktoberfest, which people in Germany observe and which is also recognized in places such as Tokyo and São Paulo. It shows a form of glocalization, where cultural items from other countries are prepared to match local customs and still maintain their symbolism. The worldwide fashion industry is known to fuse hybridization. Fashions around the world now blend local garments such as India's sari or Africa's dashiki with more global styles. Blending cultures demonstrates how globalization encourages diverse designs from different regions to be seen around the world.

Even though globalization helps people adapt to new trends, some people still resist and try to adapt to changes in their area. Often, the resistance simply means groups trying to maintain their culture in the presence of worldwide trends. For example, some movements around Latin America and Africa highlight their commitment to preserving their languages despite English and Spanish being so widely spoken. They emphasize that being able to speak several languages helps cultures remain strong (Phillipson, 2008).

As mentioned earlier, Touristocracy, by Valdivielso-Navarro (2024), proves that local communities modify their cultural traditions to attract tourists from all over the world and at the same time preserve their culture's uniqueness. Even though Touristocracy was initially about commodification for tourists, it also allows people to highlight the special qualities of their culture. When eco-tourism and heritage tourism are important, people use others' interest to help their local communities maintain their customs, traditions, and old landmarks. Cultural resistance often takes place in global cities. Holton (2000) claims that in global cities, local traditions are continually changed and protected. In multicultural cities, communities often hold festivals, create art, and organize events so they can proudly showcase their identity amidst influences from other parts of the world. By expressing their cultural ideas, members of a community can demonstrate that their way of life can prosper even in a globalized world.

The results of cultural diffusion demonstrate the way different aspects of globalization have an impact on culture. Though the world is becoming more 'unified' through global culture, local traditions still adjust and survive through hybridization and glocalization. In addition, acts of resistance help preserve cultural heritage when communities face worldwide changes. It is shown in the analysis that cultural diffusion combines the aspects of uniting cultures with the need to keep cultural traditions alive.

**Conclusion**

Globalization has made it possible for cultures to diffuse and share their customs and ways of thinking globally. The purpose of this essay was to investigate whether globalization leads to the loss of local traditions or brings together different traditions. From the analysis, it appears that globalization can result in global unity and also promote the mixing of different cultures. It does not get rid of all unique traits nor ensure that traits do not change; instead, it changes and fits cultures alongside others in the world.

Scholars Barber (1995) and Holton (2000), as well as others, give good reason for believing globalization tends to unify local aspects of culture. Studies such as McDonaldization reveal how similar business models and affiliated themes are spreading to different places globally. All over the globe, the study can see Western-style movie plots, educational models, and business habits (Appadurai, 1997; Tomlinson, 1999; Phillipson, 2008). Many believe that this situation, which Schiller (1976) called cultural imperialism, means local cultures are devalued by the influence of Western ideas. Since Western curricula are often introduced in schools and global business rules follow Western beliefs, many countries are becoming more alike culturally. Furthermore, with services like Netflix and Spotify becoming popular

worldwide, people from various countries consume cultural output that tends to be the same and has a Western influence. Local films are often adapted to suit global audiences, such as how Bollywood and Nollywood have produced movies for the international market (Haynes, 2011). It demonstrates how modern Chinese films illustrate converging ideas, as well as how the influence of global habits affects creativity in the arts.

Still, through globalization, different cultures are now blending, challenging the belief that we are becoming entirely uniform. As Tomlinson (1999) argues, globalization helps blend elements from different cultures, leading to the emergence of new cultures. An example is the world of music, with people combining traditional instruments from all over the world, the redevelopment of international festivals such as Oktoberfest in Tokyo and São Paulo, and how worldwide brands are localized. In addition, Transculturation (Ortiz, 1947) and Creolization (Hannerz, 1987) confirm that cultural diffusion involves both parties and produces new forms of culture, mixing the influences from different regions. By fusing cultures, it leads to a process Robertson (1995) called 'glocalization,' where both the local and the global are mixed, keeping their distinct features intact. Because of this, it is clear that globalization is a dialogue where local people play an active part in forming global culture. Besides, it encourages new interpretations of cultural symbols, allowing them to be meaningful in many places around the world. Many times, this happens in the fashion world, where age-old garments are combined with today's styles to create global trends that demonstrate both traditions and new trends.

Cultural resistance is a significant factor in shaping the ways globalization affects the world. While more countries are following global standards, local communities continue to maintain their traditions by engaging in local activism. It was argued that protecting indigenous languages in Latin America and Africa is more than resisting – it also reflects the strength of local cultures (Phillipson, 2008). This demonstrates that globalization is strong, but it does not always wipe out local customs. Alternatively, it may lead groups to publicly show their distinguishing qualities using organized approaches. In global cities, using festivals and other celebrations helps local traditions prosper despite the impact of worldwide influences (Holton, 2000). Also, this opposition leads to improving certain local practices, which are then demonstrated worldwide, helping these traditions become symbols representing their culture and the world. Consequently, global influences can broaden local traditions, revealing the range of experiences involved in choosing a model for adaptation. Such an exchange between the world and local cultures supports the growth of traditions and cultural values.

Indeed, some researchers claim that having cultural exposure worldwide is something that can strengthen and make cultural traditions significant again (Adger, 2000; Throsby, 2008). Respect and mutual understanding in cultural exchange make it possible for local cultures to develop in any global situation.

Referring to the initial question, it is obvious that globalization neither completely ends cultures nor fully unites them. It causes local issues and international ones to interact, at times working together and at other times opposing with clear conflict. Globalization allows for cultural exchange rather than a situation where one side wins and the other loses. By using things like media, technology, tourism, and trade, people can spread their cultural practices in other regions and countries. This means globalization not only overpowers but also encourages the evolution of cultures. It leads to a mix of global and local traditions, since globalization and local culture combine to form a unique mixture. More importantly, it supports what Appadurai (1997) explains as allowing cultural expressions to be remade in many different cultures far from their original homelands.

The findings from this analysis are very important. This study helps illustrate how cultures are created and passed down in a rapidly globalized economy. It means that while some cultural practices are standardized, others are altered, rejuvenated, and changed through influences from other parts of the world. Because of globalization, culture retains its uniqueness and finds ways to fit into a worldwide context. A global-local relationship means people's identities are neither always leading nor always following, but are constantly influencing one another. Thus, we can view globalization as providing an opportunity for society to engage with new trends worldwide while preserving their unique cultural values.

As a final note, how people deal with globalization without losing their identity will decide the fate of cultural exchange. Due to its global networks, globalization helps ideas and values reach a much larger audience. On the other hand, its most meaningful effect comes in supporting global cultures as well as new, original community-specific traditions. Therefore, globalization helps maintain diversity among cultures and can even enhance it, showing that spreading cultures today reflects the strength and flexibility of many communities. To understand how cultures can be transformed and reimagined worldwide, one must realize that culture consists of dual parts. All of this reflects the fact that cultural diffusion is important because it changes cultures internationally, creating opportunities for new practices and problems for maintaining old traditions.

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# NUTQIY BUZILISHLARINING LINGVISTIK JIHATLARINI O‘RGANISH

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***Annotatsiya.*** *Ushbu tadqiqotda zamonaviy tilshunoslik yo‘nalishlaridan biri bo‘lgan klinik lingvistikaning nazariy va amaliy ahamiyati yoritiladi. Unda nutq va til buzilishlarini o‘rganishda lingvistik yondashuvning o‘rni, shuningdek, klinik lingvistikaning tibbiyot, psixologiya va logopediya bilan o‘zaro integratsiyasi tahlil qilinadi. Shuningdek, maqolada klinik lingvistikaning zamonaviy rivojlanish tendensiyalari va uning amaliyotdagi qo‘llanilish imkoniyatlari ko‘rib chiqiladi.*

***Kalit so‘zlar:*** *klinik lingvistika, nutq buzilishlari, lingvistik tahlil, nutq patologiyasi, tashxislash, reabilitatsiya, logopediya, psixolingvistika, til va nutq terapiyasi*

***Аннотация.*** *В данном исследовании освещаются теоретические и практические аспекты клинической лингвистики как одного из направлений современного языкознания. Рассматривается роль лингвистического подхода в изучении нарушений речи и языка, а также анализируется интеграция клинической лингвистики с медициной, психологией и логопедией. Также в статье рассматриваются современные тенденции развития клинической лингвистики и возможности её применения на практике.*

***Ключевые слова:*** *клиническая лингвистика, речевые нарушения, лингвистический анализ, речевая патология, диагностика, реабилитация, логопедия, психолингвистика, терапия речи и языка*

***Abstract.*** *This study highlights the theoretical and practical aspects of clinical linguistics as one of the branches of modern linguistics. It examines the role of the linguistic approach in the study of speech and language disorders, as well as analyzes the integration of clinical linguistics with medicine, psychology, and speech therapy. The article also considers current development trends in clinical linguistics and the possibilities of its practical application.*

***Keywords:*** *clinical linguistics, speech disorders, linguistic analysis, speech pathology, diagnosis, rehabilitation, speech therapy, psycholinguistics, language and speech therapy*

XX asr insoniyat taraqqiyotida yangi davrni boshlab berdi. Ishlab chiqarishning barcha sohalarida tub o‘zgarishlar sodir bo‘la boshladi. Bu jarayon birinchi galda milliy tillarda o‘z zuhrini berdi. O‘tgan asrning oxiriga kelib zamonaviy lingvistik tadqiqotlarda ustuvor bo‘lgan struktur metodlar til va nutqning yangi qirralarini ochib berishda ojizlik qila boshladi. Tilni faqat tizim sifatida tadqiq etish uning eng muhim aloqa vositasi sifatida amalda qo‘llash, til sohibi bilan birga o‘rganish masalalarida yangicha qarashlarga muhtojlik sezildi.

Shunday masalalardan birini nutqiy nuqsonlar va ularni bartaraf etish bilan bog‘liq muammo tashkil etadi.

Ta’kidlash joizki, Alloh hammani teng qilib yaratmagan. Jamiyatda yuksak nutq madaniyatiga ega, mohir notiqlar bilan birgalikda nutqi buzilgan, tovushlar, bo‘g‘inlar va so‘zlarni tez-tez takrorlaydigan, so‘zlarni uzib-uzib talaffuz qiladigan, nutq jarayonida bixtiyor to‘xtab qoladigan shaxslar ham istalgancha topiladi. Ular o‘zbek tilida duduq, soqov atamalari bilan ataladi.

Ayrim ma’lumotlarga ko‘ra dunyo aholisining 1,0 foizi duduqlanishdan aziyat chekadi.

Jahon tarixida iz qoldirgan mashhur shaxslar: Demosfen, Georg VI, Isaak Nyuton, Uinston Cherchil, Merilin Monro, Jerar Depardye va boshqalarning mazkur kasallikdan azob chekkani to‘g‘risida ma’lumotlar bor.

1995-yilda duduq insonlar xalqaro assossiatsiyasi tashkil etilgan bo‘lib, 1998-yildan boshlab har yili 22-oktyab kuni “Xalqaro duduq insonlar kuni” sifatida nishonlanib kelinadi.

Ilm-fan, texnika rivoji, global o‘zgarishlar, hayotga yangi axborot kommunikatsion texnologiyalarning kirib kelishi, sun’iy intellektning yaratilishi tilshunoslikda kognitiv lingvistika, gender lingvistikasi, kompyuter lingvistikasi, ekolingvistika, biolingvistika kabi istiqbolli yo‘nalishlarning paydo bo‘lishi va shiddat bilan rivojlanishiga yo‘l ochdi. Shulardan birini klinik lingvistika tashkil qiladi. Avvalo, atama to‘g‘risida. “O‘zbek tilining izohli lug‘ati”da mazkur atamaniing birinchi komponenti klinik so‘ziga shunday izoh berilgan:

**KLINIK 1** Klinikaga oid, klinika bilan bog‘liq. **2** Vrach yordami (aralashuvi) talab etiladigan, shu yo‘l bilan hal etilishgi mumkin bo‘lgan [1.383].

“*Klinika*” esa yunoncha “*klinike*” so‘zidan olingan bo‘lib, “*yotgan kasalni parvarishlash*”, “*davolash*” ma’nolarini anglatadi. Keng ma’noda bemorni yotqizib (statsionar) davolash bilan birga, tibbiy ta’lim va ilmiy-tekshirish ishlari olib boriladigan maxsus shifoxona; kasallarni parvarish qilish ma’nosini bildiradi.

**LINGVISTIKA** fransuzcha “*lingustiqe*” ← lotincha “*lingua*” – “*til*” so‘zlaridan olingan bo‘lib, til haqidagi fan, til bilimi, tilshunoslik degan ma’noda qo‘llanadi. Ko‘rinadiki, klinik lingvistika oraliq fan sanalib, tibbiyotning tilshunoslik bilan kesishgan chorrahasida paydo bo‘lgan sinxron soha sifatida namoyon bo‘lmoqda, biroq ta’kidlash lozimki, uning yuzaga kelishida fiziologiya, psixologiya, sotsiologiya kabi fanlarning ham o‘rni bor [1.499].

Dunyo tilshunosligida klinik lingvistika nisbatan yosh fan sanaladi va unga shunday ta’rif beriladi: “Klinik tilshunoslik – bu tilshunoslik nazariyasini nutq terapiyasiga qo‘llashni o‘z ichiga olgan tilning kichik fanidir. Amaliy tilshunoslikning bir sohasi bo‘lgan klinik tilshunoslik til buzilishlarini tavsiflash, tahlil qilish va davolashga qaratilgani bilan xarakterlanadi.

Anglashiladiki, klinik lingvistika muayyan shaxslarda uchraydigan nutqiy yetishmovchiliklar va ularning profilaktikasi bilan shug‘ullanar ekan. Aytish lozimki, har bir milliy til o‘zining sistem-struktur va funksional-uslubiy qurilishiga ko‘ra betakror va mukammal bo‘ladi. Azaldan til va nuqtning bir-biriga bog‘liq, ajralmas tushunchalar ekani qayd etib kelinadi. Aslida, til nutq uchun moddiy material sanaladi. Nutq shu material asosiga quriladi. Bu haqda ulug‘ alloma Alisher Navoiyning o‘rinli gapi bor: “*Odam tili bilan boshqa hayvonlardan imtiyozlidir. Uning tili orqali boshqaa odamlaarrdan afzalligi bilinadi. Til shuncha sharafi bilan nutqning qurolidir. Agar nutq nomaqbul bo‘lib chiqsa, tilning ofatidir*”.

Demak, hamma gap til unsurlaridan shu til sohiblarining qay darajada foydalanishiga bog‘liq bo‘ladi. Nutq aytilishii, eshitilishi va ijtimoiy qiymatga egaligi jihatidan to‘liq bo‘lgandagina foydali sanaladi. Nutq jarayoni shularga mos ravishda gorizontal yo‘nalishda kechadi: aytiladi, eshitiladi hamda ma’no anglatadi. Uning birinchi nuqtasi sanalgan aytilishi – talaffuzida nuqson bo‘lsa, bu aynan shu tarzda eshitiladi va tilda oldindan taxt bo‘lgan muayyan birlikning shakl va ma’no jihatidan buzilishiga olib keladi.

Inson mukammal qilib yaratilgan, unga boshqa jonzotlardan farqli ravishda til – zabon ato etgan, ammo ajdodlarning xatosi yoki tabiiy shart-sharoit, baxtsiz hodisalar oqibatida insonning eng muhim organlaridan biri sanalgan miya xo‘jayralariga va nutq apparatiga shikast yetishi mumkin. Buning oqibatida shaxs nuqsonli so‘zlay boshlaydi va bu har bir milliy tilda alohida atamalar bilan yuritiladi. Mazkur atamalar kasallik nomi sifatida qabul qilingan. O‘zbek tilida ular *soqov, duduq, tutuq, chuchchi* kabi deksik birliklar orqali ifodalanadi. Bu kasalliklar tug‘ma yoki muvaqqat bo‘ladi.

Nutqiy yetishmovchiliklarning eng yorqin ko‘rinishi bu – duduqlanish sanaladi. “O‘zbek tilining izohli lug‘ati”da unga shunday ta’rif berilgan:

**DUDUQ** Ba’zi tovushlarni qiynalib talaffuz etuvchi yoki tutilib gapiruvchi.

**DUDUQLANMOQ** Ba’zi tovushlarni qiyinlik bilan talaffuz etmoq yoki tutilib-tutilib gapiruvchi.

**DUDUQLIK** tutilib gapirish, duduqlanish xususiyati[1.964].

Ushbu kasallikka uzoq vaqt faqat tibbiy nuqtai nazardan qarab kelindi. Xususan, uning sabablari nutqning noto‘g‘ri rivojlanishi, kutilmagan ruhiy holatga tushish, biror narsadan qattiq qo‘rqish, irsiyat, kuchli hayajonga berilish va hokazolardan izlandi. Meditsinada logopediya yo‘nalishi shakllandi. Uning nazoratida nutq gimnastikasi mashqlarini bajarish, to‘g‘ri nafas olish, turli preparatlar yordamida davolash ishlari bajarildi. Zaruriy o‘rinlarda ruhshunos yordamiga tayanildi. Biroq, ilm-fan rivoji, jamiyat taraqqiyoti, masalaga ilmiy yondashish shuni ko‘rsatdiki, duduqlanish, chala gapirish, nuqtni noaniq talaffuz qilish kabi nutqiy qusurlarning kelib chiqish sabablarini aniqlash, tashxislash va davolash ishlarini tashkil qilishda faqat tibbiy vositalardan foydalanish har vaqt ham yordam beravermas ekan.

Muammoning tub sabablari tibbiy-biologik, psixologik, ijtimoiy va o‘z-o‘zidan lingvistik muammolarga borib taqalishini davrning o‘zi ko‘rsatib turibdi. Shu bois, nutqiy yetishmovchilikni lingvistik aspektda o‘rganish bu borada katta samara berishi aniq.

Avvalo, shuni ta’kidlash lozimki, nutqiy yetishmovchiliklarning bir qancha ko‘rinishlari mavjud. Ularni quyidagicha ajratish mumkin:

1. Mavaqqat nutqiy yetishmovchiliklar. Bunga kichik yoshdagi bolalar nutqida uchrovchi kamchiliklarni mosil qilib keltirish mumikn. Ko‘p hollarda bolalar “*r*” tovushini “*y*” tarzida talaffuz qilishadi. Shuningdek, “*b-p”, “d-t”, “z-s”, “ch-sh”, “f-p”* undosh tovushlarini almashtirib aytishadi.

Bu qusur ko‘pchilik yosh bolalar nutqiga xos bo‘lib, yillar o‘tishi bilan yo‘qolib ketadi yoki fonetik mashqlar orqali unga barham beriladi.

2. Muntazam (doimiy) yoki tug‘ma nutq yetishmovchiliklari. Klinik lingvistika duduqlanishni bir tomonlama emas, balki logopediya, psixologiya, sotsiologiya, anatomiya, tibbiyot fanlari kesishgan nuqtada o‘rganishni va davolashni taklif etadi. Eng avval u shaxsning bolalik yillarida namoyon bo‘ladi.

Nutqiy kamchiliklar (duduqlanish) bir nechta turlarga ajraladi. Nevrozik va nevrotik duduqlanishni farqlash kerak bo‘ladi.

Nevrozik duduqlanishda shaxs muayyan vaziyatlarda doimiy ravishda nutqiy kamchiliklarga yo‘l qo‘yadi. Vaqtida davolanmasa, muntazam ravishda shunday vaziyatda hayot kechirsa, duduqlanish inosnga umrining oxirigacha odat bo‘lib qolishi

mumkin. Oiladagi, ko‘cha-ko‘ydagi, maktabdagi ruhiy bosimlar, urish-janjallar, qattiq qo‘rqish, hayajon, kutilmagan vaziyat duduqlanishga sababchi bo‘lishi mumkin.

Nevrotik duduqlanishda kuchli hayajon, qo‘rquv yoki kutilmagan xabar natijasida duduqlanish kelib chiqadi. Bunday duduqlanish shu holat o‘tib ketgach, barham topishi mumkin.

Mutaxassislar duduqlanishning uch xil darajasini faqrlaydilar:

a) yengil daraja – muloqot uchun to‘sqinlik qilmaydi, kommunikativ akt sodir bo‘ladi va har ikki tomon bir-birini tushunib yetadi.

b) o‘rta daraja – muloqotda to‘siqlar paydo bo‘ladi, aloqa-aralashuvda anglashilmovchiliklar kelib chiqadi, adresant va adresant o‘rtasida bir-birini anglamay qolishi kuzatiladi;

c) og‘ir daraja – muloqot jarayoni qiyin kechadi. Bunday sifatga ega shaxslar kam gapirishga harakat qilishadi. Odatda, bunday duduqlanish muayyan so‘zni aytishda yoki ma’lum bir vaziyatda sodir bo‘ladi. Nutq apparatida tortilish yuzaga chiqadi. Ular klonik, tonik va aralash ko‘rinishlarda bo‘lishi kuzatiladi. Bu hol davom etaversa, duduqlanish ong ostiga mahkam o‘rnashib oladi va nutq “*q..q..alaysiz”, “m...yen”, “o...najon”* kabi to‘xtamlar, kichik pauzalar bilan namoyon bo‘la boshlaydi.

Ma’lumki, muayyan tilda tanglayi ko‘tarilgan va shu tilda muloqot malakasiga ega bo‘lgan har bir shaxsda shu tildagi gutq tovushlarini talaffuz qilishga moslashgan nutq apparati bo‘ladi. Boshqacharoq qilib aytadigan bo‘lsak, har bir til sohibi o‘zining artitkulyatsion bazasiga ega.

Artikulyatsion baza – biror tilga xos tovushlarni talaffuz etish ko‘nikmalari, artikulyatsiyalar tizimi sanaladi. Artikulyatsiya esa lotincha *articylatio – yunonchav articullare – aniq-ravshan aytmoq* so‘zidan olingan bo‘lib, nutq a’zolarining tovush hosil qilishdagi harakat faaoliyati va holatidir. Tovushlarning hosil bo‘lishida nutq a’zolarining ishtiroki, holati nuqtai nazaridan artikulyatsiyada artikulyatsiya o‘rni va artikulyatsiya usuli farqlanadi [2.17].

Aytilganlardan shunday xulosa chiqarish mumkinki, chiroyli gapirish bilan birga, insonlarda uchraydigan nutqiy kamchiliklarning tibbiy, ijtimioy, lingvopsixologik sabablarini o‘rganish, davolash tizimini yo‘lga qo‘yish talabi hamma davrlarda bo‘lgan va buning yechimini topish klinik lingvistika zimmasiga yuklatilgan. Uning fan sifatida shakllanishiga uzoq vaqt kerak bo‘ldi.

Nutq va til buzilishlarini tahlil qilishda tilshunoslik fani yutuqlaridan foydalanish masalasini birinchilardan bo‘lib Rossiyada tug‘ilib, xorijda faoliyat ko‘rsatgan Roman Yakobson ko‘tarib chiqdi. U ilk bor nutq patologiyasini o‘rganishga lingvistik nazariyani qo‘llashni taklif etdi. 1941-yilda nashr etilgan “Kindersprache, Aphasie, and

Allgemeine Lautgesetze” kitobida orttirilgan afaziya bilan og‘rigan bolalar va kattalarda tildan foydalanishni tahlil qilish natijalari qayd etildi. Kitob 1968-yilda ingliz tiliga tarjima qilingandan so‘ng mutaxassislarning e’tiborini tortdi. Olimning qarashlari Amerika Qo‘shma Shtatlari va Buyuk Britaniyada fonologik, grammatik, semantik va til buzilishlarining boshqa sohalariga tatbiq etildi. Klinik lingvistikaning fan sifatida shakllanishi va rivoj topishi o‘tgan asrning 80-yillariga to‘g‘ri keladi. 1981-yili Devid Kristalning “Klinik lingvistika” nomli kitobi nashr etilganidan so‘ng u ommalasha boshladi[3.229].

Klinik lingvistikaning bir qancha sohalari paydo bo‘ldi:

1. Klinik fonetika – inson nutqdagi o‘ziga xos jihatlar, nutqiy buzilishlar va ularni davolash masalalarini o‘z ichiga oladi. Ma’lumotlarga ko‘ra, dunyodagi har bir inson tovushi betakror va boshqa birovnikiga aslo o‘xshamaydi. Hatto ota-ona nutqi bilan uning farzandlari nutqi o‘rtasida ham katta farq bo‘ladi. Har bir shaxs nutqi betakror va qaytarilmas mo‘jizadir. Inson o‘z ona tilida yoki o‘zlashtirgan tilda gapirar ekan, uning ovozi, nutqi o‘ziga xos tarzda tovlanadi. Shu bois, nutqiy buzilishlar har bir shaxs faoliyatida individual kechadi.

2. Klinik fonologiya og‘zaki nutq tovushlarni va imo-ishoralarni tizimli tashkil etish bilan shug'ullanadigan tilshunoslikning bir sohasi sanaladi. Klinik fonetikadan farqli ravishda klinik fonologiyada ma’lum bir tildagi nutq tovushlariga tavsif beriladi va nutqda tovushlarning qay tarzda foydalanishiga diqqat qaratiladi.

3. Klinik prozodiya alohida fonetik segmentlar (unlilar va undoshlar) emas, balki bo‘g‘inlar, so‘zlar va so‘z birikmalarini qo‘llash bilan bog‘liq bo‘lgan nutqiy buzilishlarni o‘rganadi.

4. Klinik morfologiyada so‘zlarning, so‘z tuzilishi va uning qismlari, masalan, asos, qo‘shimchalarni ishlatishdagi nutqiy kamchiliklar tahlil qilinadi.

5. Klinik sintaksis gap qurilishi, so‘z tartibi, muayyan tildagi matnlarni tuzish bilan bog‘liq nutqiy buzilishlar va ularniing oldini olish masalalarini o‘rganadi.

6. Klinik semantika muayayn shaxs yoki jamoa tomonidan qo‘llangan belgilarga oid nutqiy buzilishlar va ularning terapeyasini o‘z ichiga oladi.

7. Klinik pragmatika nutqiy buzilishlarning tavsifi va tasnifini amalga oshiradi, ularni turli pragmatik, lingvistik, kognitiv va nevrologik nazariyalar nuqtai nazaridan tushuntirish, shuningdek, ularni baholash va davolash ishlari bilan shug‘ullanadi.

8. Klinik tibbiy diskurs murakkab kommunikativ jarayon bo‘lib, u o‘z ichiga shu sohaga oid barcha ma’lumotlarni, ya’ni tibbiy nutqni, shu mavzuda kechayotgan lingvistik jarayonlarni va ular negizida yotgan konseptual tizimlarni qamrab oladi.

Yuqoridagilardaan anglashiladiki, nutqiy buzilishlarining lingvistik jihatlarini o‘rganish til va nutq o‘rtasidagi aloqalarni yanada chuqurroq anglab yetish, nutqning yuzaga chiqishi bilan bog‘liq fonetik-fonologik, psixologik jarayonlardagi nuqsonlarning sabablarini aniqlash va davolash choralarini ko‘rish imkoniyatini yaratadi.

O‘zbek tilshunosligi oldida klinik lingvistikani shakllantirish va rivojlantirishdek murakkab va dolzarb masala ko‘ndalang bo‘lib turibdi. Jahon tibbiyotiga tamal toshini qo‘ygan Abu Ali ibn Sinoning avlodlari hozirgacha rus meditsinasi ta’sirida faqat nutq terapiyasi va til buzilishlari bilan bog‘liq ayrim masalalar ustida shug‘ullanib keldi. Endilikda oldimizda turgan eng muhim vazifa nutq va til buzilishlarini baholash, davolash hamda tahlil qilishni takomillashtirish; mavjud klinik lingvistika nazariyalariga yangi zamon nuqtai nazarlaridan yondashib, kerakli takliflarni kiritishdan iborat.

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# INGLIZ TILI TA'SIRIDAGI GRAMMATIK MODELLARNING SOTSIOLINGVISTIK FAOLLASHUVI

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***Annotatsiya.*** *Ushbu tezisda zamonaviy o'zbek tilida ingliz tili ta'siridagi grammatik modellarning sotsiolingvistik faollashuv mexanizmlari tahlil qilinadi. Grammatik o'zlashuv struktur hodisa sifatida emas, balki til kontakti, tarjima, professional diskurs, ommaviy axborot vositalari, raqamli kommunikatsiya, ijtimoiy prestij va so'zlovchilar tanlovi bilan bog'liq dinamik jarayon sifatida talqin etiladi. Grammatik modelning o'zbek tilida tarqalishi kontakt va transfer, kommunikativ adaptatsiya, diskursiv faollashuv, ijtimoiy tarqalish, uzualizatsiya, institutsional mustahkamlashuv hamda me'yoriy kodifikatsiya bosqichlari asosida tavsiflanadi. Inglizcha birlikning mavjudligi bilan grammatik modelning o'zlashuvi, shuningdek, kommunikativ faollik, uzualik va me'yoriylik hodisalari o'zaro farqlanadi. IT, AI, biznes, media, startap kabi komponentlar ishtirokidagi konstruksiyalar misolida professional va raqamli diskursning grammatik modellar faollashuvidagi o'rni ko'rsatiladi.*

***Kalit so'zlar:*** *grammatik o'zlashuv, ingliz tili, o'zbek tili, pattern replikatsiya, sotsiolingvistika, til kontakti, diskurs, tarjima, raqamli kommunikatsiya, uzualizatsiya, me'yorlashuv.*

***Abstract.*** *This paper examines the mechanisms underlying the sociolinguistic activation of grammatical patterns influenced by English in contemporary Uzbek. Grammatical borrowing is approached not merely as a structural phenomenon but as*

*a dynamic process shaped by language contact, translation, professional discourse, mass media, digital communication, social prestige, and speakers' linguistic choices. The diffusion of grammatical patterns in Uzbek is described through the stages of contact and transfer, communicative adaptation, discursive activation, social diffusion, conventionalization, institutional consolidation, and normative codification. A distinction is drawn between the mere presence of English-derived linguistic elements and the borrowing of grammatical patterns, as well as between communicative frequency, conventionalization, and normative status. Drawing on constructions involving such components as IT, AI, business, media, and startup, the study demonstrates the role of professional and digital discourse in the activation and diffusion of grammatical patterns in contemporary Uzbek.*

***Keywords:*** *grammatical borrowing, English, Uzbek, pattern replication, sociolinguistics, language contact, discourse, translation, digital communication, conventionalization, standardization.*

Zamonaviy o‘zbek tiliga ingliz tilining ta’siri, avvalo, leksik qatlamda yaqqol kuzatiladi. Biroq globallashuv va raqamli kommunikatsiyaning jadallashuvi tillararo munosabatni yangi bosqichga olib chiqib, faqat tayyor leksik birliklarning emas, balki ayrim struktur munosabat va modellarning ham kommunikativ amaliyotda faollashishiga sharoit yaratmoqda. Shu sababli ingliz tilining o‘zbek tiliga ta’sirini faqat o‘zlashma so‘zlar miqdori orqali belgilash kontakt hodisasining bugungi ko‘lamini to‘liq ochib bermaydi.

Kontakt lingvistikasida grammatik ta’sirning yuzaga kelishi faqat ikki til strukturasining formal mosligiga bog‘lanmaydi. Til kontakti natijalarini kontaktning intensivligi, ikki tillilik xususiyati, so‘zlovchilar guruhi va ijtimoiy vaziyat kabi nolisoniy omillardan ajratib tushuntirib bo‘lmaydi [6, B. 60–94]. Demak, grammatik o‘zlashuvning yuzaga chiqishi lingvistik imkoniyat bilan birga ijtimoiy sharoit mavjudligini ham talab qiladi.

Y. Matras til kontaktini individual va ijtimoiy ko‘p tillilik bilan uzviy bog‘laydi hamda grammatik o‘zlashuv va struktur konvergensiyani kontaktning mumkin bo‘lgan natijalari sifatida tahlil qiladi [3, B. 193–233]. Olim pattern replikatsiyasida qabul qiluvchi til boshqa tildagi tayyor moddiy shaklni ko‘chirishi shart emasligini, balki struktur munosabatni o‘zining mavjud til vositalari yordamida qayta tashkil etishi mumkinligini ko‘rsatadi [3, B. 234–274]. Bu yondashuv ingliz tilining o‘zbek tiliga zamonaviy ta’sirini baholashda muhim nazariy asosdir.

J. Sakel grammatik o‘zlashuvni tavsiflashda MAT va PAT hodisalarini farqlaydi.

MAT, ya’ni “matter borrowing”da moddiy til elementi o‘zlashtirilsa, PAT, ya’ni “pattern borrowing”da struktur model yoki birliklarni tashkil etish usuli replikatsiya qilinadi [5, B. 15–29]. Mazkur farqlanish o‘zbek tilidagi inglizcha komponentli har qanday konstruksiyani grammatik o‘zlashma sifatida talqin qilishdan saqlaydi. Masalan, *internet, marketing, blog, startap* kabi leksemalarning qo‘llanishi leksik kontaktni ko‘rsatsa, muayyan struktur munosabatning turli leksik material bilan takror ishlab chiqarilishi modelning faollashuvi masalasini yuzaga keltiradi.

B. Heine va T. Kuteva kontakt ta’siridagi grammatik o‘zgarishda “use pattern”, ya’ni foydalanish modelining replikatsiyasiga alohida e’tibor qaratadi [2, B. 40–78]. Bunda model tildagi ma’lum foydalanish usuli qabul qiluvchi tilning o‘z materiali orqali qayta hosil qilinishi mumkin. Shu ma’noda grammatik ta’sirni xorijiy shaklning bevosita ko‘chishi bilangina chegaralash mumkin emas. Kontakt mavjud struktur imkoniyatning funksional yukini, qo‘llanish chastotasini yoki diskursiv doirasini ham o‘zgartirishi mumkin [2, B. 40–78].

P. Muysken ham kontakt natijalarini faqat til strukturasining o‘ziga bog‘lash cheklangan yondashuv ekanini ta’kidlaydi. Uning modelida bilingv so‘zlovchining strategiyasi ijtimoiy omillar, tilni qayta ishlash imkoniyatlari va tillar o‘rtasidagi qabul qilingan masofa bilan belgilanadi [4, B. 709–730]. Demak, til kontaktining real natijasi til tizimi bilan bir qatorda uni qo‘llovchi shaxs va kommunikativ jamoaning tanlovlari bilan shakllanadi.

F. Coulmasning sotsiolingvistik yondashuvida ham til bir jinsli va o‘zgarmas tizim emas, balki so‘zlovchilar tanlovi bilan uzviy bog‘langan ijtimoiy hodisa sifatida qaraladi. Til birliklaridan foydalanish hudud, vaqt, ijtimoiy qatlam, yosh va kommunikativ vaziyatga qarab farqlanishi mumkin [1, B. 107–125]. Shunday ekan, inglizcha modelning o‘zbek tilida faollashishi ham faqat grammatik imkoniyat bilan emas, balki modelni kim, qaysi diskursda va qanday kommunikativ maqsadda qo‘llayotganligi bilan belgilanadi.

Zamonaviy o‘zbek tilida ingliz tili ta’siridagi grammatik modellarning tarqalishida an’anaviy hududiy kontaktga nisbatan bilvosita va masofaviy kontaktning roli ortmoqda. Ingliz va o‘zbek tillari o‘rtasida bevosita hududiy qo‘shnichilik mavjud emas. Shunga qaramay, inglizcha material fan, texnologiya, ta’lim, biznes, media, internet, tarjima va ijtimoiy tarmoqlar orqali o‘zbek kommunikativ makoniga uzluksiz kirib kelmoqda. Matrasning individual va ijtimoiy ko‘p tillilikni kontakt jarayonining muhim tarkibiy qismi sifatida baholashi bunday zamonaviy kontaktni tushuntirish imkonini beradi [3, B. 41–100].

Shu asosda o‘zbek va ingliz tillari o‘rtasidagi bugungi aloqani axborot-

kommunikativ kontakt deb baholash mumkin. Mazkur kontaktning o‘ziga xosligi shundaki, grammatik yoki struktur namunaning tarqalishi uchun barcha so‘zlovchilarning ingliz tilini mukammal egallashi talab qilinmaydi. Model tarjima, professional matn, reklama, ijtimoiy tarmoq yoki ommaviy axborot vositasi orqali ham bilvosita o‘zlashtirilishi mumkin.

Tarjima ingliz tilidagi struktur namunalarning o‘zbek tiliga kirishida muhim transfer kanallaridan biridir. Tarjimon manba matn mazmunini qayta ifodalash jarayonida ba’zan manba tildagi struktur tashkil etish usulini ham qabul qiluvchi tilda qayta ishlab chiqaradi. Heine va Kuteva ta’riflagan foydalanish modelining replikatsiyasi bunday hodisalarni tushuntirish uchun nazariy imkoniyat yaratadi [2, B. 40–78]. Ammo tarjima matnida bir marta qo‘llangan konstruksiyaning o‘zi grammatik o‘zlashuvni isbotlamaydi. Mazkur konstruksiya boshqa matnlarda, boshqa mualliflar nutqida va yangi leksik material bilan takror ishlab chiqarila boshlagan taqdirdagina uning diskursiv faollashuvi haqida fikr yuritish mumkin.

Shu jihatdan grammatik modelning o‘zbek tilida ijtimoiylashishida tarjima birlamchi transfer vositasi, professional diskurs esa uning dastlabki faollashuv muhiti sifatida namoyon bo‘ladi. Ayniqsa IT, sun’iy intellekt, biznes, marketing, media va raqamli iqtisodiyot sohalarida *IT kompaniya, IT xizmat, AI model, AI platforma, biznes model, media loyiha, startap loyiha* kabi konstruksiyalarning keng qo‘llanishi kuzatiladi.

Mazkur konstruksiyalarning tarkibida inglizcha yoki xalqaro komponent mavjudligi ularning barchasini grammatik o‘zlashma deb belgilash uchun yetarli emas. O‘zbek tilining o‘zida aniqlovchi komponentning aniqlanmishdan oldin joylashishi tabiiy struktur imkoniyat hisoblanadi. Shu sababli kontakt ta’siri xorijiy komponentning mavjudligi bilan emas, balki uning yangi leksik birliklar bilan kombinator faolligi, muayyan diskursda yuqori takrorlanishi va yangi konstruksiyalar yaratishga jalb qilinishi asosida aniqlanishi lozim [3, B. 234–274; 5, B. 15–29].

**1-jadval.**

**Ingliz tili ta’siridagi konstruksiyalarning diskursiv faollashuvi**

| **Diskurs sohasi** | **Faol konstruksiyalar** | **Struktur xususiyat** | **Sotsiolingvistik vazifa** |
|---|---|---|---|
| Axborot texnologiyalari | IT kompaniya, IT xizmat, IT mutaxassis | IT + N | Sohaviy identifikatsiya va kommunikativ ixchamlik |
| Sun’iy intellekt | AI model, AI platforma, AI tizim | AI + N | Yangi texnologik tushunchalarni ixcham nomlash |

| | | | |
|---|---|---|---|
| Biznes | biznes model, biznes loyiha, startap loyiha | N + N | Terminologik zichlik va kasbiy nominatsiya |
| Marketing | marketing strategiyasi, brend strategiyasi | N + N | Professional terminologik standartlashuv |
| Media | media loyiha, media platforma, video kontent | N + N | Raqamli kommunikatsiyaga struktur moslashuv |

Jadvaldan ko‘rinadiki, ayni bir xorijiy komponent turli aniqlanmishlar bilan birikib, ma’lum professional diskurs ichida seriyali konstruksiyalar hosil qilmoqda. Bunday seriyalilik tayyor terminning takrorlanishidan ko‘ra kengroq hodisani ko‘rsatadi. Lekin bu yerda ham struktur produktivlikni isbotlash uchun real matn materialidagi chastota, leksik variativlik va diskurslararo tarqalish alohida tekshirilishi talab etiladi.

Ommaviy axborot vositalari grammatik innovatsiyani keng kommunikativ muhitga olib chiqadigan muhim kanal hisoblanadi. Professional nutq doirasida shakllangan konstruksiya OAV matnlarida muntazam qo‘llana boshlashi bilan uning ijtimoiy ko‘rinuvchanligi ortadi. Biroq ommaviy qo‘llanishni avtomatik ravishda me’yorlashuv bilan tenglashtirish mumkin emas. Kontakt lingvistikasida struktur hodisaning mavjudligi va uning jamiyatdagi mavqei alohida parametrlar ekanligi qayd etiladi [6, B. 60–94]. Shu sababli OAVda yuqori chastotada qo‘llanayotgan konstruktsiya hali normativ manbalarda kodifikatsiyalanmagan bo‘lishi mumkin.

Raqamli kommunikatsiya ushbu jarayonni yanada tezlashtiradi. Ijtimoiy tarmoqlar, messenjerlar, bloglar, video platformalar va internet nashrlarida matn ishlab chiqarish tezligi yuqori bo‘lganligi sababli yangi termin hamda konstruksiyalar an’anaviy tahrir va kodifikatsiya jarayonidan oldin ommalashishi mumkin. Bu holatda kommunikativ faollik me’yoriy mustahkamlashuvdan ilgarilab ketadi. Shuning uchun o‘zlashgan modelning tarqalishini baholashda chastota bilan me’yorni bir xil ko‘rsatkich sifatida olish mumkin emas.

So‘zlovchi tanlovi ham grammatik modellar tarqalishining muhim sotsiolingvistik omilidir. Muyskenning yondashuvida kontakt natijalari bilingv so‘zlovchining turli struktur imkoniyatlardan foydalanish strategiyasi bilan bog‘lanadi [4, B. 709–730]. Coulmas ham til kontaktidagi variant tanlovini ijtimoiy va kommunikativ omillardan ajratib bo‘lmasligini ko‘rsatadi [1, B. 107–125]. Shu nuqtayi nazardan *axborot texnologiyalari kompaniyasi* va *IT kompaniya* tipidagi variantlar o‘rtasidagi tanlov faqat struktur masala emas. Birinchi variant izohli va rasmiyroq, ikkinchi variant esa professional diskursda ixcham, tez taniladigan va xalqaro

terminologik muhitga mos birlik sifatida namoyon bo‘lishi mumkin.

Demak, modelning tanlanishida struktur qulaylik, kommunikativ iqtisod va ijtimoiy prestij o‘zaro ta’sirga kirishadi. Bunda prestijning o‘zi grammatik o‘zlashuvni yuzaga keltirmaydi, ammo muayyan variantning kommunikativ guruhda tezroq qabul qilinishi va tarqalishiga yordam beruvchi omillardan biri sifatida xizmat qiladi.

Grammatik innovatsiyalarning barcha so‘zlovchilar qatlamida bir xil tezlikda tarqalmasligi ham tabiiy. IT mutaxassislari, marketologlar, biznes vakillari, jurnalistlar, tarjimonlar, ilmiy xodimlar, talabalar va raqamli kommunikatsiyada faol foydalanuvchilar yangi inglizcha terminologik konstruksiyalar bilan ko‘proq to‘qnashadigan guruhlarni tashkil qiladi. Bu guruhlarning ayrimlari yangi konstruksiyalar uchun dastlabki tarqalish muhiti vazifasini bajarishi mumkin. Til hodisalarining ijtimoiy guruh, yosh va kommunikativ vaziyatga qarab variantlashuvi sotsiolingvistik tanlovning tabiiy xususiyati sifatida qaraladi [1, B. 107–125].

Biroq yoshni grammatik o‘zlashuvning yagona sababi sifatida ko‘rsatish mumkin emas. Raqamli faollik, kasb, ta’lim, ingliz tilini bilish darajasi, xalqaro axborot bilan aloqa va kommunikativ muhit birgalikda ta’sir qiladi. Shu sababli grammatik modelning sotsiolingvistik tarqalishi bir omilli emas, balki ko‘p omilli hodisadir [4, B. 709–730].

Mazkur kuzatishlar asosida ingliz tili ta’siridagi grammatik modellarning o‘zbek tilida ijtimoiylashuvini yetti bosqichga ajratish mumkin: kontakt va transfer, kommunikativ adaptatsiya, diskursiv faollashuv, ijtimoiy tarqalish, uzualizatsiya, institutsional mustahkamlashuv va me’yoriy kodifikatsiya. Ushbu tasnif mavjud kontakt nazariyalarini o‘zbek tili materiali bilan uyg‘unlashtirish natijasida taklif etilmoqda va grammatik o‘zlashuvning struktur hamda sotsiolingvistik tomonlarini yagona dinamik jarayon sifatida ko‘rish imkonini beradi [2, B. 40–78; 3, B. 193–274; 5, B. 15–29].

**2-jadval.**

**Grammatik modelning sotsiolingvistik ijtimoiylashuv bosqichlari**

| **Bosqich** | **Jarayon mazmuni** | **Asosiy kommunikativ muhit** | **Natija** |
|---|---|---|---|
| **1. Kontakt va transfer** | Manba tildagi struktur model bilan dastlabki aloqa yuzaga keladi | Inglizcha matn, tarjima, xalqaro kommunikatsiya | Dastlabki struktur namuna |
| **2. Kommunikativ adaptatsiya** | Model o‘zbek tilining struktur imkoniyatlariga moslashtiriladi | Tarjima, professional nutq | Struktur moslashuv |

| | | | |
|---|---|---|---|
| **3. Diskursiv faollashuv** | Konstruksiya muayyan sohada takroriy qo‘llana boshlaydi | IT, biznes, media, ilmiy diskurs | Sohaviy faollik |
| **4. Ijtimoiy tarqalish** | Model tor professional guruh doirasidan kengroq auditoriyaga o‘tadi | OAV, internet, ijtimoiy tarmoqlar | Kommunikativ kengayish |
| **5. Uzualizatsiya** | Takroriy qo‘llanish natijasida konstruksiya odatiylashadi | Ommaviy kommunikatsiya | Barqaror nutqiy qo‘llanish |
| **6. Institutsional mustahkamlashuv** | Model rasmiy, ilmiy va ta’limiy matnlarda muntazam qo‘llana boshlaydi | Fan, ta’lim, rasmiy va institutsional diskurs | Institutsional tan olinish |
| **7. Me’yoriy baholash va kodifikatsiya** | Modelning adabiy til me’yoriga munosabati va qo‘llanish chegaralari belgilanadi | Lug‘atlar, qo‘llanmalar, me’yoriy manbalar | Me’yoriy maqom |

Mazkur bosqichlar qat’iy mexanik ketma-ketlik sifatida tushunilmasligi kerak. Har bir model barcha bosqichlardan o‘tishi shart emas. Ayrim konstruksiyalar professional diskurs chegarasida qolishi, boshqalari raqamli kommunikatsiyada yuqori faollikka ega bo‘lsa-da, rasmiy uslubga o‘tmasligi mumkin. Yana ayrim birliklar esa ommaviy nutqda odatiylashib, keyinchalik institutsional manbalarda ham mustahkamlanishi mumkin.

Shu jihatdan grammatik o‘zlashuvning uch ko‘rsatkichini bir-biridan qat’iy farqlash zarur: kommunikativ faollik, ijtimoiy uzualizatsiya va me’yoriy kodifikatsiya. Kommunikativ faollik birlikning muayyan diskursda ko‘p qo‘llanishini anglatadi. Uzualizatsiya konstruktsiyaning til jamoasi uchun odatiy kommunikativ vositaga aylanishini bildiradi. Kodifikatsiya esa uning normativ manbalarda qayd etilishi va qo‘llanish chegaralarining belgilanishi bilan bog‘liq. Demak, yuqori chastota o‘z-o‘zidan me’yoriy maqomni ta’minlamaydi.

Tahlil natijasida grammatik modellarning zamonaviy o‘zbek tilidagi sotsiolingvistik harakatini quyidagi tarzda umumlashtirish mumkin: dastlab inglizcha struktur namuna tarjima yoki professional diskurs orqali kommunikativ muhitga kiradi; keyin qabul qiluvchi til imkoniyatlariga moslashadi; ma’lum sohada takrorlanib diskursiv faollashadi; OAV va raqamli kommunikatsiya orqali kengroq auditoriyaga tarqaladi; muntazam qo‘llanish sharoitida uzual xususiyat kasb etishi mumkin; ayrim hollarda esa rasmiy, ilmiy va ta’limiy diskursda mustahkamlanib, normativ baholash

obyektiga aylanadi.

Bu jarayonda kommunikativ kanallarning vazifalari ham bir xil emas. Tarjima asosan transferni, professional diskurs dastlabki faollashtirishni, OAV ommalashtirishni, raqamli kommunikatsiya esa tarqalish sur'ati va funksional doirasini kengaytirishni ta'minlaydi. Rasmiy, ilmiy va ta'limiy diskurs modelning institutsional mustahkamlanishiga xizmat qilsa, me'yoriy manbalar uning kodifikatsion maqomini belgilaydi.

Shu tariqa ingliz tili ta'siridagi grammatik modelni tayyor shaklning bir tildan ikkinchi tilga oddiy ko'chishi sifatida talqin qilish yetarli emas. Grammatik o'zlashuv struktur replikatsiya bilan bir qatorda kommunikativ tanlov, ijtimoiy tarqalish va me'yorlashuv jarayonlarini ham qamrab oladigan ko'p bosqichli hodisadir [2, B. 40–78; 3, B. 193–274]. Grammatik ta'sirning ijtimoiy natijasi esa faqat modelning mavjudligi bilan emas, uning yangi kontekstlarda qayta ishlab chiqarilishi va nutq jamoasi tomonidan qabul qilinish darajasi bilan belgilanadi [4, B. 709–730].

Tadqiqot natijasida ingliz tili ta'siridagi grammatik modellarning sotsiolingvistik faollashuviga doir uchta muhim xulosa ilgari suriladi. Birinchidan, zamonaviy inglizcha-o'zbekcha grammatik kontaktning muhim qismi hududiy yaqinlikka emas, axborot-kommunikativ va raqamli aloqaga asoslanadi. Ikkinchidan, inglizcha komponentning mavjudligi grammatik model o'zlashuvini isbotlamaydi; grammatik ta'sirni aniqlashda struktur takrorlanish, leksik variativlik, diskursiv tarqalish va produktivlik kabi belgilar majmui hisobga olinishi zarur [3, B. 234–274; 5, B. 15–29]. Uchinchidan, grammatik modelning kommunikativ faolligi, uzualizatsiyasi va kodifikatsiyasi aynan bir hodisa emas. Shu bois modelning yuqori chastotasi uning adabiy til me'yoriga avtomatik ravishda kirganligini anglatmaydi.

Xulosa qilib aytganda, ingliz tilining zamonaviy o'zbek tiliga grammatik ta'siri yangi strukturani to'g'ridan to'g'ri ko'chirish bilangina chegaralanmaydi. Kontakt o'zbek tilida avvaldan mavjud bo'lgan struktur imkoniyatning chastotasi, funksional yuklamasi va diskursiv qo'llanish doirasini kengaytirishi ham mumkin. Grammatik modelning o'zlashuvi shu sababli struktur, kommunikativ va ijtimoiy omillar kesishgan nuqtada yuzaga chiqadigan dinamik jarayon sifatida baholanishi lozim. Bunday yondashuv grammatik o'zlashmani oddiy xorijiylik belgisi asosida emas, balki real til materiali, kontakt mexanizmi, diskursiv faollik va me'yoriy munosabatning o'zaro birligi asosida aniqlash imkonini beradi.

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# TILAK JO‘RA IJODIDA SINONIMLARNING QO‘LLANILISHI

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***Annotatsiya.*** *Maqolada Tilak Jo‘ra she’riyatida sinonimlarning qo‘llanish xususiyatlari va badiiy-estetik vazifalari tahlil qilingan. Sinonimlarning ma’no nozikligi, uslubiy va emotsional-ekspressiv bo‘yoo‘i, shuningdek, poetik fikrni kuchaytirish, obrazlilik va ta’sirchanlikni oshirishdagi o‘rni misollar asosida yoritilgan.*

***Kalit so‘zlar:*** *Sinonimiya, sinonimik qator, ma’no nozikligi, uslubiy bo‘yoq, emotsional-ekspressivlik, poetik nutq.*

***Аннотация.*** *В статье анализируются особенности употребления синонимов в поэзии Тилака Джуры и их художественно-эстетические функции. На основе поэтических примеров раскрываются смысловые оттенки, стилистическая и эмоционально-экспрессивная окраска синонимов, а также их роль в усилении выразительности и образности поэтической речи.*

***Ключевые слова:*** *Синонимия, синонимический ряд, смысловой оттенок, стилистическая окраска, эмоциональная экспрессивность, поэтическая речь.*

***Abstract.*** *The article analyzes the use of synonyms in the poetry of Tilak Jura and their artistic and aesthetic functions. Based on poetic examples, it examines the semantic nuances, stylistic and emotional-expressive features of synonyms, as well as their role in enhancing the expressiveness and imagery of poetic discourse.*

***Keywords:*** *Tilak Jura, synonym, synonymy, synonymous series, semantic nuance, stylistic coloring, emotional expressiveness, poetic discourse.*

**Kirish:** Sinonimlar – talaffuzi, yozilishi har xil, birlashtiruvchi ma’nosi bir xil (umumiy) bo‘lgan, qo‘shimcha ma’no nozikligi, emotsional bo‘yog‘i, qo‘llanishi kabi bir qator xususiyatlari bilan o‘zaro farqlanadigan so‘zlardir.[12] Umuman olganda, sinonimlar shaxs, narsa, belgi, xususiyat, voqea-hodisa va harakatning bir necha nom

[12] Ҳожиев А. Ўзбек тили синонимларининг изоҳли луғати. – Т.: Ўқитувчи , 1974. – Б. 3.

bilan aytilishidir. Sinonimlar til boyligi bo‘lib, avvalo, narsa va hodisalarning nozik ma’no bo‘yoqlarini ifodalash uchun xizmat qiladi.

Til birliklari orasidagi sinonimiya munosabati tilday murakkab va muhtasham tizim tarkibidagi favqulodda muhim paradigmatik munosabatlardan biri bo‘lib, bu munosabatning mavjudligi mazkur tizimning takomil va taraqqiyoti darajasi bilan uyg‘undir. Boshqacha qilib aytganda, tilning rivojlanganlik darajasining yuksakligini, demakki zanginligi va rangginligini ta’min etadigan muntazam va betimsol omillardan biri unda lisoniy birliklararo ma’nodoshlik – sinonimiya munosabati imkoniyatlarining ko‘lamdorligidir.[13]

**Asosiy qism:** Shoir Tilak Jo‘ra she’riyatida ayni bir matn tarkibida ikki yoki undan ortiq ma’nodosh so‘zni badiiy tasvir maqsadiga uyg‘un holda mohirona qo‘llaganligi kuzatiladi. Ayrim misollarni kuzatamiz:

*Mujgonlarim yulduzlar tizib,*
*Kiprigimda aylanar olam.*

Mujgon/kiprik so‘zlari o‘zaro sinonim sifatida qo‘llanilgan. Ma’lumki, Buxoro shevasi lug‘at tarkibida fors-tojik tilidan o‘zlashgan so‘zlar ko‘p uchraydi. Tilak Jo‘raning shu hudud farzandi ekanligini inobatga olsak, kiprik so‘zining aynan fors tilidagi ma’nodoshi (mujgon)ni qo‘llashi tabiiy hol. Kiprik asl turkiy so‘z bo‘lib, “O‘zbek tilining etimologik” lug‘atida “ko‘z qovoqlari chetida qator joylashgan tuklar”[14] deb keltirilgan. Shoir leksik sinonim bilan go‘zal ifoda yaratganligini ko‘ramiz.

*Oydin kechalardan ming bora ravshan…*

She’rda oydin va ravshan so‘zlari o‘zaro sinonimik munosabatda qo‘llanilgan. “O‘zbek tili sinonimlarining katta izohli lug‘ati”da aniq leksemasi bosh so‘z bo‘lib uning sinonimlari sifatida ochiq, yaqqol, ravshan, aniq-tiniq, yorqin, oydin so‘zlari keltirilgan.[15] Lug‘atda aniq so‘zi mazkur ma’no to‘liq ifodalashi va ravshan so‘zi bilan juft shaklda kelganda ma’no yanada teranroq o‘z aksini topishi ta’kidlangan. Oydin so‘zining ma’no ottenkasi yorqin so‘ziga yaqinligi va kuchli ta’kidga ega ekanligi ifodalangan. Ravshan forsiy so‘z hisoblanib, yorug‘, nurli, aniq, ko‘rinarli; yorqin nur sochadigan; yorug‘, yorqin ma’nolarida keladi. Shoir mazkur misrada ikki kuchli ottenkali sinonimlardan ustalik bilan foydalanib go‘zal ifoda yaratgan.

*Axir, xavfli, xatarli naqadar*

[13] Mahmudov N. O`zbek tili sinonimlarining katta izohli lug`ati. – T.: G`afur G`ulom nomidagi nashriyot-matbaa ijodiy uyi, 2022. – B. 5.

[14] Sh. Rahmatullayev. O‘zbek tilining etimologik lug‘ati. - T., “Universitet”, 2000, 209b

[15] Mahmudov N. O`zbek tili sinonimlarining katta izohli lug`ati. – T.: G`afur G`ulom nomidagi nashriyot-matbaa ijodiy uyi, 2022. – B. 49.

*Yerdagi bu og‘izlar, bu qo‘llar…*

Xavfli / xatarli leksemalari she’rda sinonim sifatida kelgan. Lug‘atda xavfli bosh so‘zining sinonimlari sifatida xavotirli, xatarli, qo‘rqinchli, tahlikali kabi so‘zlar keltiriladi. Xavotirli so‘zida belgi darajasi kuchsizroq. Xatarli so‘zida belgi darajasi kuchli. Qo‘rqinchli bu ma’noda kam qo‘llanadi. Tahlikali kitobiy.[16] Xavf va xatar arab tilidan o‘zlashgan so‘zlar hisoblanib, o‘zbek tilida xavfli, xatarli sifatlari hosil qilingan. “O‘zbek tilining izohli lug‘ati”da xavfli leksemasi xavf paydo qiladigan, xatarli, qo‘rqinchli, deb izohlangan. Xatarli leksemasi esa biror baxtsizlikka olib kelishi mumkin bo‘lgan, xavfli, tahlikali tarzida keltirilgan. Lug‘atda deyarli bir xil izohlanadi. Misradagi sinonim juftlik ma’noni kuchaytirish, ta’kidni oshirish maqsadida qo‘llangan.

*Chidamning ham bordir oxiri,*
*Bardosh ham bir kuni bukilar*

Lug‘atda chidam, bardosh, toqad, tob, to‘zim, tahammul, matonat so‘zlari sinonim sifatida uchraydi. Bardosh so‘zlashuv tiliga nisbatan yozma nutqda ko‘p qo‘llanilishi, tob, bardosh so‘zlari bu ma’noda kam qo‘llanilishi, tahammul eskirgan va kitobiy ekanligi ta’kidlanadi.[17] Chidam so‘zi insonning ruhiy va jismoniy qiyinchiliklarga dosh bera olish qobiliyatini ifodalovchi neytral uslubiy birlik bo‘lsa, bardosh leksemasi ko‘proq badiiy va yozma nutqda qo‘llanib, iroda, matonat hamda ruhiy sobitlik ma’nolarini kuchliroq aks ettiradi. Shoir sinonimik qatordagi ikki birlikni ketma-ket qo‘llash orqali oddiy takrorni emas, balki ma’no gradatsiyasini yuzaga keltirgan. Dastlab chidamning oxiri borligi ta’kidlanadi, keyingi misrada esa undan ta’sirchanroq bo‘lgan bardoshning ham “bukilishi” tasvirlanadi. Natijada inson imkoniyatlarining cheklanganligi, eng kuchli iroda ham ma’lum bir nuqtada sinov qarshisida ojiz qolishi haqidagi falsafiy g‘oya yanada ta’sirchan ifodalanadi. Shuningdek, sinonimlarning parallel qo‘llanishi misralarning emotsional-ekspressivligini kuchaytiradi, badiiy matnda mazmunning ta’sir kuchini oshiradi va muallifning individual uslubini namoyon etadi. Demak, bu o‘rinda sinonimlar nafaqat ma’noni takrorlash, balki poetik fikrni bosqichma-bosqich kuchaytirish, obrazlilik va estetik ta’sirni oshirish vazifasini ham bajargan.

*—Ko‘kda yulduz qilarkan xanda,*
*Suqlanarkan lojuvard osmon.*

[16] Mahmudov N. O`zbek tili sinonimlarining katta izohli lug`ati. – T.: G`afur G`ulom nomidagi nashriyot-matbaa ijodiy uyi, 2022. – B. 250.

[17] Mahmudov N. O`zbek tili sinonimlarining katta izohli lug`ati. – T.: G`afur G`ulom nomidagi nashriyot-matbaa ijodiy uyi, 2022. – B. 377.

She’riy parchada ko‘k va osmon leksemalari sinonimik munosabatni hosil qilgan. “O‘zbek tili sinonimlarining katta izohli lug‘ati”da osmon leksemasining sinonimlari sifatida ko‘k, samo, falak, gardun, fazo, sipehr, mi(y)nu birliklari keltirilgan. Ushbu sinonimik qatorda ko‘k umumiste’molga xos asl turkiy leksema bo‘lsa, samo, falak, gardun va fazo asosan kitobiy hamda badiiy uslubda qo‘llanadi. Gardun leksemasida eskilik bo‘yog‘i seziladi, fazo esa mazkur ma’noda nisbatan kam ishlatiladi. Sipehr va mi(y)nu birliklari esa eskirgan qatlamga mansub hisoblanadi.[18] Shoir bir misra doirasida asl turkiy ko‘k hamda tojikcha o‘zlashma osmon leksemalarini yonma-yon qo‘llash orqali tasvirning badiiyligini kuchaytirgan, she’riy nutqda takrorning oldini olib, ifodaning uslubiy rang-barangligini ta’minlagan.

*Sanduvoch erding, bo‘lding andalib,*
*Bulbul bo‘lib kelding aldanib.*
*Noming o‘zgardi-yu, o‘zgarmagan nolang*
*Tutqunlikda toliqqan qushcham.*

She’rda sanduvoch/ andalib/ bulbul leksemalari sinonimiyani hosil qilgan. Shoir bir tushunchani turli sinonim birliklar bilan ifodalab, she’rning badiiy ta’sirchanligini va ohangdorligini kuchaytirgan. Sanduvoch, andalib, bulbul so‘zlari o‘z va o‘zlashgan qatlamga oidligi va davr nuqtayi nazaridan farq qiladi. Shu sababdan bu so‘zlar ma’no ifodasidagi farq u qadar sezilarli emas.

*Yayrab quchmoqqa oshyoning yo‘qdir,*
*Tashlab ketmoqqa makoning yo‘qdir.*

Mazkur misralarda sinonimik munosabat oshyon va makon leksemalari o‘rtasida kuzatiladi. Har ikkala leksema “yashash joyi, maskan” semasini ifodalashi bilan umumiy semantik maydonga mansub bo‘lib, matn tarkibida kontekstual sinonim sifatida namoyon bo‘ladi. Muallif ushbu sinonimik birliklardan foydalanish orqali bir xil ma’noni takrorlashdan qochgan, she’rning uslubiy jozibadorligini oshirgan hamda lirik qahramonning boshpana va maskanga ega emasligi haqidagi o‘oyani ta’sirchan tarzda ifodalagan.

*G‘ivirlar*
*Balandga-pastga,*
*Demak, maqsadlari bor,*
*Bordir murodlari.*

She’riy parchada maqsad va murod so‘zlari ma’nodoshlik hosil qilgan. Lug‘atda maqsad bosh so‘zining sinonimlari sifatida niyat, murod, muddao, maqsud kabi so‘zlar

[18] Mahmudov N. O`zbek tili sinonimlarining katta izohli lug`ati. – T.: G`afur G`ulom nomidagi nashriyot-matbaa ijodiy uyi, 2022. – B. 461.

keltiriladi. Murod so‘zi orziqib, intiqib kutilgan xohish istakni bildirib kitobiy uslubga xos.[19] “O‘zbek tili sinonimlarining katta izohli lug‘ati”da ham mazkur so‘zlar bir xil izohlangan. Shoir ushbu sinonimlarni bir misra doirasida qo‘llash orqali fikrning ma’no qamrovini kengaytirgan hamda lirik qahramonning ichki intilishi va ko‘zlagan niyatini emotsional-ekspressiv jihatdan kuchaytirgan. Natijada sinonimik birliklar she’rning badiiy ta’sirchanligini oshirishga xizmat qilgan.

*Yemrilar diyonatli diyorim,*
*Nomusim, orim yemrilar…*

Mazkur misrada nomus va or so‘zlari sinonim sifatida kelgan. “O‘zbek tili sinonimlarining katta izohli lug‘ati” da bu so‘z aynan keltirilmay fe’l va sifat ko‘rinishi uchraydi. Umuman olganda, har ikkala birlik insonning sha’ni, qadr-qimmati va axloqiy pokligini ifodalaydi. Shoir ushbu sinonimlarni yonma-yon qo‘llash orqali lirik qahramonning ma’naviy iztirobi va yurt taqdiri bilan bog‘liq ruhiy kechinmalarini yanada ta’sirchan ifodalagan.

**Xulosa:** Xullas, iste’dodli shoir Tilak Jo‘ra so‘zdan, xususan, sinonim so‘zlardan mohirona foydalanib betakror, mazmundor misralar yaratganligiga, har bir sinonim so‘zning o‘rni bilan, maqsadli qo‘llanganliga guvoh bo‘lamiz.

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# NAMANGAN XALQARO GULLAR FESTIVALI TADQIQI: OMMAVIY BAYRAMLARNI TASHKIL ETISHDA XORIJIY TAJRIBA

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***Annotatsiya.*** *Ushbu maqolada ommaviy bayramlar, xususan, Namangan xalqaro gullar festivali misolida tarixiylik va zamonaviylik kategoriyalari madaniyatshunoslik nuqtai nazaridan tahlil qilinadi. Tarixiylik kategoriyasi jamoaviy xotira, avlodlararo vorisiylik va nomoddiy madaniy meros nazariyalari P. Nora, J. Assmann, M. Halbwachs, P. Connerton, UNESCO Konvensiyasi orqali, zamonaviylik esa institutsional jadallashuv, glokalizatsiya va madaniy gibridlik konsepsiyalari A. Giddens, R. Robertson, J. Tomlinson, N.G. Canclini orqali asoslanadi. Tadqiqot natijalari festivalni hududiy madaniy-turistik kapital sifatida rivojlantirish uchun nazariy-metodologik asos bo'lib xizmat qilishi mumkin.*

***Kalit so’zlar:*** *Ommaviy bayram, tarixiylik, zamonaviylik, jamoaviy xotira, nomoddiy madaniy meros, glokalizatsiya, madaniy gibridlik, hududiy identiklik, Namangan xalqaro gullar festivali, madaniy transformatsiya.*

***Аннотация.*** *В статье с позиций культурологии анализируются категории историчности и современности на примере массовых праздников, в частности Международного фестиваля цветов в Намангане. Категория историчности рассматривается через теории коллективной памяти, межпоколенческой преемственности и нематериального культурного наследия на основе концепций П. Нора, Я. Ассмана, М. Хальбвакса, П. Коннертона и положений Конвенции ЮНЕСКО. Современность обосновывается посредством концепций институциональной интенсификации, глокализации и культурной гибридности, разработанных Э. Гидденсом, Р. Робертсоном, Дж. Томлинсоном и Н.Г. Канкліні. Результаты исследования могут служить теоретико-методологической основой для развития фестиваля как регионального культурно-туристического капитала.*

***Ключевые слова:*** *массовый праздник, историчность, современность, коллективная память, нематериальное культурное наследие, глокализация,*

*культурная гибридность, региональная идентичность, Международный фестиваль цветов в Намангане, культурная трансформация.*

***Abstract.*** *This article analyzes the categories of historicity and modernity in the context of mass festivals, with particular reference to the Namangan International Flower Festival, from a cultural studies perspective. The category of historicity is examined through the theories of collective memory, intergenerational continuity, and intangible cultural heritage, drawing on the works of P. Nora, J. Assmann, M. Halbwachs, P. Connerton, and the UNESCO Convention. Modernity is substantiated through the concepts of institutional intensification, glocalization, and cultural hybridity developed by A. Giddens, R. Robertson, J. Tomlinson, and N.G. Canclini. The findings of the study may serve as a theoretical and methodological basis for developing the festival as a regional cultural and tourism capital.*

***Keywords:*** *Mass festival, historicity, modernity, collective memory, intangible cultural heritage, glocalization, cultural hybridity, regional identity, Namangan International Flower Festival, cultural transformation.*

## Kirish.

Ommaviy bayramlar jamiyatning tarixiy xotirasi, milliy qadriyatlari va zamonaviy madaniy hayotini aks ettiruvchi muhim ijtimoiy-madaniy hodisadir. Uning subyektlari hisoblangan insonlar ong-tafakkurida transformatsion jarayonlarni yuzaga keltiradi, bunda zamon va makon muhim ahamiyat kasb etadi.

Zamonaviy madaniyatshunoslikda ommaviy bayramlar tizimini o'rganishda tarixiylik va zamonaviylik kategoriyalarini alohida-alohida emas, balki o'zaro bog'liq madaniy mexanizm sifatida talqin qilish zaruriyati yuzaga kelmoqda. Tarixiylik festivalga vaqt chuqurligi, jamoaviy xotira, avlodlararo vorisiylik va qadriyatlar uzluksizligini beradi; zamonaviylik esa shu xotirani yangi kommunikativ shakllar, sahnaviy yechimlar, turistik xizmatlar, media obrazlar va urbanistik dizayn orqali hozirgi auditoriyaga yetkazadi. Bunday yondashuvda festival statik marosim emas, balki doimiy qayta talqin qilinadigan madaniy axborot sifatida namoyon bo'ladi.

Mazkur tadqiqotning dolzarbligi shundan iboratki, Namangan xalqaro gullar festivali misolida tarixiylik va zamonaviylikning nazariy-uslubiy tahlili hozirgacha yaxlit madaniyatshunoslik nuqtai nazaridan chuqur o'rganilmagan. Tadqiqotning maqsadi — festivalning tarixiy ildizi hamda zamonaviy transformatsiya jarayonlarini jamoaviy xotira, nomoddiy madaniy meros va glokalizatsiya nazariyalari asosida tahlil qilish, shuningdek, festivalning hududiy madaniy-turistik kapital sifatidagi ahamiyatini asoslashdan iborat.

## Asosiy qism.

Tarixiylik tushunchasi madaniyatshunoslikda oddiy xronologik o'tmishni emas, balki jamiyat uchun ahamiyatli bo'lgan xotira, ramz, an'ana va muqaddaslashtirilgan tajribalar tizimini anglatadi. Pierre Nora ta'kidlaganidek, zamonaviy jamiyatda xotira tabiiy ravishda emas, balki maxsus joylar, belgilar, marosimlar va ramziy amaliyotlar orqali saqlanadi [1, 7-b]. Shu ma'noda Namangan xalqaro gullar festivali ham shahar xotirasining zamonaviy "madaniy joyi" sifatida talqin qilinishi mumkin.

U.Qoraboyevning 1991-yilda nashr etilgan "O'zbekiston bayramlari" nomli risolasida bayramlarning tarixiy o'zgaruvchanligi tamoyili asoslangan bo'lib, har bir davr bayramga o'ziga xos ijtimoiy-madaniy mazmun olib kirishi empirik dalillar bilan tasdiqlanadi [4, 89-b]. Bunday yondashuv Namangan gullar festivalining 1961-yildagi mahalliy "Gul bayrami" shaklidan 2019-yildagi xalqaro festival shakliga qadar transformatsiyalashish jarayonini metodologik jihatdan tushunishga keng yo'l ochadi.

Mazkur evolyutsiyani uch bosqichli tarixiy chiziqda izohlash mantiqan asoslidir:

**1.** Sovet davri bosqichi.

**2.** Mustaqillik davri bosqichi.

**3.** Xalqarolashuv bosqichi.

Binobarin, bayramni o'zgarmas "an'ana" sifatida emas, balki davr taqozosiga muvofiq moslashib boruvchi dinamik madaniy institut sifatida talqin qilish ushbu tahlildan kelib chiqadigan asosiy metodologik xulosa hisoblanadi. Bunday qarash festivalning ramziy mazmunini "o'zgarishsiz an'ana" sifatida emas, balki "tarixiy-dinamik an'analar" sifatida tahlil qilish imkonini beradi.

Festivalda tarixiylikning birinchi ko'rinishi mahalliy jamoaning o'zini anglashida namoyon bo'ladi. Namangan aholisi uchun gulchilik, bog'dorchilik, estetik bezak, tabiatga mehr va shaharni fayzli ko'rsatish amaliyoti faqat tashqi dekoratsiya emas, balki avlodlar tajribasi, mahalliy did, mehnat madaniyati va yashash muhitiga munosabat ifodasidir. J.Assmannning kollektiv xotira haqidagi qarashlari bunday jarayonni madaniy identiklikni mustahkamlovchi ramziy tizim sifatida izohlash imkonini beradi [2, 125-b].

Ommaviy bayramda tarixiy xotira faqat axborot orqali emas, balki tana harakati, marosimiy ishtirok, ko'rish, eshitish, birgalikda yurish, tomosha qilish, suratga olish va taassurot almashish orqali ham uzatiladi. P.Connertonning jamiyatlar qanday eslashiga doir konsepsiyasi festivalni xotiraning jonli amaliyoti sifatida ko'rishga yordam beradi [3, 126-b]. Bu yerda xotira kitob sahifasida emas, balki shahar makonida, insonlar ishtirokida, ramziy harakatlar orqali qayta yaratiladi.

Gul, bahor va tabiat yangilanishi obrazlarining qadimdan rivojlangan chuqur qatlamlari A. Ashirovning "O'zbek xalqining qadimiy e'tiqod va marosimlari"

monografiyasida tadqiq etilgan [5, 69-b]. Olim Markaziy Osiyo xalqlari madaniyatida tabiat va mavsumiy o'zgarishlar hamda butun olamning yangidan jonlanishi "ilohiy kuchning qayta namoyon bo'lishi" jarayonini batafsil yoritib bergan: yangi yil, qishdan bahorga o'tish, ilk gullarning paydo bo'lishi qadimda yashagan insonlar ongida ilohiy tartibning qayta o'rnatilishi sifatida idrok etilgan.

Nomoddiy madaniy meros konsepsiyasi ham festivalni izohlashda muhim nazariy tayanchdir. UNESCOning 2003-yilgi Konvensiyasida nomoddiy madaniy meros sifatida og'zaki an'analar, ijro san'ati, ijtimoiy amaliyotlar, marosimlar, bayram tadbirlari, tabiat va koinotga oid bilimlar, an'anaviy hunarmandchilik ko'nikmalari e'tirof etiladi [6, 94-b]. Namangan gullar festivali aynan ijtimoiy amaliyot, estetik ko'nikma, tabiatga madaniy munosabat va ommaviy bayram elementlarini birlashtiradi.

B.Kirshenblatt-Gimblett nomoddiy merosni "metamadaniy ishlab chiqarish" sifatida talqin qilib, merosning o'zi ham zamonaviy institutlar, ko'rgazmalar, festival va muzeylashtirish jarayonlari orqali qayta ishlab chiqilishini ko'rsatadi [7, 52-b]. Bu fikr Namangan festivalini shunchaki tarixiy an'anani namoyish qilish emas, balki madaniy merosni zamonaviy ko'rgazmaviy, turistik va kommunikativ formatda qayta ishlab chiqarish jarayoni sifatida anglashga imkon beradi.

Zamonaviylik kategoriyasi bayram va festivallarni o'rganishda yangilik, texnologiya yoki tashqi bezak bilangina belgilanmaydi. A.Giddens zamonaviylikni ijtimoiy institutlarning jadallashuvi, makon va vaqt munosabatlarining o'zgarishi hamda ijtimoiy amaliyotlarning doimiy qayta ko'rib chiqilishi bilan bog'laydi [8, 36-b]. Namangan festivalida ham zamonaviylik festival maydonining kengayishi, auditoriya tarkibining o'zgarishi, turistik xizmatlar va media kommunikatsiyaning kuchayishi orqali namoyon bo'ladi.

R.Robertson tomonidan ilgari surilgan "glokalizatsiya" g'oyasi festivalni tahlil qilishda ayniqsa samaralidir [9, 258-b], chunki Namangan gullar festivali bir tomondan mahalliy gulchilik an'analari, shahar mentaliteti va milliy estetik didga tayanadi, ikkinchi tomondan xalqaro festival, turizm va ko'rgazma standartlariga moslashadi. Natijada lokal an'ana global madaniy muloqotga kiradi.

Madaniy zamonaviylashuvni faqat g'arbona shakllarni o'zlashtirish sifatida talqin qilish biryoqlama bo'ladi. N.G.Canclini madaniy gibridlik nazariyasida an'anaviy va zamonaviy shakllar bir-birini inkor etmasdan, aksincha, yangi ijtimoiy-madaniy kombinatsiyalarni yaratishini ko'rsatadi [10, 154-b]. Namangan festivalidagi xalqona sayil, gul ko'rgazmasi, zamonaviy sahna, turistik servis va media dizayn ana shunday gibrid madaniy shaklni hosil qiladi.

O'zbek lingvomadaniyatshunosligida milliy tajriba, urf-odat va qadriyatlarning til, ramz va ifoda vositalari orqali jamiyat xotirasida saqlanishi alohida ilmiy ahamiyat kasb etadi. M.S.Karimova paremiologik birliklar xalqning ijtimoiy hayoti, mentaliteti va madaniy tajribasini ifodalashini asoslagan [11, 57-b]. Bu qarash festivaldagi shiorlar, xalqona iboralar, bayram nutqi va ramziy obrazlarni tahlil qilish uchun muhim nazariy asosdir.

Tarixiylik kategoriyasi bu yerda faqat o'tmish haqidagi ma'lumotlar yig'indisi emas, balki avlodlar tomonidan tan olingan ramzlar, odatlar va ma'no shakllarining hozirgi bayram maydonida qayta ishlashidir. M. Karimova tadqiqotidagi "milliy-madaniy birlik" tushunchasi festivalga tatbiq etilganda, gul obrazi ham tabiat mahsuli yoki bezak elementi darajasidan chiqib, ijtimoiy xotirani uyg'otuvchi belgi maqomini oladi. Masalan, Namangan gulchiligi, hovli madaniyati, bahoriy sayl, oilaviy tomosha va mehmon kutish marosimlari festivalda birgalikda namoyon bo'lsa, ular tarixiylikni muzey eksponati sifatida emas, yashayotgan madaniy amaliyot sifatida ko'rsatadi.

Madaniy integratsiya, transformatsiya va diffuziya jarayonlari lokal madaniyatning saqlanishi hamda zamonaviy muhitga moslashuvi bilan bog'liq murakkab ijtimoiy-madaniy hodisalardir. Namangan gullar festivalida ham mahalliy an'analar, shahar makoni, turistik ehtiyoj va xalqaro kommunikatsiya o'zaro tutashib, madaniy transformatsiyaning o'ziga xos modelini yuzaga keltiradi.

Madaniy integratsiya masalasi festivalning jamiyatdagi birlashtiruvchi funksiyasini ham ochib beradi. O.Nishonova madaniy integratsiyani umuminsoniylikni rivojlantirish omili sifatida talqin qilgan. Festival jarayonida turli yoshdagi, turli kasb va ijtimoiy guruhlardagi insonlar yagona estetik tajriba atrofida birlashadi. Bu esa jamoaviy hamjihatlik va shahar fuqaroligi hissini kuchaytiradi.

**Xulosa.**

Shunday qilib, tarixiylik festivalning ildizini, zamonaviylik esa uning harakat trayektoriyasini belgilaydi. Tarixiyliksiz festival yuzaki tomoshaga, zamonaviyliksiz esa muzeylashgan, harakatsiz marosimga aylanib qolishi mumkin. Namangan xalqaro gullar festivalining ilmiy qiymati aynan ana shu ikki kategoriya — meros va yangilanish, xotira va kommunikatsiya, an'ana va innovatsiya, mahalliylik va xalqaro ochiqlik o'rtasidagi muvozanatni namoyon etishidadir.

Tarixiylik va zamonaviylik kategoriyalari Namangan xalqaro gullar festivali kontekstida bir-birini istisno etmaydigan, balki o'zaro ma'no hosil qiluvchi ikki jihat sifatida amal qiladi. Tarixiylik festivalga ildiz, jamoaviy xotira va vorisiylik beradi. Zamonaviylik esa shu xotirani yangi sahnaviy, raqamli, turistik va kommunikativ shakllar orqali keng auditoriyaga yetkazadi. Mazkur ikki kategoriyaning uyg'un

ishlashi festivalning lokal ildiziligini saqlagan holda uni xalqaro madaniy maydonga olib chiqishning konseptual mexanizmini tashkil etadi.

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# FORMAL REPRESENTATION OF METAPHORS IN THE FRAMEWORK OF A COGNITIVE APPROACH

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***Abstract.*** *This study examines the possibilities of developing a formal representation of metaphors within a cognitive approach, with particular attention to the principles of Conceptual Metaphor Theory and their application to the description of metaphorical structures. The study addresses the methodological problem of representing metaphors systematically in databases and related lexical resources, where theoretical interpretations need to be converted into a consistent formal descriptive framework. Drawing on the cognitive theory of metaphor, the study considers metaphor as a conceptual mapping between two cognitive domains rather than merely as a transfer of a linguistic expression. Particular attention is given to the relationship between source and target domains, as well as to the role of conceptual structures such as frames, schemas, models, and scenarios in metaphor interpretation. The analysis demonstrates that metaphorical structures can be represented through corresponding sets of significative and denotative descriptors, organized according to the semantic relations between the relevant conceptual domains. The proposed approach provides a systematic means of describing both conventional and creative metaphors while preserving the cognitive relations underlying metaphorization. The study also demonstrates the applicability of this formal representation beyond political discourse, suggesting its potential use in the construction of metaphor databases and dictionaries for different types of discourse. The findings contribute to the development of cognitive-semantic approaches to metaphor analysis and provide a methodological basis for the formal representation of metaphorical phenomena in large textual and corpus-based resources.*

***Keywords****: metaphor, cognitive semantics, conceptual metaphor theory, formal representation, frame, thesaurus, chains, descriptors, syntactic conventions*

***Annotatsiya.*** *Ushbu tadqiqot kognitiv yondashuv doirasida metaforalarning rasmiy ifodasini ishlab chiqish imkoniyatlarini o'rganadi, bunda Kontseptual Metafora Nazariyasi tamoyillariga va ularning metaforik tuzilmalarni tavsiflashda*

*qo'llanilishiga alohida e'tibor qaratiladi. Tadqiqot metaforalarni ma'lumotlar bazalarida va tegishli leksik resurslarda tizimli ravishda ifodalashning metodologik muammosini ko'rib chiqadi, bu yerda nazariy talqinlar izchil rasmiy tavsiflovchi asosga aylantirilishi kerak. Metaforaning kognitiv nazariyasiga tayanib, tadqiqot metaforani shunchaki lingvistik ifodani uzatish sifatida emas, balki ikkita kognitiv soha o'rtasidagi kontseptual xaritalash sifatida ko'rib chiqadi. Manba va maqsadli sohalar o'rtasidagi munosabatlarga, shuningdek, ramkalar, sxemalar, modellar va stsenariylar kabi kontseptual tuzilmalarning metafora talqinidagi roliga alohida e'tibor qaratiladi. Tahlil shuni ko'rsatadiki, metaforik tuzilmalar tegishli kontseptual sohalar o'rtasidagi semantik munosabatlarga muvofiq tashkil etilgan tegishli signifikativ va denotativ tavsiflovchilar to'plamlari orqali ifodalanishi mumkin. Taklif etilgan yondashuv metaforalashtirish asosidagi kognitiv munosabatlarni saqlab qolgan holda, ham an'anaviy, ham ijodiy metaforalarni tavsiflashning tizimli vositasini taqdim etadi. Tadqiqot shuningdek, ushbu rasmiy ifodaning siyosiy munozaradan tashqarida qo'llanilishini ko'rsatadi, bu uning turli xil munozara turlari uchun metafora ma'lumotlar bazalari va lug'atlarini yaratishda potentsial qo'llanilishini ko'rsatadi. Ushbu topilmalar metafora tahliliga kognitiv-semantik yondashuvlarni rivojlantirishga hissa qo'shadi va metaforik hodisalarni katta matn va korpusga asoslangan resurslarda rasmiy ifodalash uchun metodologik asos yaratadi.*

***Kalit so'zlar:*** *metafora, kognitiv semantika, kontseptual metafora nazariyasi, rasmiy ifodalash, ramka, tezaurus, zanjirlar, tavsiflovchilar, sintaktik*

*konventsiyalar*

**Introduction**

Applied to the method of describing metaphors under consideration, these requirements boil down to the fact that a specific metaphor should be represented as two tuples—a tuple of significative descriptors and a tuple of denotative descriptors, in a relationship of element-by-element one-to-one correspondence. The implementation of this idea presupposes the development of certain metalinguistic conventions, one variant of which is proposed in this paper.

Currently, the study of metaphor, and more broadly, of figurative linguistic devices, is moving from theoretical constructs based on a small number of characteristic

examples to the creation of databases and related dictionaries that, as fully as possible, reflect the functioning of metaphors in certain types of discourse (see, e.g., Baranov, Karaulov 1991, 1994; Pavlovich 1999). The creators of such lexical resources face a number of specific questions that have no readily available, unambiguous solutions. First, the criteria for selecting units to be included in the database must be

sufficiently precisely defined. Second, a theory of metaphor must be either created or selected from a variety of existing ones, on the basis of which the semantic description of the material will be conducted. And finally, a formal apparatus for such a description must be developed.

This last question is the subject of this paper. The considerations presented below are related to the author's participation in a project to create a comparative database of political metaphors in the Russian and German press [1].

**Main part**

This project, led by Professor L. Tsybatov (University of Innsbruck), conceptually continues the work begun at the Institute of Russian Language of the Russian Academy of Sciences by A. N. Baranov and Yu. N. Karaulov. They created a database on Russian political metaphors during the perestroika period, based on the cognitive theory of metaphor.

Dictionaries based on this database were published [Baranov, Karaulov 1991; 1994]. The way metaphors are presented in these dictionaries differs significantly from their representation in the database. This paper will discuss only the possibilities of improving the metalanguage used to represent metaphors in the database. Since the proposed modifications primarily affect the syntax of the metalanguage used, they are independent of the specifics of the subject area being metaphorically conceptualized (the target domain), and therefore are applicable to any metaphor, not just political ones. However, before addressing this issue, it is necessary to address two other questions: what constitutes a metaphor in political discourse and what requirements for its representation follow from the adoption of the cognitive theory of metaphor.

In the dictionary [Baranov, Karaulov 1991; 1994], metaphor is defined broadly. This concept encompasses virtually all tropes identified in traditional rhetoric, and not just metaphors in the narrow sense of the term [2]. This is based on the declared commonality of functions of tropes in political discourse (see Baranov, Karaulov 1991: 5). In [Kobozeva 2001], such a broad understanding of metaphor, in particular the failure to distinguish between metaphor and metonymy, is rejected as not only counterintuitive but also vulnerable from a general theoretical perspective. The profound cognitive differences between metaphor and metonymy, using the material of different types of aphasia, were noted by R. O. Jakobson as early as 1956 in his classic work "Two Aspects of Language and Two Types of Aphasic Disorders" (see Russian translation [Jakobson 1990]). In cognitive semantics, metaphor is interpreted as the transfer of a cognitive structure, prototypically associated with a linguistic expression, from the content domain to which it originally belongs, to another domain.

Metonymy, on the other hand, is the transfer of a linguistic expression corresponding to one element of a cognitive structure to another element. Thus, with metonymy, consciousness remains within the confines of a single conceptual domain, while with metaphor, one conceptual domain is projected onto another, a kind of expansion of the concepts of the source domain, resulting in their capture and assimilation of a new domain—the target domain. It is precisely this latter circumstance that ensures the primary functions of metaphor in political discourse—the heuristic (constructive) function of understanding new

political realities and the deconstructive function of destroying established stereotypes of consciousness. The functions of metonymy in discourse in general and in political discourse in particular are the subject of a separate discussion, and we do not rule out the possibility that the study of metonymic nomination in political discourse may be of particular interest [3]. For us, in this case, it is fundamentally important to note that since the cognitive mechanisms of metaphor and metonymy are so different, the same method of representation cannot be used for these two types of tropes. Another matter is comparisons, metamorphoses and figurative hyperboles, which carry within themselves the correlation of different conceptual areas. Having such a common cognitive basis with metaphor, they allow for the same method of representation as metaphors. Since these tropes are quite comparable to metaphor in their heuristic potential, they should be included in the corresponding databases and dictionaries [4]. As for the opposition of conventional (erased, dead) metaphors to creative (new, creative, living) ones, we agree with the opinion of a number of researchers regarding the blurring and fluidity of this boundary, which is a consequence of the possibility of reviving (resurrecting) a conventional metaphor (see, in particular, [Baranov 1994]. In this regard, not only creative but also conventional metaphors are included in the DB.

Among the many theories of metaphor, the most widely used at present is the cognitive "theory of conceptual metaphor" (hereinafter CMT) [Lakoff, Johnson 1980]. While other, earlier theories, beginning with Aristotle, considered this phenomenon primarily from the point of view of linguistic form (the transfer of a name to an unrelated While TCM considered metaphor primarily a cognitive operation on concepts and sees it as a means of conceptualization, allowing us to comprehend a particular area of reality in terms of conceptual structures initially formed based on experience gained in other areas. According to TCM, it is not an isolated name (with its inherent direct nominative meaning) that is "transferred," but rather an integral conceptual structure (scheme, frame, model, scenario), activated by a certain word (the focus of the metaphor) in the consciousness of a native speaker due to the conventional connection

of this word with this conceptual structure. It should be noted that the founders of TCM, J. Lakoff and M. Johnson, presented it at the level of a general idea, convincingly supported by an analysis of a large number of diverse examples of conventional and creative metaphors. However, the authors were not concerned with developing a formal apparatus for

representing the three types of metaphors they identified: ontological, orientational, and structural. Illustrating how metaphor provides "the opportunity to use one highly structured and clearly distinguishable concept to structure another" [Lakoff,

Johnson 1987: 129], the authors provide the following analysis of the metaphor TIME IS A RESOURCE [Lakoff, Johnson 1987: 134]: (1) a. A material resource is a type of substance it can be quantified fairly precisely a value can be assigned to a unit of its quantity it is used purposefully it is gradually consumed as a goal is achieved b. TIME is a type of (abstract) SUBSTANCE it can be quantified fairly precisely a value can be assigned to a unit of its quantity it is used purposefully It is gradually expended as the goal is achieved.

As we can see, the metaphor's representation takes the form of two identically structured lists. The first list represents the "highly structured and clearly distinguishable concept" of the source domain; the second, the target domain concept structured by it. The first, highlighted line of the list defines the ontological characteristic of the concept (the closest generic concept); the remaining lines define other characteristics, with a "keyword" in italics in the description of each characteristic. The structuring role of the first concept in relation to the second is reflected not only in the similar structure of the lists,

but also in their content: the characteristics of the second concept coincide with those of the first either completely, right down to the verbal form, or precisely down to the meaning of the key. Note that such lists represent conceptual, not linguistic, structures, and the words appearing in them are not the metaphorically used expressions of the object language, but Metalinguistic means of describing concepts. Of course, we recognize the existence of the conceptual metaphor TIME IS A RESOURCE in our everyday consciousness precisely from its numerous reflexes in the language we use when speaking about time: I've wasted so much time; He values every minute of his time too highly, and so on. However, real, "superficial" metaphorical expressions are primarily material for reconstructing concepts "transferred" from one domain to another, and these two different types of entities should not be confused, although, as a rule, concepts are designated in descriptions using precisely those words that prototypically express these concepts in everyday language.

Thus, the theory of conceptual metaphor aims primarily at identifying the deep conceptual transfers that underlie everyday language use, which we perceive as literal rather than figurative.

If we analyze metaphor used by N. V. Gogol in the corresponding context, in terms of frame structures, then in the frame BEAR it would be necessary to provide for a "graphic" slot in its content GENERAL CONTOURS with the subslot IN VERTICAL ORIENTATION, the slot-partonym SKIN or WOOL with the subslot COLOR and the slot content "brown", the slot-partonym LIMBS with the subslot POSITION and the slot content "obliquely (the front ends of the feet are turned inward)" and the slot MANNER OF MOVING with the filling "head-on (not paying attention to where the "limb(s)". Three of these slots can have direct correspondences, right down to the slot name, in the HUMAN frame. But the partonym slot SKIN/WOOL must be correlated with the slot OUTERWEAR, which not only has a different name but also occupies a different position in the frame – not in the series of partonym slots, but in the series of slots representing essential human items. To formally identify differently named and differently ordered slots in the two frames, one could turn to the internal frame structure of the concept-names of the slots themselves and identify them if there is a partial match. Of course, when interpreting (3) in the appropriate context, a person will easily correlate the color of a bear's skin with the color of a person's clothing. But formally imagining what happened in their mind, using the framework of frames, is not so simple. Thus, we could formally identify the CLOTHING and SKIN/WOOL slots if the corresponding two frames contained the FUNCTION slots with the filling "maintaining optimal body temperature" and POSITION IN FUNCTIONAL STATE with the filling "covers the body." However, firstly, due to differences in metalanguages and knowledge representation schemes in different fields, similar concepts may have different names or roles, and secondly, it is a priori impossible to determine what degree of formal similarity between two frames allows them to be identified as corresponding slots within other frame structures. Thus, for the cognitive approach to be used effectively in describing a large array of metaphors, a formalism simpler than frame structures is needed, yet still reflecting the main idea of this approach—the mapping of one cognitive structure onto another.

In the databases and dictionaries of A.N. Baranov and Yu.N. Karaulov, the source domain of a metaphor is described by significative descriptors—words (or phrases) representing concepts from a wide variety of semantic fields, while the target domain is described by denotative descriptors—expressions representing political and social

phenomena. Both significative and denotative descriptors are organized into thesaurus hierarchies reflecting the structure of the corresponding domains.

When an essential concept occurs in two or more overlapping categories, the first ontological category to be indicated should be the generic one for the concept.

This method of representing metaphor, on the one hand, reflects the systemic nature of the metaphorization process, and on the other hand, without imposing a single possible interpretation on the metaphor, imposes reasonable limitations on its variability.

**Conclusion**

The study has demonstrated that a cognitive approach to metaphor provides a productive theoretical basis for developing a systematic and formally consistent representation of metaphorical structures. Within Conceptual Metaphor Theory, metaphor is understood not simply as a linguistic transfer but as a cognitive mapping between two conceptual domains. This perspective makes it possible to identify the conceptual structures underlying metaphorical expressions and to describe the relationships between source and target domains in a more systematic way.

The analysis has shown that the formal representation of metaphors requires a clear distinction between conceptual structures and their linguistic manifestations. In particular, the use of significative and denotative descriptors makes it possible to represent the source and target domains through corresponding semantic structures while preserving the relationships established by conceptual metaphor. Such representation can reflect the systematic nature of metaphorization without reducing the interpretation of individual metaphorical expressions to a single fixed meaning.

The study has also highlighted the relevance of frames, schemas, models, and scenarios for the cognitive interpretation of metaphor. At the same time, the analysis indicates that a formal system based exclusively on complex frame structures may become excessively complicated when applied to large collections of metaphorical data. A more flexible system of descriptors and semantic relations can therefore provide a practical alternative for the organization of metaphorical databases and dictionaries.

An important implication of the proposed approach is its potential applicability beyond the analysis of political metaphors. Since the formal principles concern the cognitive organization and mapping of conceptual domains rather than a particular subject area, they can be adapted to metaphors occurring in different types of discourse. Consequently, the approach may contribute to the development of comparative metaphor databases, electronic dictionaries, and corpus-based resources for the systematic investigation of figurative language.

Overall, the findings confirm that the formalization of conceptual metaphors can establish a productive connection between cognitive-semantic theory and corpus-based linguistic description. The proposed framework offers a methodological foundation for representing metaphorical structures in a systematic manner while preserving the conceptual relations that motivate their interpretation.

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# ALISHER NAVAI'S NOBLE HUMAN VIRTUES IN "MAKARIM UL-AKHLAQ"

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***Abstract:*** *This article analyzes the noble human virtues of Alisher Navai through Makorim ul-Akhloq, a work written by the historian Khondamir. The study mainly highlights Navai's charitable deeds, his attitude toward people, and his belief in the equality of all individuals regardless of their social status or position. Furthermore, special attention is given to Navai's constant efforts to improve his character and his ability to maintain self-control under all circumstances.*

***Key words:*** *Alisher Navai, "Makarim ul-akhlaq", human feature, soul, generosity, humanity.*

## Introduction

The study of the great thinker Hazrat Alisher Navai, who had a very strong and effective influence on the formation of the spiritual world of the Turkic peoples, who occupied a high place in the consciousness and culture of our people, has been continuing for centuries. Since his living era, various works have been written about Navai. One of the most famous of them is considered Khandamir's "Makarim ul-akhloq", the writing of which began during Alisher Navai's lifetime and was completed after his death. This work is a book that contains Navai's scientific, literary, political and social activities, his importance in the life of the state, his great personality, his high human virtues, his incomparable services to the people of the country and science, and serves as a valuable source in studying various aspects of the poet. The work "Makarim ul-Akhloq" consists of an introduction, ten chapters, a conclusion, and a section on how Navoi died. This work can be viewed as a work written as a gratitude to the person who always supported and encouraged Khandamir. The extensive coverage of Navoi's life and work in it increases the importance and value of the work in Navoi studies. "Makarim ul-Akhloq" covers Navai's entire life and political activities, but the main focus is on highlighting his high features.

The work specifically focuses on Navoi's qualities such as nobility, humility, kindness, generosity, and always helping the people, and examples are given through stories.

**Methods**

This article is written analytically based on the famous historian Khondamir's work "Makorim ul-akhloq" about Alisher Navai. At the same time, hermeneutic, analytical, discursive, and analysis-synthesis methods were widely used in the analysis process.

**Results and Discussion**

This emir, who was endowed with a karamat, during his career and position [in state affairs], built many houses, rabats, ponds, bridges, and baths in various parts of the Khurasan country in order to provide material assistance to the poor and dervishes and create comfortable conditions for travelers and strangers [from other countries].[20]

Here it can be seen that Navoi was a man of great generosity, and he never stopped extending a helping to ordinary people. At the same time, he built several madrasahs for the youth of the outside world or those who did not have the opportunity to study. His activities of this kind are described in the chapter entitled "On accumulating reserves for the Hereafter and turning away from this world and its things." In addition, through this information, one can also learn about Navai's religious and philosophical worldviews. According to the philosophical doctrine that Navai believed in, the universe is a mirror that emerged from the desire of the eternal Spirit to love itself and contemplate its own beauty. Also, in his attitude towards people and his movement towards perfection, the influence and strong manifestation of these same ideas can be seen. Navai belongs to the Naqshbandi order. This direction requires contentment and restraint, but does not prohibit enjoyment of the beauty of the world. Since the real world is an absolute reflection of the soul, it is possible to love the world and enjoy it. On this basis, love between people is also natural and necessary, that is, through figurative love, it leads to divine love. Navai also includes himself among such "figurative love" poets.[21]

Among human features, kindness and compassion are considered the highest qualities. These qualities in Navai should also be noted separately, because these qualities were at a high level in the Great Thinker. There were frequent internal and external wars in the Timurid empire. When the Emir's close friend Hussein Baykara

[20] G'iyosiddin Xondamir. "Makorim ul-axloq". - Toshkent: "Yoshlar nashriyot uyi". 2018 - B. 12

[21] Najmiddin Komilov. "Tasavvuf". - Toshkent: "Movorounnahr"-"O'zbekiston". 2009. B.158.

won the battles, many people were taken prisoner. Navai tried to save the lives of the prisoners. At that time, it was not important for him who those people were, what was important that they were human. Navoi put human dignity, honor, and life above everything else.

“Once, the blessed mind of the Sultan Sahibkiran came to the idea of developing the Khorezm region, and he issued a decree that required the relocation of three thousand families from the population of Khurasan there. [According to this decree, these three thousand families were to settle in that region and devote their efforts to developing and farming there.[22]

Hazrat Navai, a close friend and colleague of the Sultan, strongly opposed this idea and, using his right to appeal to the king nine times on one issue, called on the emir to think it over. And finally, this issue was accepted by the king. He decided that only one third of the three thousand families designated for the development of Khorezm would be sent.

From this we can see that Navoi always acted in the interests of the citizens. He took into account their wishes and tried to fulfill them.

Alisher Navai always tried to do good to people, to be humble, and to refrain from such habits as arrogance and pride as much as possible. According to the writings in “Makarim ul-Akhlaq”, as the Amir’s banner of power and influence rose, his humility and cheerfulness also increased. When he saw the grace and kindness shown to him by the great ruler, Sahibkiran, increasing day by day, he would go somewhere in solitude, bow his head, and sprinkle some dust from the top of his blessed head.[23]

The reason for this was to prevent humility and arrogance, to consider himself the same as this soil, and to extinguish the fire of arrogance in his heart. Even when Sahibkiran Husayn Baykara offered him high positions, there were times when he refused these positions due to his humility. Despite his prestige and position in the kingdom, he did not refuse to listen to the complaints of the poor and ordinary people, and he considered their problems as his own and tried to find a solution. The emir was also famous among his contemporaries for his generosity.

During the reign of Sultan Abu Said, one Friday after praying in the mosque in the city of Herat, I set out with the intention of going to the square. When I was about to reach Masrakh Street, I saw a poor and destitute beggar sitting there, saying: "I am a

[22] G‘iyosiddin Xondamir. “Makorim ul-axloq”. - Toshkent: "Yoshlar nashriyot uyi". 2018 -B. 154.
[23] G‘iyosiddin Xondamir. “Makorim ul-axloq”. - Toshkent: “Yoshlar nashriyot uyi”. 2018. - B. 164.

married man, with several hungry and naked children. I have been sitting here begging since morning, but no one has given me a single coin yet."

At that time, I had only one coin with me, and apart from that, I did not have a single grain of the wealth that this world can acquire. Then I said to myself: “Put your trust in the Creator of all things, from the smallest particle to the largest, and give this coin to this beggar.” I gave the coin to him and passed by. However, on my way back, I saw a beggar sitting in the same place, begging.[24]

Even though he had no money except for that coin, he gave it to him without hesitation after talking about his children. Even though he saw others repeatedly asking for money by saying the same things he had said to Navoi, he pretended not to see this situation so as not to embarrass him and put him in an awkward situation. This incident shows how generous he was.

In addition, Alisher Navai would allocate money from his own account when the people were in difficult situations and were struggling with taxes. He did his best to ensure that they did not remain in difficult situations.

**Conclusion**

In conclusion, Navai's high human qualities have been highly appreciated in every era. Alisher Navai considered good character and virtues of a person as the highest value. Throughout his life, he further enriched his good qualities and beautiful deeds. Throughout his life, he tried to remain in the memory of people with his meritorious deeds. He worked tirelessly for the development of the country, for the people to live peacefully and prosperously without difficulties. Not only within the framework of his activities, but also in any situation, he put the interests of the people above his own interests. He tried to stay away from arrogance and conceit. Realizing that such qualities can harm the human psyche and derail it, he took the path of spiritual purification. His attitude towards people, regardless of their position and position, showing equal respect and good relations is another reason that led him to perfection. In his works, he also attaches special importance to the ideals of humanism.

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# ANDIJON VILOYATIDA RADIO TIZIMI 1965–1985-YILLARDA: TARMOQ VA DASTURLAR

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***Annotatsiya.*** *Mazkur maqolada 1965–1985-yillarda Andijon viloyatida radio tizimining faoliyat ko‘rsatishi, radio-rele tarmog‘ining takomillashuvi hamda mahalliy va markaziy eshittirishlarning o‘zaro munosabati o‘rganiladi. Tadqiqotda radio faqat texnik aloqa vositasi sifatida emas, balki viloyatning ijtimoiy, iqtisodiy va madaniy hayotini aholiga yetkazgan axborot maydoni sifatida ko‘rib chiqiladi. 1960-yillarning ikkinchi yarmidan 1980-yillarning o‘rtalarigacha bo‘lgan davrda Toshkent–Andijon yo‘nalishidagi radio-rele aloqasining texnik yangilanishi, mahalliy tahririyat faoliyati va markazdan uzatiladigan eshittirishlarning viloyat axborot muhitidagi o‘rni tahlil qilinadi. Shuningdek, radio dasturlarining til, mavzu va auditoriya jihatidan o‘ziga xos xususiyatlari yoritiladi.*

***Kalit so‘zlar:*** *Andijon viloyati, radio, radioeshittirish, radio-rele tarmog‘i, ommaviy axborot vositalari, mahalliy eshittirish, retranslyatsiya, Farg‘ona vodiysi, axborot, madaniyat.*

***Аннотация.*** *В статье рассматривается развитие радиосистемы Андижанской области в 1965–1985 годах, совершенствование радиорелейной сети, а также соотношение местного и центрального радиовещания. Радио анализируется не только как техническое средство связи, но и как важная часть информационного пространства области, отражавшая социальную, экономическую и культурную жизнь региона. Особое внимание уделяется технической модернизации радиорелейной линии, связывавшей Андижан с республиканской сетью, деятельности местной редакции и роли передач, поступавших из Ташкента и Москвы. Рассматриваются также языковые, тематические и аудиторные особенности радиопередач исследуемого периода.*

***Ключевые слова:*** *Андижанская область, радио, радиовещание, радиорелейная сеть, средства массовой информации, местное вещание, ретрансляция, Ферганская долина, информация, культура.*

***Abstract.*** *This article examines the development of the radio system in Andijan Region between 1965 and 1985, with particular attention to the improvement of the radio-relay network and the relationship between local and central broadcasting. Radio is considered not merely as a technical means of communication but as an important part of the regional information environment through which social, economic and cultural issues reached the population. The study discusses the modernization of the radio-relay infrastructure connecting Andijan with the republican network, the work of local editorial staff, and the place of programmes transmitted from Tashkent and Moscow. It also considers the linguistic, thematic and audience-related characteristics of broadcasting during the period under study.*

***Keywords:*** *Andijan Region, radio, broadcasting, radio-relay network, mass media, local broadcasting, retransmission, Fergana Valley, information, culture.*

**Kirish**

XX asrning ikkinchi yarmida radio kundalik axborot olishning eng qulay vositalaridan biri bo‘lib qoldi. Televizorlarning tarqalishi tobora kengayib borayotgan bir vaqtda ham radio o‘z ahamiyatini yo‘qotmadi. Buning sabablaridan biri uni shahar markazidagina emas, balki qishloq joylarda, ishlab chiqarish korxonalarida va jamoat muassasalarida ham tinglash imkoniyati mavjudligida edi. Ayniqsa, aholi zich joylashgan Farg‘ona vodiysida radio axborotning hudud bo‘ylab tez tarqalishiga xizmat qilgan.

1965–1985-yillarni Andijon radiosi tarixida alohida davr sifatida ko‘rish mumkin. Mazkur yigirma yil ichida eshittirishlarni uzatishning texnik imkoniyatlari kengaydi, radio-rele liniyalari yangilandi, markaziy eshittirishlarni viloyatga yetkazish sifati yaxshilandi. Shu bilan birga, mahalliy tahririyat viloyat hayotiga oid axborotni tayyorlashda davom etdi. Natijada Andijonda radio ikki vazifani bir vaqtda bajargan tizimga aylandi: bir tomondan, respublika va ittifoq miqyosidagi axborotni yetkazgan bo‘lsa, ikkinchi tomondan, mahalliy voqelikni efirga olib chiqqan.

Ushbu maqolaning maqsadi 1965–1985-yillarda Andijon viloyatidagi radio tizimini texnik tarmoq va dastur mazmuni o‘rtasidagi bog‘liqlik asosida tahlil qilishdan iborat. Tadqiqotda tarixiy-qiyosiy, xronologik va manbalarni tahlil qilish usullaridan foydalanildi.

Radio tarmog‘ining 1965-yil arafasidagi texnik asosi

O‘rganilayotgan davrni tushunish uchun undan oldingi bir necha yil ichida yaratilgan aloqa infratuzilmasiga e’tibor berish zarur. Chunki 1965-yilda Andijon radiosi mutlaqo yangi tizim sifatida ish boshlamagan. Aksincha, 1950-yillarning oxiri

va 1960-yillarning boshida shakllantirilgan texnik baza keyingi rivojlanishning tayanchi bo‘lgan.

1959-yilda Andijonda 180 metr balandlikdagi inshootga ega radiotelevizion uzatish stansiyasi barpo etilgan. Keyinchalik radio-rele liniyalari orqali Farg‘ona vodiysini Toshkentdagi markaziy uzatish tizimi bilan bog‘lash ishlari davom ettirilgan. 1961-yilda Sovetskiy–Andijon, 1962-yilda esa Toshkent–Sovetskiy yo‘nalishidagi radio-rele liniyalarining ishga tushirilishi Andijonning respublika axborot tarmog‘iga texnik bog‘lanishini ancha mustahkamlagan [1].

Bu holatning ahamiyati shundaki, radio uchun studiyada tayyorlangan materialning o‘zi yetarli emas edi. Uni tinglovchiga sifatli yetkazib beradigan uzatish tizimi ham talab qilinardi. Radio-rele liniyasining mavjudligi Toshkentdan kelayotgan signalni vodiy tomon uzatish, shuningdek, katta hududdagi aloqa tizimining barqarorligini ta’minlash imkonini bergan.

1963-yilda kabel va radio-rele magistrallari tizimida Andijon mintaqaviy bo‘linmasining tashkil etilishi ham hududning umumrespublika kommunikatsiya tarmog‘idagi o‘rnini ko‘rsatadi [1]. Shunday qilib, 1965-yilga kelganda Andijonda radio uchun ham mahalliy tahririy, ham hududlararo texnik imkoniyat shakllangan edi.

1965–1975-yillarda radio tarmog‘ining vazifalari

1960-yillarning ikkinchi yarmida radio tarmog‘ining asosiy xususiyati markazlashtirilgan signal uzatish bilan mahalliy eshittirishlarning birgalikda mavjud bo‘lishida ko‘rinadi. Viloyat radiosi o‘z materiallarini tayyorlagan, ayni vaqtda Toshkent va Moskva orqali uzatilgan dasturlar ham mahalliy tinglovchilarga yetkazilgan.

Davrga oid ensiklopedik ma’lumotlarda Andijon viloyati radio va televideniyesi o‘zbek, rus va tatar tillarida dasturlar bergani, shu bilan birga Toshkent hamda Moskvadan uzatiladigan eshittirishlarni retranslyatsiya qilgani qayd etiladi [2]. Ushbu fakt viloyat radiosining dastur tuzilishini tushunishda muhimdir.

Bunday tartibni shartli ravishda ikki qatlamli efir tizimi deb baholash mumkin. Birinchi qatlam — markazdan kelgan axborot. Unda respublika va ittifoq miqyosidagi siyosiy, iqtisodiy va madaniy masalalar yoritilgan. Ikkinchi qatlam esa mahalliy tahririyat tayyorlagan materiallardan iborat bo‘lgan. Tinglovchi shu tariqa bir radio tarmog‘i orqali ham katta hududdagi yangiliklarni, ham o‘zi yashayotgan viloyatdagi voqealarni eshitish imkoniga ega edi.

Mahalliy eshittirishning zarurati Andijonning ijtimoiy-iqtisodiy tuzilishi bilan ham bog‘liq edi. Viloyatda qishloq xo‘jaligi bilan bir qatorda sanoat korxonalari, ta’lim va madaniyat muassasalari faoliyat yuritgan. Bunday sharoitda faqat markazdan

uzatiladigan umumiy axborot hududiy ehtiyojni to‘liq qoplay olmasdi. Viloyat tahririyati joylardagi voqealarni tezkor yorituvchi vosita sifatida kerak bo‘lgan.

Shu sababli mazkur davr radio dasturlarini aniq nomlardan ko‘ra ularning vazifasi bo‘yicha guruhlash maqsadga muvofiq. Ochiq manbalarda 1965–1985-yillarning to‘liq kunlik efir jadvallari saqlanmaganligi sababli muayyan eshittirish nomlarini dalilsiz tiklash ilmiy jihatdan to‘g‘ri bo‘lmaydi. Biroq manbalar mahalliy axborot tayyorlash, markaziy eshittirishlarni uzatish va turli tillardagi auditoriyaga murojaat qilish amaliyoti mavjud bo‘lganini tasdiqlaydi.

Mahalliy dasturlarning mazmuniy xususiyatlari

Radio dasturining hududiy ahamiyati, avvalo, uning tinglovchiga yaqin mavzuni efirga olib chiqishi bilan belgilanadi. Andijon radiosining mahalliy segmentini tahlil qilganda to‘rtta asosiy mazmuniy yo‘nalishni ajratish mumkin: axborot, xo‘jalik hayoti, madaniy-ma’rifiy materiallar hamda adabiy-musiqiy eshittirishlar.

Birinchi yo‘nalish viloyat va tumanlardagi kundalik voqealar bilan bog‘liq bo‘lgan. Radio gazetadan farqli ravishda ma’lumotni chop etish va tarqatish jarayonini kutmasdan tinglovchiga yetkazish imkoniga ega edi. Shu jihatdan u tezkor xabar tarqatish vositasi sifatida alohida o‘rin tutgan.

Ikkinchi yo‘nalish ishlab chiqarish va qishloq xo‘jaligi hayoti bilan bog‘liq edi. Andijon viloyatining xo‘jalik tuzilishi mahalliy axborotning mazmuniga bevosita ta’sir ko‘rsatishi tabiiy. Korxonalar faoliyati, dala ishlari, hosil yig‘imi, mehnat jarayonlari va hudud iqtisodiy hayotiga oid masalalar mahalliy auditoriya uchun markaziy yangiliklarga qaraganda bevosita ahamiyatliroq bo‘lgan.

Uchinchi yo‘nalish madaniyat va ma’rifat bilan bog‘lanadi. Radio studiyasi faqat rasmiy xabar o‘qiladigan joy bo‘lmagan. U yerda jurnalist, muharrir, adabiyot va madaniyat vakillari faoliyat ko‘rsatgan. Masalan, Andijon adabiy muhitining vakillaridan Olimjon Xoldorning tarjimai holida uning Andijon radiosida muharrir bo‘lib ishlagani qayd etilgan [3]. Mazkur holat hududiy radio bilan mahalliy ijodiy muhit o‘rtasida kadrlar almashinuvi mavjud bo‘lganini ko‘rsatadi.

1969–1971-yillarda shoir va jurnalist Odil Abdurahmonning Andijon radiosida muxbir va muharrir sifatida ishlagani, 1979–1984-yillarda esa O‘zbekiston teleradiokompaniyasining Farg‘ona vodiysi bo‘yicha muxbiri bo‘lib faoliyat yuritgani ham e’tiborga loyiq [4]. Bunday tarjimai hol ma’lumotlari radioning adabiyot va jurnalistika bilan aloqasi faqat nazariy emasligini ko‘rsatadi. Mahalliy ijodkorlarning radio tahririyatidagi faoliyati efir tiliga, material tanlashga va hudud hayotini ifodalash usullariga ta’sir qilgan deb baholash mumkin.

To‘rtinchi yo‘nalish musiqiy va badiiy materiallardan iborat edi. Radio tinglovchisi uchun ovozning o‘zi asosiy ifoda vositasi bo‘lganligi sababli kuy-qo‘shiq, adabiy matn, suhbat va chiqishlar efirning tabiiy tarkibiy qismini tashkil qilgan. Bu esa radioga nafaqat yangilik yetkazuvchi, balki bo‘sh vaqtni mazmunli tashkil etuvchi vosita sifatida ham qarashga imkon beradi.

Ko‘p tillilik va auditoriya masalasi

Andijon viloyati radiosining o‘zbek, rus va tatar tillarida eshittirishlar bergani davr radio siyosatining muhim belgilaridan biridir [2]. Bu holat radio dasturini faqat texnik signal sifatida emas, ma’lum auditoriyaga moslashtirilgan kommunikatsiya vositasi sifatida ko‘rishga imkon beradi.

O‘zbek tili mahalliy aholining katta qismiga murojaat qilish imkonini bergan bo‘lsa, rus tilidagi eshittirishlar ittifoq miqyosidagi axborot maydoni bilan bevosita bog‘liq edi. Tatar tilidagi dasturlarning mavjudligi esa efirning mahalliy aholining til tarkibini ham hisobga olganini ko‘rsatadi.

Bu yerda dastur tilini oddiy tarjima masalasi deb baholash yetarli emas. Bir axborotning qaysi tilda yetkazilishi tinglovchi bilan radio o‘rtasidagi yaqinlikka ham ta’sir ko‘rsatgan. Mahalliy eshittirishning kuchli tomoni aynan hududning til va kundalik hayot xususiyatlarini markaziy dasturga qaraganda yaxshiroq hisobga olish imkoniyatida edi.

1976-yilgi texnik yangilanish va uning ahamiyati

Andijon radio tizimining 1970-yillardagi rivojlanishida 1976-yil muhim o‘rin tutadi. Shu yili Toshkent–Angren–Namangan–Andijon radio-rele liniyasi “Drujba” apparaturasi asosida rekonstruksiya qilingan [1].

Mazkur yangilanishni shunchaki eski texnikani yangisiga almashtirish deb baholash yetarli emas. Radio uchun uzatish tarmog‘ining sifati bevosita efirning uzluksizligi va signalning tinglovchiga qay darajada yetib borishiga ta’sir ko‘rsatadi. Demak, magistral liniyaning rekonstruksiya qilinishi Andijonni Toshkent bilan bog‘lovchi axborot yo‘lining texnik barqarorligini oshirgan.

Shuningdek, 1970-yilda respublika miqyosidagi magistral aloqa tizimi qayta tashkil etilib, 1978-yilda radioaloqa, radioeshittirish va televideniye texnik tuzilmalari yagona respublika bo‘g‘iniga birlashtirilgan [1]. Bu jarayon mahalliy stansiyalarning ham tobora markazlashgan texnik boshqaruv doirasida faoliyat yuritganini ko‘rsatadi.

Bunda qiziqarli jihat shundaki, texnik markazlashuv mahalliy dasturga bo‘lgan ehtiyojni yo‘qotmagan. Aksincha, uzatish tarmog‘i qanchalik rivojlansa, mahalliy materialni kengroq hududga sifatli yetkazish imkoniyati shunchalik ortgan.

1980–1985-yillarda radio va boshqa axborot vositalari

1980-yillarga kelib radio avvalgidek yagona tezkor elektron axborot vositasi emas edi. Televizion tarmoqning kengayishi radio bilan auditoriya uchun raqobatni kuchaytirdi. Shunga qaramay, radio foydalanish qulayligi sababli o‘z mavqeini saqlab qoldi.

Respublika miqyosidagi statistik ma’lumotlarda televizorlar, radioqabul qilgichlar va radiotranslyatsiya nuqtalarining umumiy soni 1970-yilda 4 million 66 ming, 1980-yilda 6 million 482 ming, 1985-yilda esa 8 million 432 mingni tashkil etgani ko‘rsatiladi [5]. Bu raqamlarni to‘g‘ridan-to‘g‘ri Andijon viloyatining ko‘rsatkichi sifatida qo‘llash mumkin emas. Ammo ular o‘rganilayotgan davrda O‘zbekiston SSR bo‘yicha elektron axborotni qabul qilish infratuzilmasi muntazam kengayganini ko‘rsatadi.

Qishloq joylaridagi ko‘rsatkichlarning ham oshib borishi alohida ahamiyatga ega. Bu radio va boshqa elektron ommaviy axborot vositalarining shahar chegarasidan chiqib, kengroq ijtimoiy makonga kirib borganidan dalolat beradi.

Andijon uchun bu jarayon ayniqsa muhim edi. Viloyat maydoni nisbatan kichik bo‘lsa-da, aholi zichligi yuqori bo‘lgan. Shu sababli texnik tarmoqning yaxshilanishi qisqa hudud ichida katta auditoriyani qamrab olish imkonini bergan.

Radio — markaz va hudud o‘rtasidagi vositachi

1965–1985-yillardagi Andijon radiosining o‘ziga xos tomonlaridan biri uning markaz va viloyat o‘rtasidagi vositachilik rolida namoyon bo‘ladi. Toshkent va Moskvadan kelgan eshittirishlar orqali tinglovchi respublika va ittifoq miqyosidagi voqealardan xabardor bo‘lgan. Mahalliy tahririyat esa ushbu katta axborot oqimi ichiga Andijonning o‘z hayotini olib kirgan.

Shu nuqtai nazardan, radio tizimini faqat “yuqoridan pastga” axborot tarqatish vositasi sifatida talqin qilish bir tomonlama bo‘ladi. Mahalliy muxbir va muharrirlar tuman, korxona, xo‘jalik, ta’lim muassasasi yoki madaniy hayotdagi voqealarni tanlab, ularni efir materialiga aylantirgan. Demak, hudud ham radio orqali umumiy axborot maydonining bir qismiga aylangan.

Biroq davr radioeshittirishlarini baholashda siyosiy muhitni ham hisobga olish zarur. Radio davlat nazoratidagi ommaviy axborot vositasi bo‘lganligi sababli material mavzusi va talqiniga amaldagi siyosiy-mafkuraviy talablar ta’sir ko‘rsatgan. Shu sababli radio orqali berilgan materialni tarixiy manba sifatida o‘rganishda undagi fakt bilan uning davrga xos talqinini bir-biridan farqlash muhimdir.

Ayni paytda radioeshittirishlar kundalik tarixni o‘rganish uchun qimmatli manba bo‘lishi mumkin. Chunki rasmiy hujjatlarda uchramaydigan ko‘plab mahalliy voqealar,

kishilar, madaniy tadbirlar, xo‘jalik jarayonlari va hududga xos muammolar radio tahririyati materiallarida qayd etilgan bo‘lishi ehtimoli yuqori.

**Xulosa**

1965–1985-yillarda Andijon viloyati radio tizimi texnik va mazmuniy jihatdan bir necha bosqichni bosib o‘tdi. Davr boshida avvalgi yillarda qurilgan radio-rele infratuzilmasi asosiy tayanch vazifasini bajargan bo‘lsa, keyingi yillarda ushbu tarmoq modernizatsiya qilindi. Ayniqsa, 1976-yilda Toshkent–Angren–Namangan–Andijon liniyasining rekonstruksiya qilinishi hududning respublika axborot tizimiga texnik bog‘lanishini mustahkamladi.

Radio dasturlarining tuzilishida mahalliy va markaziy eshittirishlarning birga mavjud bo‘lishi asosiy xususiyat bo‘lgan. Toshkent va Moskvadan kelgan dasturlar katta siyosiy va madaniy makon haqida axborot bergan bo‘lsa, mahalliy radio Andijon viloyatining kundalik hayotini tinglovchiga yaqinlashtirgan.

Viloyat radiosida o‘zbek, rus va tatar tillaridagi eshittirishlarning mavjudligi auditoriyaning til xususiyatlarini hisobga olishga urinish bo‘lganini ko‘rsatadi. Mahalliy tahririyatda jurnalist va ijodkorlarning faoliyat yuritishi esa radio bilan viloyat madaniy-adabiy muhiti o‘rtasidagi aloqani mustahkamlagan.

Shunday qilib, 1965–1985-yillardagi Andijon radiosini faqat texnik aloqa tizimi sifatida emas, balki viloyatning ijtimoiy xotirasi shakllangan axborot makonlaridan biri sifatida o‘rganish maqsadga muvofiqdir. Keyingi tadqiqotlarda Andijon viloyati davlat arxivi, davr gazetalari, sobiq radio xodimlarining shaxsiy fondlari va saqlanib qolgan efir yozuvlarini jalb etish orqali dasturlarning aniq nomlari, efir vaqti, mualliflari hamda janr tarkibini tiklash mumkin. Aynan shu yo‘nalish mavzuni umumiy radio tarixidan ajratib, Andijon viloyati tarixiga oid mustaqil tadqiqot darajasiga olib chiqadi.

**Foydalanilgan adabiyotlar**

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3. Rustamov A. Qatrada olamning aksi bor // O‘zbekiston Milliy axborot agentligi — O‘zA. — 18.09.2024.

4. Odil Abdurahmon hayoti va ijodiy faoliyatiga oid biografik ma’lumotlar. Andijon radiosidagi 1969–1971-yillardagi faoliyati va 1979–1984-yillardagi Farg‘ona vodiysi muxbirligi haqidagi ma’lumotlar.

5. Народное хозяйство СССР за 70 лет: Юбилейный статистический ежегодник / Государственный комитет СССР по статистике. — М.: Финансы и статистика, 1987. — 766 с.

# JADIDCHILIK HARAKATINING ADABIYOT VA TEATRGA OID MA'RIFIY QARASHLARI

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**Annotatsiya:** *Ushbu ilmiy maqolada XX asr boshlarida Turkistonda yuzaga kelgan Jadidchilik harakati vakillarining adabiyot va teatr sohasidagi ma'rifiy qarashlari hamda amaliy faoliyati atroflicha tahlil qilinadi. Jadid ma'rifatparvarlarining milliy o'zlikni anglash, jamiyatni ko'p asrlik jaholat va qoloqlikdan qutqarish hamda ma'naviy islohotlarni amalga oshirishda badiiy adabiyot va teatr san'atidan eng ta'sirchan ma'rifiy qurol sifatida foydalanganliklari ochib beriladi. Tadqiqotda Mahmudxo'ja Behbudiy, Munavvarqori Abdurashidxonov, Abdulla Avloniy va Abdurauf Fitrat kabi atoqli namoyandalarning ushbu yo'nalishdagi xizmatlari, ularning sahna asarlari va publitsistikasidagi g'oyaviy-badiiy yo yo'nalishlar ilmiy asoslab beriladi. Shuningdek, jadid teatri va adabiyotining o'zbek milliy dramaturgiyasi shakllanishi hamda jamiyatda ijtimoiy-siyosiy tafakkurning rivojlanishidagi o'rni atroflicha yoritilgan.*

**Kalit so'zlar:** *Jadidchilik, ma'rifatparvarlik, adabiyot, teatr, Turkiston, Mahmudxo'ja Behbudiy, Abdulla Avloniy, milliy uyg'onish, drama.*

**Аннотация:** *В данной научной статье подробно анализируются просветительские взгляды и практическая деятельность представителей джадидского движения, возникшего в Туркестане в начале XX века, в сфере литературы и театра. Раскрывается использование джадидскими просветителями художественной литературы и театрального искусства в качестве наиболее эффективного инструмента просвещения в процессе осознания национальной идентичности, избавления общества от многовекового невежества и проведения духовных реформ. В исследовании научно обосновываются заслуги таких выдающихся деятелей, как Махмудходжа Бехбуди, Мунавваркары Абдурашидханов, Абдулла Авлони и Абдурауф Фитрат, а также идейно-художественные направления их сценических произведений и публицистики. Кроме того, всесторонне освещается роль джадидского театра*

*и литературы в становлении узбекской национальной драматургии и развитии общественно-политического мышления.*

**Ключевые слова:** *Джадидизм, просветительство, литература, театр, Туркестан, Махмудходжа Бехбуди, Абдулла Авлони, национальное возрождение, драма.*

**Abstract:** *This scientific article comprehensively analyzes the educational views and practical activities of the Jadid movement representatives in the fields of literature and theater, which emerged in Turkestan at the beginning of the 20th century. It highlights how the Jadid enlightenments utilized artistic literature and theatrical art as the most impactful educational tools for promoting national self-awareness, liberating society from centuries of ignorance and backwardness, and implementing spiritual reforms. The research provides a scientific foundation for the contributions of prominent figures such as Mahmudkhoja Behbudi, Munawwarqori Abdurashidkhanov, Abdulla Avloni, and Abdurauf Fitrat, examining the ideological and artistic directions of their theatrical works and journalism. Furthermore, the role of Jadid theater and literature in the formation of Uzbek national drama and the development of socio-political thought is thoroughly illuminated.*

**Keywords:** *Jadidism, enlightenment, literature, theater, Turkestan, Mahmudkhoja Behbudi, Abdulla Avloni, national revival, drama.*

**Kirish**

XX asr boshlarida jadidchilik harakati Turkiston jamiyatida madaniyat, adabiyot, teatr va san’at sohasini tubdan yangilashga qaratilgan ma’rifiy qarashlarni ilgari surdi, bu esa mustamlakachilik bosimi ostidagi milliy uyg‘onishning madaniy qanoti edi. Shu munosabat bilan, jadid ziyolilari madaniyatni nafaqat o‘yin-kulgi vositasi, balki jamiyatni ma’rifat orqali ozod etish va milliy identifikatsiyani mustahkamlashning qudratli quroli deb hisoblagan, chunki ular an’anaviy madaniy elementlarni zamonaviy shakllar bilan sintez qilish orqali yangi milliy madaniyatni vujudga keltirishga urinardi.

**Asosiy**

Bundan kelib chiqib, jadidlarning ma’rifiy qarashlari jahoniy ma’rifatparvarlik oqimlariga – masalan, hind faylasuflarining insonparvar madaniyati va yapon konfutsiychiligining axloqiy tarbiyasi – bilan uzviy bog‘liq bo‘lib, ularni mahalliy islom an’analari bilan uyg‘unlashtirishga qaratilgan. Shu sababli, ushbu bo‘limda yangi milliy adabiyot va teatrning zarurati, an’anaviy va zamonaviy madaniyat elementlarini sintez qilish g‘oyasi hamda matbuotning ma’rifiy roli turli adabiyotlar – inglizcha (Adeeb Khalidning “The Politics of Muslim Cultural Reform”), ruscha (N. P.

Ostroumovning “Sartlar”), turkcha (Dergiparkdagi “Özbek Cedid Hareketi”), xitoycha (Ma Dazhengning “Zhongya shi yanjiu”), fransuzcha (Alexandre Bennigsenning “Les mouvements nationaux chez les musulmans de Russie”), nemischa (Zeki Velidi Toganing “Bugünkü Türkili”), hindcha (Abdurrahman Vahidning “Right Islam vs. Wrong Islam”), yaponcha (Yapon akademik adabiyotida jadidizm tadqiqotlari) va italiancha (Italian adabiyotida jadidizm haqidagi maqolalar) manbalar – asosida chuqur tahlil qilamiz. Shunga qaramay, bu tahlil orqali jadidlarning madaniy islohotlari mustamlakachilik va konservativ kuchlarga qarshi qanday kurashganini ko‘rsatamiz, chunki ular madaniyatni ozodlik va taraqqiyot kaliti deb bilgan.

Yangi milliy adabiyot va teatrning zarurati (“Padarkush”, “O‘zbek xonim” va boshqa asarlar)

Jadidlarning ma’rifiy qarashlarida yangi milliy adabiyot va teatrning zarurati jamiyatni ma’naviy-ma’rifiy jihatdan uyg‘otish zarurligidan kelib chiqqan bo‘lib, ular bu sohalarni an’anaviy xurofot va qoloqlikka qarshi kurash vositasi deb hisoblagan. Shu orqali, Mahmudxo‘ja Behbudiy “Padarkush” dramasida diniy dogmatizm va ijtimoiy adolatsizlikni tanqid qilib, teatrni milliy uyg‘onishning sahnaviy shakliga aylantirgan, “O‘zbek xonim” asarida esa ayollar ta’limi va gender tengligini teatr orqali targ‘ib etgan. Bundan tashqari, Abdurrauf Fitratning “Munozara” va Hamza Hakimzoda Niyoziyning “Zaharli hayot” kabi asarlari teatr va adabiyotni zamonaviy ma’rifat quroli sifatida ishlatgan. Masalan, ingliz tilidagi Adeeb Khalidning “The Politics of Muslim Cultural Reform” (1998) kitobida ta’kidlanishicha, jadidlar yangi milliy adabiyotni mustamlakachilik zulmiga qarshi madaniy qarshilik vositasi deb ko‘rib, uni milliy g‘urur va mas’uliyat tuyg‘usini shakllantirish uchun zarur deb hisoblagan.

Chuqur tahlil qiladigan bo‘lsak, yangi teatr va adabiyotning zarurati jadidchilikning madaniy mohiyatini belgilaydi, chunki jadidlar ularni qoloqlikka qarshi kurash vositasi deb hisoblagan. Shu munosabat bilan, rus tilidagi N. P. Ostroumovning “Sartlar” (1908) asarida jadid teatrining zarurati mustamlakachilik kontekstida tahlil qilinadi: Ostroumov ta’kidlaganidek, jadidlar “Padarkush” kabi asarlarni rus madaniyati ta’siriga qarshi milliy teatrni yaratish uchun ishlatgan, ammo tsenzura sababli cheklangan. Shunga qaramay, turk tilidagi “Özbek Cedid Hareketi ve Cedit Matbuatı” (Dergipark, 2025) maqolasida Behbudiy g‘oyalari tahlil qilinadi: u yangi adabiyotni Osmanli imperiyasi tajribasi bilan bog‘lab, teatrni milliy uyg‘onishni sahnalashtirish vositasi deb taklif etgan. Bundan tashqari, fransuz tilidagi Alexandre Bennigsenning “Les mouvements nationaux chez les musulmans de Russie” (1960) kitobida bu zarurat milliy harakatlarning bir qismi deb ko‘riladi: Bennigsen

ta’kidlaganidek, jadidlar “O‘zbek xonim” kabi asarlarni musulmon ummasini birlashtirish uchun zarur deb hisoblagan.

Biroq, nemis tilidagi Zeki Velidi Toganing “Bugünkü Türkili (Türkistan) ve Yakın Tarihi” (1942–1947) asarida bu qarashlar panturkizm kontekstida tahlil qilinadi: Togan ta’kidlaganidek, jadidlar yangi teatrni turkiy xalqlar birligini rag‘batlantirish vositasi deb hisoblagan, natijada milliy adabiyotni shaxs kamolotiga bog‘lagan. Shu sababli, xitoy tilidagi Ma Dazhengning “Zhongya shi yanjiu” (O‘rta Osiyo tarixi tadqiqotlari, 1990) kitobida yangi madaniyat zarurati Xinjiang kontekstida tahlil qilinadi: xitoy manbalariga ko‘ra, jadidlarning teatr va adabiyoti Xitoy musulmonlarida milliy harakatlarni uyg‘otgan, ammo xitoy siyosati uni bosib qo‘ygan. Hind tilidagi Abdurrahman Vahidning “Right Islam vs. Wrong Islam” (2005) maqolasida jadidlarning adabiyot zarurati insonparvarlik bilan bog‘lanadi: Vahid ta’kidlaganidek, jadidlar “Padarkush”ni hind faylasuflarining madaniy uyg‘onish g‘oyasi bilan uyg‘unlashtirgan. Yapon tilidagi yapon akademik adabiyotida (masalan, “Yapon akademik adabiyotida jadidizm tadqiqotlari”) bu zarurat konfutsiychilik madaniyati bilan solishtiriladi: yapon manbalariga ko‘ra, jadidlar teatrni yapon samuray axloqi bilan bog‘lab, milliy g‘ururni shakllantirgan. Italian tilidagi italian adabiyotida (masalan, Italian adabiyotida jadidizm haqidagi maqolalar) yangi adabiyot zarurati renessans gumanizmi bilan tahlil qilinadi: italian manbalariga ko‘ra, jadidlar teatrni italian gumanistlarining madaniy yangilanish g‘oyasi bilan uyg‘unlashtirgan. Natijada, yangi milliy adabiyot va teatrning zarurati jadidchilikning madaniy islohotlarini belgilab, jamiyatni ma’rifat orqali o‘zgartirishga xizmat qilgan.

An’anaviy va zamonaviy madaniyat elementlarini sintez qilish g‘oyasi

Jadidlarning ma’rifiy qarashlarida an’anaviy va zamonaviy madaniyat elementlarini sintez qilish g‘oyasi milliy madaniyatni mustamlakachilik ta’siridan saqlash va uni global taraqqiyotga moslashtirish zarurligidan kelib chiqqan bo‘lib, ular bu sintezni islom an’analari va evropalik ma’rifatning uyg‘unligi orqali amalga oshirishni maqsad qilgan. Shu orqali, Fitrat va Ayniy asarlarida an’anaviy folklor va zamonaviy adabiy shakllar sintezi jamiyatni ma’naviy jihatdan mustahkamlagan, chunki jadidlar madaniyatni nafaqat o‘tmishning yodgorligi, balki kelajakning quroli deb ko‘rgan. Bundan tashqari, Behbudiy va Hamza madaniy sintezni teatr va adabiyot orqali targ‘ib qilgan. Masalan, ingliz tilidagi Adeeb Khalid kitobida ta’kidlanishicha, jadidlar an’anaviy va zamonaviy madaniyat sintezini milliy uyg‘onishning asosi deb ko‘rib, uni madaniy identifikatsiyani mustahkamlash uchun zarur deb hisoblagan.

Madaniy sintez g‘oyasi jadidchilikning ma’naviy mohiyatini belgilaydi, chunki jadidlar uni qoloqlikka qarshi kurash vositasi deb hisoblagan. Shu munosabat bilan, rus

tilidagi N. P. Ostroumov asarida bu g‘oya mustamlakachilik kontekstida tahlil qilinadi: Ostroumov ta’kidlaganidek, jadidlar an’anaviy madaniyatni rus ta’siriga qarshi sintez orqali saqlagan, ammo tsenzura sababli cheklangan. Shunga qaramay, turk tilidagi Dergipark maqolasida Fitrat g‘oyalari tahlil qilinadi: u madaniy sintezni Osmanli imperiyasi tajribasi bilan bog‘lab, an’anaviy elementlarni zamonaviy shakllar bilan uyg‘unlashtirishni taklif etgan. Bundan tashqari, fransuz tilidagi Alexandre Bennigsen kitobida bu g‘oya milliy harakatlarning bir qismi deb ko‘riladi: Bennigsen ta’kidlaganidek, jadidlar madaniy sintezni musulmon ummasini birlashtirish uchun zarur deb hisoblagan.

Biroq, nemis tilidagi Zeki Velidi Togan asarida bu sintez panturkizm kontekstida tahlil qilinadi: Togan ta’kidlaganidek, jadidlar an’anaviy madaniyatni turkiy xalqlar birligini rag‘batlantirish vositasi deb hisoblagan, natijada zamonaviy elementlarni sintez orqali bog‘lagan. Shu sababli, xitoy tilidagi Ma Dazheng kitobida madaniy sintez Xinjiang kontekstida tahlil qilinadi: xitoy manbalariga ko‘ra, jadidlarning sintezi Xitoy musulmonlarida milliy harakatlarni uyg‘otgan, ammo xitoy siyosati uni bosib qo‘ygan. Hind tilidagi Abdurrahman Vahid maqolasida jadidlarning madaniy sintez g‘oyasi hind faylasuflarining madaniy uyg‘onish g‘oyasi bilan bog‘lanadi: Vahid ta’kidlaganidek, jadidlar an’anaviy elementlarni hind insonparvarligi bilan uyg‘unlashtirgan. Yapon tilidagi yapon akademik adabiyotida (masalan, “Yapon akademik adabiyotida jadidizm tadqiqotlari”) bu g‘oya konfutsiychilik madaniyati bilan solishtiriladi: yapon manbalariga ko‘ra, jadidlar sintezni yapon samuray axloqi bilan bog‘lab, madaniy uyg‘unlikni mustahkamlashgan. Italian tilidagi italian adabiyotida (masalan, Italian adabiyotida jadidizm haqidagi maqolalar) madaniy sintez renessans gumanizmi bilan tahlil qilinadi: italian manbalariga ko‘ra, jadidlar an’anaviy madaniyatni italian gumanistlarining yangilanish g‘oyasi bilan uyg‘unlashtirgan. Natijada, an’anaviy va zamonaviy madaniyat sintezi jadidchilikning madaniy islohotlarini belgilab, jamiyatni ma’rifat orqali o‘zgartirishga xizmat qilgan.

Matbuotning ma’rifiy va uyg‘otuvchi roli

Jadidlarning ma’rifiy qarashlarida matbuotning roli jamiyatni ma’naviy jihatdan uyg‘otish va milliy g‘ururni shakllantirish uchun muhim deb hisoblangan bo‘lib, ular gazeta va jurnallarni xurofot va qoloqlikka qarshi kurash vositasi sifatida ishlatgan. Shu orqali, “Taraqqiy”, “Oyina” va “Sadoyi Turkiston” kabi nashrlar orqali jadidlar ma’rifiy g‘oyalarni ommaga yetkazgan, chunki matbuot ular uchun milliy uyg‘onishning ovozi edi. Bundan tashqari, Behbudiy va Munavvar qori matbuotni madaniy sintez quroli deb ko‘rgan. Masalan, ingliz tilidagi Adeeb Khalid kitobida

ta’kidlanishicha, jadidlar matbuotni ma’rifiy rolida milliy uyg‘onishning asosi deb ko‘rib, uni uyg‘otuvchi qurol sifatida ishlatgan.

Matbuotning ma’rifiy roli jadidchilikning madaniy mohiyatini belgilaydi, chunki jadidlar uni qoloqlikka qarshi kurash vositasi deb hisoblagan. Shu munosabat bilan, rus tilidagi N. P. Ostroumov asarida matbuot roli mustamlakachilik kontekstida tahlil qilinadi: Ostroumov ta’kidlaganidek, jadidlar matbuotni rus ta’siriga qarshi uyg‘otuvchi vosita deb ko‘rgan, ammo tsenzura sababli cheklangan. Shunga qaramay, turk tilidagi Dergipark maqolasida Behbudiy g‘oyalari tahlil qilinadi: u matbuotni Osmanli imperiyasi tajribasi bilan bog‘lab, ma’rifiy rolini uyg‘otuvchi quvvat deb taklif etgan. Bundan tashqari, fransuz tilidagi Alexandre Bennigsen kitobida matbuot roli milliy harakatlarning bir qismi deb ko‘riladi: Bennigsen ta’kidlaganidek, jadidlar matbuotni musulmon ummasini birlashtirish uchun zarur deb hisoblagan.

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## Xulosa

Jadidchilik harakati vakillarining adabiyot va teatrga oid ma’rifiy qarashlarini tahlil qilish shuni ko‘rsatadiki, ma’rifatparvarlar badiiy adabiyot va teatrning jamiyatdagi estetik vazifasini tubdan kengaytirib, ularni ijtimoiy-siyosiy islohotlar hamda milliy uyg‘onishning asosiy harakatlantiruvchi kuchiga aylantirdilar. Yevropa va Sharq tajribasining sintezi natijasida o‘zbek milliy madaniyatiga zamonaviy

dramaturgiya, realistik drama va publitsistika kabi yangi janrlar kirib keldi. Mahmudxo‘ja Behbudiyning “Padarxush”, Abdulla Avloniyning “Advokatlik osonmi?” kabi asarlarida jaholat, xurofot va ma’naviy qoloqlik o‘tkir tanqid qilinib, jamiyatni ma’rifatga chorlash g‘oyasi bosh mezon qilib olindi. Oqibatda, jadid dramasi va adabiyoti xalqning milliy g‘ururini hamda o‘zligini anglashini shakllantirishda, azaliy erkinlik hamda davlatchilik g‘oyalarini ilgari surishda beqiyos burilish nuqtasi bo‘ldi va bu boy ma’naviy meros bugungi zamonaviy jamiyat rivoji uchun ham o‘zining yuksak ilmiy-amaliy qimmatini saqlab qolmoqda.

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# 9. ECONOMICS, FINANCE, MANAGEMENT, AND SERVICES

# PROSPECTS FOR DEVELOPING BUSINESS TOURISM IN UZBEKISTAN THROUGH DIGITAL MARKETING TECHNOLOGIES

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***Abstract.*** *This article analyzes the role of digital marketing technologies in the development of business tourism (the MICE industry) in Uzbekistan. It examines the potential of social media marketing, search engine optimization (SEO), content marketing and online booking platforms in attracting international business travelers. Based on international experience, practical recommendations are developed for advancing business tourism in Uzbekistan through digital marketing tools.*

***Keywords:*** *business tourism, MICE, digital marketing, SMM, SEO, content marketing, digital transformation, destination branding, Uzbekistan.*

***Annotatsiya.*** *Mazkur maqolada O‘zbekistonda biznes turizmni (MICE sanoatini) rivojlantirishda raqamli marketing texnologiyalarining o‘rni tahlil qilinadi. Ijtimoiy tarmoqlar marketingi, qidiruv tizimlarida optimallashtirish (SEO), kontent-marketing hamda onlayn-bron qilish platformalarining xalqaro biznes sayohatchilarni jalb qilishdagi imkoniyatlari o‘rganiladi. Xorijiy tajriba asosida O‘zbekiston sharoitida biznes turizmni raqamli marketing vositalari yordamida rivojlantirish bo‘yicha amaliy tavsiyalar ishlab chiqilgan.*

***Kalit so‘zlar:*** *biznes turizm, MICE, raqamli marketing, SMM, SEO, kontent-marketing, raqamli transformatsiya, destinatsiya brendingi, O‘zbekiston.*

***Аннотация.*** *В данной статье анализируется роль технологий цифрового маркетинга в развитии делового туризма (MICE-индустрии) в Узбекистане. Рассматриваются возможности маркетинга в социальных сетях, поисковой оптимизации (SEO), контент-маркетинга и онлайн-платформ бронирования в привлечении международных деловых путешественников. На основе зарубежного опыта разработаны практические рекомендации по развитию делового туризма в Узбекистане с использованием инструментов цифрового маркетинга.*

***Ключевые слова:*** *деловой туризм, MICE, цифровой маркетинг, SMM, SEO, контент-маркетинг, цифровая трансформация, брендинг дестинации, Узбекистан.*

## INTRODUCTION

Business tourism, internationally known as the MICE industry (Meetings, Incentives, Conferences and Exhibitions), is one of the most dynamic and profitable segments of the global travel market. Unlike leisure tourism, business tourism is characterized by high average spending per visitor, low seasonality and strong multiplier effects on related sectors such as hospitality, transport, catering, event management and professional services. According to estimates of the Global Business Travel Association, global business travel spending has fully recovered after the pandemic period and continues to grow, exceeding pre-crisis levels and confirming the strategic importance of this segment for national economies [6].

For Uzbekistan, the development of business tourism is of particular relevance. The country has adopted an ambitious course of economic liberalization and openness, reflected in the Development Strategy of New Uzbekistan, which identifies tourism as one of the drivers of economic growth and regional development [1]. In recent years, Uzbekistan has hosted an increasing number of international summits, investment forums, industry exhibitions and academic conferences, while Tashkent, Samarkand and Bukhara are gradually positioning themselves as emerging destinations for international events. At the same time, the country's share in the global MICE market remains modest, and its recognition among international event planners is still limited [10].

In modern conditions, the competitiveness of any tourist destination is largely determined by its digital presence. Corporate clients, event organizers and business travelers search for venues, compare destinations, book services and form their expectations primarily through digital channels. Consequently, digital marketing technologies — search engine optimization, social media marketing, content marketing, targeted advertising, online booking systems and data-driven personalization — have become critical instruments of destination competitiveness [5; 7]. The purpose of this article is to identify the opportunities offered by digital marketing technologies for the development of business tourism in Uzbekistan and to formulate practical recommendations for their implementation.

## MAIN PART

Business tourism covers travel undertaken for professional purposes, including participation in meetings, incentive trips, congresses, conferences, exhibitions and corporate events [4]. Researchers emphasize several features that distinguish this segment: decisions are made not only by individual travelers but also by corporate buyers and professional event organizers; the purchasing cycle is longer and more rational; and the requirements for infrastructure, service quality and reliability are significantly higher than in leisure tourism. The main differences between leisure and business tourism are summarized in Table 1.

*Table 1*

**Comparative characteristics of leisure and business tourism**

| Criterion | Leisure tourism | Business tourism (MICE) |
|---|---|---|
| Main purpose of travel | Recreation, entertainment, sightseeing | Meetings, conferences, exhibitions, incentive programs |
| Decision-maker | Individual traveler, family | Corporate buyer, professional event organizer |
| Seasonality | High, concentrated in holiday periods | Low, distributed throughout the year |
| Average spending per visitor | Moderate | High (according to estimates, 2–3 times higher) |
| Planning and purchasing cycle | Short (days–weeks) | Long (months–years), rational and multi-stage |
| Key infrastructure requirements | Attractions, resorts, accommodation | Convention centers, business hotels, technical equipment, professional services |

*Source: compiled by the author on the basis of [3; 4].*

These features directly determine the specifics of marketing in this sphere: promotion must be targeted at professional audiences and based on trust, reputation and verifiable information. Digital marketing, in turn, is understood as the achievement of marketing objectives through the application of digital technologies, channels and media [5]. The key digital instruments applicable to business tourism, their functions and the directions of their use in MICE promotion are presented in Table 2.

*Table 2*

**Digital marketing tools and their application in business tourism promotion**

| Tool | Main function | Application in MICE promotion |
|---|---|---|

| | | |
|---|---|---|
| SEO / SEM | Visibility of websites in search engines | Presence of the destination and venues in search queries of international event planners |
| SMM | Communication with target audiences in social networks | LinkedIn campaigns aimed at meeting planners; visual branding of destinations |
| Content marketing | Building trust through valuable content | Venue guides, case studies, bid documents, success stories of held events |
| E-mail marketing and automation | Maintaining long-term client relations | Nurturing corporate clients throughout the long purchasing cycle |
| Online booking and event platforms | Convenience of transactions and registration | Booking of venues and accommodation, electronic registration of participants, event apps |
| Big data and AI analytics | Personalization and forecasting | Demand forecasting, personalized offers, evaluation of the economic effect of events |

*Source: compiled by the author on the basis of [5; 7].*

Over the past decade, Uzbekistan has substantially modernized its tourism infrastructure. International hotel chains have entered the market, the capacity of conference halls and exhibition centers has expanded, air connectivity has improved, and the visa regime has been significantly liberalized for a wide range of countries. Large international events — investment forums, cultural congresses and sporting competitions — have demonstrated the country's ability to host complex, high-profile gatherings. Official statistics indicate a steady growth in the number of foreign visitors arriving in Uzbekistan, part of whom travel for professional and business purposes [8]. The dynamics of international visitor arrivals are shown in Figure 1: after a deep pandemic decline in 2020–2021, the flow recovered almost to the pre-crisis level by 2023, and according to UN Tourism data, in 2025 Uzbekistan entered the group of the fastest-growing destinations in the world, with arrivals substantially exceeding the 2019 level [2].

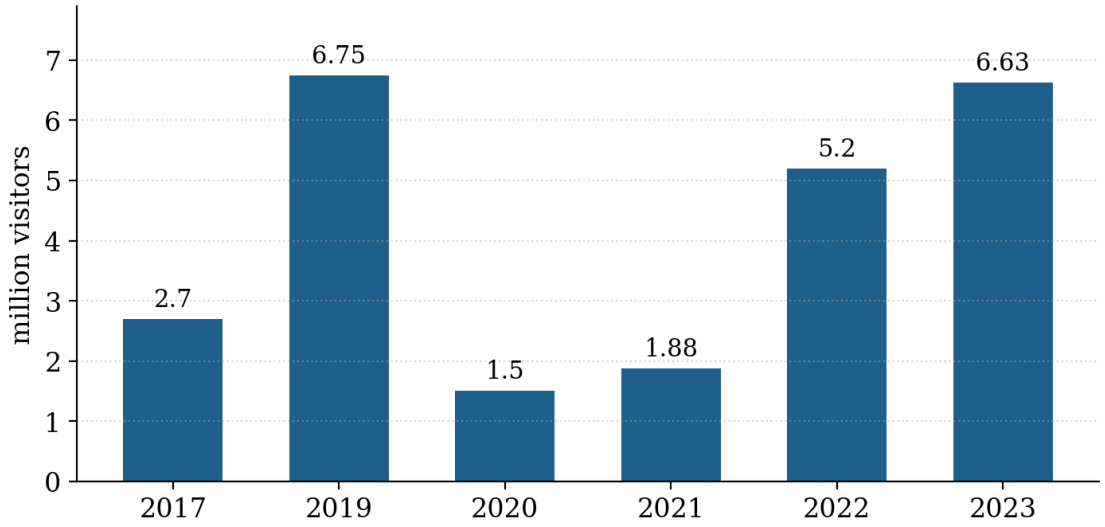


*Figure 1. Dynamics of international visitor arrivals to Uzbekistan, million people [8]*

Nevertheless, an analysis of the digital environment reveals a number of systemic constraints. First, Uzbekistan does not yet have a dedicated, internationally recognized convention bureau brand with a strong digital platform that would aggregate information about venues, suppliers, support measures and bidding procedures for event organizers. Second, the English-language digital content about the country's MICE opportunities is fragmented: information is scattered across the websites of individual hotels, agencies and state bodies, is not always updated and is rarely optimized for the search queries actually used by international planners. Third, the use of professional social networks and specialized international platforms for the systematic promotion of Uzbek destinations remains episodic. Finally, the level of digital maturity differs sharply between the capital and the regions, which limits the inclusion of cities such as Bukhara, Khiva and Fergana in international event circuits [9].

The experience of leading and rapidly growing MICE destinations — Singapore, Dubai and Istanbul — shows that digital marketing plays a decisive role in overcoming precisely such constraints. These destinations operate powerful convention bureau portals with venue databases and online bid submission; they maintain continuous content programs targeted at event professionals; they invest in search visibility for commercially valuable queries; and they use customer relationship management systems and data analytics to accompany the client from the first inquiry to post-event evaluation. As a result, they consistently occupy high positions in the rankings of the International Congress and Convention Association [10].

Based on the analysis above, five interrelated directions can be identified in which digital marketing technologies can produce the greatest effect for the development of business tourism in Uzbekistan. The proposed conceptual framework is presented in Figure 2.

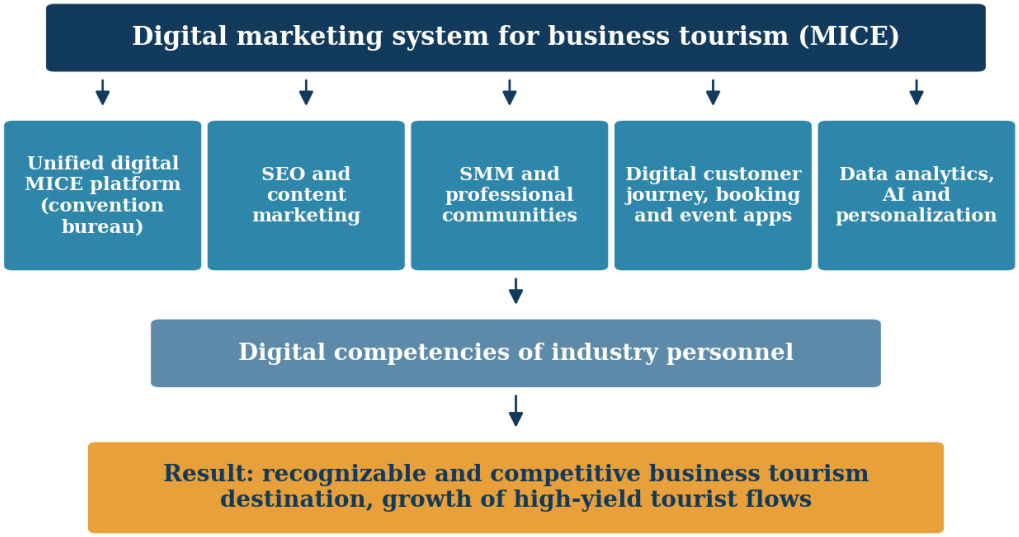


*Figure 2. Conceptual framework of digital marketing directions for the development of business tourism in Uzbekistan (compiled by the author)*

The first direction is the creation of a unified digital MICE platform of the national convention bureau. Such a platform should combine a multilingual catalogue of certified venues and service providers, standardized technical specifications, a request-for-proposal module, information on state support measures, and a media library for event organizers. International practice shows that the presence of such a "single digital window" radically reduces transaction costs for planners and increases the probability of a destination being shortlisted.

The second direction is systematic search engine optimization and content marketing in English and other working languages of the target markets. Content should be built around the real decision-making logic of corporate clients: comparative venue guides, budget calculators, case studies of successfully held events, information on logistics, safety and visa procedures. Regular publication of such materials not only improves search visibility but also forms the image of Uzbekistan as a professional and predictable destination.

The third direction is targeted work in professional social networks and digital communities of the event industry. LinkedIn campaigns aimed at meeting planners, participation in online activities of international industry associations, webinars and

virtual familiarization tours make it possible to reach narrow professional audiences at relatively low cost. Visual platforms, in turn, can be used to promote the unique cultural component of Uzbek destinations — historical venues of Samarkand and Bukhara as locations for gala events and incentive programs.

The fourth direction is the digitalization of the customer journey: online booking of venues and accommodation, electronic registration of participants, mobile applications of events, QR-based services and cashless payment infrastructure. Each of these elements is not only a service convenience but also a source of data. The accumulation and analysis of such data with the help of big data and artificial intelligence technologies allows destinations to personalize offers, forecast demand and evaluate the real economic effect of events [7].

Finally, the fifth direction is the development of digital competencies of personnel. The effectiveness of any technological solution ultimately depends on the qualifications of marketing specialists, event managers and hotel employees. The inclusion of digital marketing modules in tourism education programs of universities, including regional ones, and systematic professional development courses are necessary conditions for the sustainable digital transformation of the industry.

## CONCLUSION

The conducted analysis allows us to draw the following conclusions. Business tourism represents a strategically important segment for Uzbekistan, capable of generating high-yield tourist flows, smoothing seasonality and strengthening the international image of the country. The key constraint on its development today lies not so much in physical infrastructure, which has improved markedly, as in the digital environment: fragmented online information, weak search visibility, insufficient presence in professional digital communities and limited use of data-driven marketing.

Digital marketing technologies offer Uzbekistan realistic and comparatively low-cost opportunities to overcome these constraints. The priority measures include: creation of a unified digital platform of the national convention bureau; systematic SEO and content marketing addressed to international event planners; targeted promotion in professional social networks; end-to-end digitalization of the customer journey with subsequent use of accumulated data for personalization and demand forecasting; and purposeful development of digital competencies of industry personnel.

Implementation of these measures on the basis of public-private partnership will make it possible to transform Uzbekistan from an episodic host of individual international events into a recognizable and competitive business tourism destination

in Central Asia, which fully corresponds to the goals of the country's long-term development strategy.

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# MINTAQADA TARMOQLAR O‘RTASIDAGI MUNOSABATLARNI TAKOMILLASHTIRISHDA RAQAMLI TEXNOLOGIYALARNING AHAMIYATI

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***Annotatsiya.*** *maqolasida raqamli texnologiyalarning sanoat korxonalarini rivojlantirishga ta’siri o'rganiladi va ulardan foydalanish tajribasi va istiqbollari tahlil qilinadi. Axborot texnologiyalarining jadal rivojlanishi va biznes muhitini raqamlashtirish sharoitida sanoat korxonalari o‘zgaruvchan bozor talablariga moslashish va operatsion samaradorligini oshirish zarurati bilan duch kelmoqdalar. Maqolada raqamli texnologiyalar korxonalarga ijobiy ta’sir ko‘rsatishi mumkin bo‘lgan asosiy sohalar, masalan, ishlab chiqarish jarayonlarini avtomatlashtirish, logistika va ta’minot zanjiri boshqaruvini takomillashtirish, korxonalarni boshqarishni optimallashtirish va mahsulot sifatini yaxshilash kabi masalalar ko‘rib chiqiladi. Bundan tashqari, sanoat korxonalarida raqamli texnologiyalarni muvaffaqiyatli joriy etish misollari real kompaniyalarning hisobotlari va tadqiqotlari asosida muhokama qilinadi. Maqolada raqobatbardosh ustunliklarga erishish va ularning operatsion samaradorligini oshirish uchun sanoat korxonalarida raqamli texnologiyalardan keyingi foydalanish bo‘yicha tavsiyalar va istiqbollar keltirilgan. Umuman olganda, ushbu maqolada sanoat korxonalari uchun raqamli texnologiyalarning ahamiyati va ularning zamonaviy raqamli davrda biznesni o‘zgartirish va rivojlantirish salohiyati batafsil o‘rganilgan.*

***Kalit so'zlar:*** *raqamli texnologiyalar, sanoat korxonalarini rivojlantirish, innovatsiya, sun’iy intellekt, ishlab chiqarish jarayoni samaradorligi.*

***Аннотация.*** *Данная научная статья исследует влияние цифровых технологий на развитие промышленного предприятия и анализирует опыт и перспективы их использования. В контексте быстрого развития информационных технологий и цифровизации бизнес-среды, промышленные предприятия сталкиваются с необходимостью приспособления к изменяющимся требованиям рынка и повышению эффективности своей деятельности. В статье рассматриваются основные направления, в которых цифровые*

*технологии могут оказать положительное влияние на предприятие, такие как автоматизация производственных процессов, улучшение логистики и снабжения, оптимизация управления предприятием и повышение качества продукции. Кроме того, обсуждаются примеры успешной реализации цифровых технологий на промышленных предприятиях, основанных на отчетах и исследованиях реальных компаний. В результате статьи предлагаются рекомендации и перспективы для дальнейшего использования цифровых технологий на промышленных предприятиях с целью достижения конкурентных преимуществ и увеличения эффективности их деятельности. В целом, данная статья представляет собой основательное исследование о важности цифровых технологий для промышленных предприятий и их потенциала для трансформации и развития бизнеса в современной цифровой эпохе.*

***Ключевые слова:*** *цифровые технологии, развитие промышленного предприятия, инновации, искусственный интеллект, эффективность производственных процессов.*

***Abstract.*** *This research article explores the impact of digital technologies on industrial enterprise development and analyzes the experience and prospects for their use. In the context of the rapid development of information technology and the digitalization of the business environment, industrial enterprises are faced with the need to adapt to changing market demands and improve their operational efficiency. The article examines the key areas in which digital technologies can have a positive impact on enterprises, such as the automation of production processes, improved logistics and supply chain management, optimization of enterprise management, and improved product quality. Furthermore, examples of the successful implementation of digital technologies at industrial enterprises are discussed, based on reports and studies of real companies. The article offers recommendations and prospects for the further use of digital technologies at industrial enterprises to achieve competitive advantages and increase their operational efficiency. Overall, this article presents a thorough study of the importance of digital technologies for industrial enterprises and their potential for business transformation and development in the modern digital era.*

***Keywords:*** *digital technologies, industrial enterprise development, innovation, artificial intelligence, production process efficiency.*

Bugungi kunda raqamli texnologiyalar zamonaviy sanoat sektorining ajralmas qismiga aylanib ulgurdi, ish amaliyotini o‘zgartirmoqda va korxonalarni rivojlantirish uchun yangi imkoniyatlar yaratmoqda. Ushbu maqolada biz raqamli texnologiyalarning

mintaqada sanoat korxonalarini rivojlantirishga ta’siri o‘rganilgan, zamonaviy raqamli yechimlar joriy etish bo‘yicha samaradorligi tahlil qilingan. Afsuski, sanoatni raqamlashtirishda keng ko‘lamli tadqiqotlarga qaramay, sanoatda raqamli texnologiyalarni qo‘llash bilan bog‘liq haqiqiy foyda va xavf-xatarlarga yetarlicha e’tibor berilmayapti.

XX asrning o‘rtalarida elektron kompyuterlarning joriy etilishi sanoat inqilobiga ta’sir ko‘rsatgan asosiy yangiliklardan biri bo‘ldi. Raqamli sxemalarning rivojlanishi ishlab chiqarish jarayonlarini sezilarli darajada tezlashtirdi va sifat nazoratini oshirdi. Bu sanoatga odatiy ishlarining ko‘p qismini avtomatlashtirishga va yangi mahsulotlarni ishlab chiqish va samaradorlikni oshirishga e’tibor qaratishga yordam berdi.

Raqamli texnologiyalarning rivojlanishi “aqlli fabrikalar” yoki “SMART korxonalar” konsepsiyasining paydo bo‘lishiga ham olib keldi.

Bular raqamli texnologiyalar barcha ishlab chiqarish va boshqaruv jarayonlariga to‘liq integratsiyalashgan korxonalardir. Aqlli fabrikalar yuqori unumdorlik, moslashuvchanlik va miqyoslanishga erishish uchun avtomatlashtirish, sun’iy intellekt, robototexnika va boshqa raqamli innovatsiyalardan foydalanadi. So‘nggi yillardagi tadqiqotlar va nashrlarning tahlili shuni ko‘rsatadiki, raqamli texnologiyalarning sanoat korxonalarini rivojlantirishga ta’siri ulkan salohiyatga ega va yangi biznes imkoniyatlarini ochadi.

Sanoat korxonasida raqamli texnologiyalarni muvaffaqiyatli joriy etishga misollar:

1. Raqamli texnologiyalarni joriy etishning asosiy afzalliklaridan biri ishlab chiqarish jarayonlarining samaradorligini oshirish va optimallashtirishdir. Masalan, ishlab chiqarish jarayonida raqamli egizaklarni joriy etish. Raqamli egizak texnologiyasi alohida qismlarni yaratish va butun ishlab chiqarish zanjirlarini takrorlash, virtual sinovlarni o‘tkazish va nosozliklarning oldini olish imkonini beradi. Masalan, avtomobil ishlab chiqaruvchisi avtomobil kabi jismoniy obyektning virtual nusxasini yaratish uchun sun'iy intellekt yordamida modellashtirish va ma’lumotlarni tahlil qilishni birlashtiradi. Keyin jismoniy obyektdan to‘plangan real vaqt rejimidagi ma’lumotlar virtual nusxani yangilash va optimallashtirish uchun ishlatiladi, bu esa kompaniyaga muammolarni aniqlash va ishlab chiqarishni yaxshilash imkonini beradi.

2. Ishlab chiqarish jarayonida sun'iy intellektdan foydalanish. Masalan, yirik po‘lat zavodi sensorlar va video kuzatuvdan olingan ma’lumotlarni tahlil qilish uchun mashinani o‘rganish algoritmlaridan foydalanadi, bu esa real vaqt rejimida jarayonlarni kuzatib borish va optimallashtirishga imkon beradi. Bu uskunalarning shikastlanishi va baxtsiz hodisalarining oldini olishga, shuningdek, ishlab chiqarish samaradorligini

oshirish va xarajatlarni kamaytirish uchun ishlab chiqarish jarayonlarini optimallashtirishga yordam beradi.

3. Sanoatda narsalar interneti (IoT) ning muvaffaqiyatli qo‘llanilishi. Masalan, yirik elektronika ishlab chiqaruvchisi jismoniy obyektlarni raqamli muhit bilan ulash uchun uskunalarga o‘rnatilgan IoT qurilmalaridan foydalanadi. Bu uskunaning holati haqida real vaqt rejimida ma’lumot olish imkonini beradi, undan foydalanishni optimallashtiradi, nosozliklar haqida ogohlantiradi va texnik xizmat ko'rsatishni yaxshilaydi, ishonchlilik va ishlab chiqarish unumdorligini oshiradi.

4. Raqamli texnologiyalarning sanoat korxonalariga ta’sirining yana bir muhim jihati yangi biznes modellarini ishlab chiqishdir. Raqamli texnologiyalar yordamida korxonalar ma’lumotlarni tahlil qilish va innovatsion yechimlarga asoslangan holda yangi xizmatlar va mahsulotlarni yaratishi va taklif qilishi mumkin. Masalan, ko‘plab korxonalar “Mahsulot xizmat sifatida” modelini muvaffaqiyatli joriy etishdi, bunda mijozlar mahsulot sotib olmaydilar, balki kerak bo‘lganda unga kirishadi.

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# ENHANCING THE COMPETITIVENESS OF GREENHOUSE PRODUCTS UNDER WTO CONDITIONS: ORGANIZATIONAL, MARKETING, AND INVESTMENT MECHANISMS

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***Abstract.*** *The paper examines ways to ensure the competitiveness of greenhouse products under conditions of membership in the World Trade Organization (WTO). Based on the comparative analysis, marketing analysis, clustering, and investment-risk assessment approaches defined in the dissertation, the requirements for greenhouse products to enter international markets are systematized. The study substantiates the interrelationship of product quality, resource efficiency, logistics, certification, cooperation, and export-oriented management. Recommendations are developed for forming organizational and marketing mechanisms for Uzbekistan that are consistent with WTO-related requirements.*

***Keywords:*** *WTO; competitiveness; greenhouse products; marketing; export; cluster; certification; investment risk*

## Introduction

The integration of global markets imposes new requirements on agricultural producers. Greenhouse products are becoming an important segment of export-oriented agriculture because they can reduce seasonality and enable year-round supply. However, access to international markets cannot be ensured merely by increasing production volume. Product quality, safety, compliance with standards, delivery speed, price, and marketing strategy jointly determine competitiveness.

The dissertation identifies increasing food security and the competitiveness of greenhouse products in Uzbekistan under WTO membership conditions as a distinct research task. Within this task, approaches based on comparative and marketing analysis, cluster analysis, and the improvement of management and investment mechanisms are proposed. This paper presents a generalized form of that concept from the perspective of international trade and markets.

**1. Economic Meaning of Competitiveness**

The competitiveness of a greenhouse product is not determined solely by its ability to be sold at a low price. Competitiveness is a multidimensional concept that includes production cost, product quality, productivity, resource consumption, logistics costs, certification, and adaptability to market demand. The dissertation presents an approach to measuring efficiency through output volume, quality, export share, and revenue.

Under WTO conditions, producers must consider not only the domestic market but also the effects of external competition. This requires improvement of production standards, accounting systems, and management. Stable quality and consistency between batches are important for export-oriented greenhouse products. Therefore, automated monitoring, climate control, and digital accounting systems become technological foundations of competitiveness.

**2. The Role of Marketing and Cluster Mechanisms**

The marketing system for greenhouse products covers the process from pre-production demand analysis to delivery of the product to the final customer. Decisions concerning product type, variety, packaging, storage temperature, delivery time, and market segment should be linked to the production plan. From this perspective, separating marketing from production may reduce economic efficiency.

The cluster approach makes it possible to integrate greenhouse farms with logistics, storage, processing, service, and export organizations. The dissertation emphasizes that clustering and cooperation can strengthen the integration of farms and develop logistics, storage, and processing systems. This model can reduce market-entry costs for small producers and increase their ability to negotiate with large buyers.

The cooperative and auction systems used in the Netherlands are of interest as organizational mechanisms for bringing products to market. For Uzbekistan, rather than copying these institutions completely, it is advisable to combine their relevant elements with electronic commerce, cooperative sales, and logistics centers. This can reduce information asymmetry between producers and exporters.

**3. Investment Risk and Business Model**

Investment decisions in greenhouse farming are associated with high initial costs. Structures, heating, lighting, irrigation, automation, seeds and seedlings, and labor costs form the initial capital requirement. The dissertation cites a payback period of around 3–5 years for modern projects; however, this indicator depends on market prices, energy costs, productivity, and product type.

For investment-risk management, calculations based on several scenarios are advisable: optimistic, baseline, and pessimistic. Increases in energy prices, declines in

product prices, or disruptions in export logistics can directly affect project cash flows. Therefore, investment-project assessment should use not only net profit but also payback period, cost, profitability, and sensitivity analysis.

The Business Model Canvas approach makes it possible to represent the value proposition, customer segments, key resources, partners, channels, and cost structure of a greenhouse project within a single model. This approach is useful for export-oriented enterprises because it links production strategy with market strategy.

**4. Organizational and Marketing Mechanism under WTO Conditions**

Under WTO conditions, a three-stage organizational mechanism can be proposed to improve the competitiveness of greenhouse products. The first stage is stabilization of production standards; the second is product certification, packaging, and logistics; and the third is segmentation of foreign markets and conclusion of long-term contracts. This sequence helps align production volume with market demand.

Marketing analysis requires market segmentation by country, buyer type, and seasonal demand. Nearby geographical markets may be advantageous in terms of transportation costs, while distant markets with high demand may require additional certification and logistics costs. Therefore, the choice of export geography should be based not only on price but also on overall margin.

The following system of indicators can be proposed for assessing competitiveness: (1) production cost per ton; (2) productivity; (3) water consumption; (4) energy consumption; (5) export share; (6) share of returned or rejected batches; (7) delivery time; and (8) net profit margin. These indicators are consistent with the integrated assessment concept proposed in the dissertation.

**Conclusion**

The findings show that the international competitiveness of greenhouse products depends on a broader set of factors than production volume and price. Under WTO conditions, quality, standards, certification, logistics, marketing, and resource efficiency should be managed as an integrated system.

For Uzbekistan, important directions include strengthening cluster and cooperation mechanisms, developing digital marketing and electronic commerce, improving cooling and storage infrastructure, and insuring export risks. Investment projects should be assessed through sensitivity analysis covering product-market conditions, energy prices, and export scenarios.

Thus, under WTO conditions, the competitiveness of greenhouse products is based on the integration of organizational, technological, and marketing mechanisms. The new integrated indicator and organizational-economic model proposed in the

dissertation can serve as a methodological basis for systematic management of this process.

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# ГЕОЛОГИЯ-ҚИДИРУВ ИШЛАРИДА ХАРАЖАТЛАРНИ ТУРКУМЛАШ ВА ТАННАРХ КАЛЬКУЛЯЦИЯСИНИ ТАКОМИЛЛАШТИРИШ ЙЎНАЛИШЛАРИ

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***Аннотация:*** *Ушбу мақолада геология-қидирув ишларида харажатларни туркумлаш, уларни объектлар ва харажат марказлари кесимида ҳисобга олиш ҳамда таннарх калькуляциясини такомиллаштириш масалалари тадқиқ этилган. Геология соҳасида харажатларни шакллантирувчи технологик жараёнларнинг ўзига хос хусусиятлари таҳлил қилиниб, анъанавий ҳисоб тизимининг айрим чекловлари асосланган. Тадқиқот натижасида геологик лойиҳалар кесимида харажатларни бошқариш, босқичли калькуляция моделини жорий этиш ва умумий харажатларни уларни юзага келтирувчи реал драйверлар асосида тақсимлаш бўйича илмий-услубий таклифлар ишлаб чиқилган.*

***Калит сўзлар:*** *геология-қидирув ишлари, харажатлар ҳисоби, таннарх калькуляцияси, харажат маркази, геологик лойиҳа, калькуляция усули, бошқарув ҳисоби, харажат драйверлари.*

***Аннотация:*** *В данной статье исследованы вопросы классификации затрат в геологоразведочных работах, их учета в разрезе объектов и центров затрат, а также совершенствования методов калькулирования себестоимости. Проанализированы особенности технологических процессов, формирующих затраты в геологической отрасли, и обоснованы отдельные ограничения традиционной системы учета. По результатам исследования разработаны научно-методические предложения по управлению затратами в разрезе геологических проектов, внедрению поэтапной модели калькулирования и распределению общих затрат на основе реальных драйверов затрат, вызывающих их возникновение.*

***Ключевые слова:*** *геологоразведочные работы, учет затрат, калькулирование себестоимости, центр затрат, геологический проект, метод калькулирования, управленческий учет, драйверы затрат.*

***Abstract:*** *This article examines the issues of cost classification in geological exploration activities, their accounting by objects and cost centers, as well as the improvement of cost calculation methods. The study analyzes the specific features of technological processes that generate costs in the geological sector and substantiates certain limitations of the traditional accounting system. Based on the research findings, scientific and methodological recommendations have been developed for cost management by geological projects, the implementation of a stage-based costing model, and the allocation of indirect costs based on actual cost drivers that determine their occurrence.*

***Keywords:*** *geological exploration activities, cost accounting, cost calculation, cost center, geological project, costing method, management accounting, cost drivers.*

**Кириш**

Замонавий иқтисодиёт шароитида минерал-хомашё ресурсларидан самарали ва оқилона фойдаланиш, янги конларни аниқлаш ҳамда мавжуд ресурс базасини кенгайтириш мамлакатларнинг саноат ва иқтисодий барқарорлигини таъминлашда муҳим аҳамият касб этмоқда.[19,20] Айниқса, табиий ресурсларга бўлган талабнинг ортиб бориши, саноат тармоқларининг ривожланиши ва стратегик хомашё манбаларига эҳтиёжнинг кучайиши геология-қидирув ишларининг аҳамиятини янада оширмоқда. Геология-қидирув жараёнлари нафақат ер ости бойликларини аниқлаш ва баҳолаш вазифасини бажаради, балки келгуси ишлаб чиқариш фаолиятининг иқтисодий асосларини шакллантирадиган муҳим инвестицион жараён ҳисобланади.[19,21,22]

Геология-қидирув ишларининг ўзига хос хусусияти шундаки, мазкур фаолият юқори даражадаги ноаниқлик, катта миқдордаги молиявий ресурсларни жалб этиш зарурати ва узоқ муддатли натижа кутиш билан тавсифланади.[5,20] Қидирув жараёнида амалга ошириладиган геологик тадқиқотлар, бурғилаш ишлари, лаборатория таҳлиллари, геофизик ва геокимёвий изланишлар, намуна олиш ҳамда бошқа технологик жараёнлар турли таркиб ва хусусиятга эга харажатларни юзага келтиради. Шу сабабли ушбу харажатларни тўғри туркумлаш, уларнинг шаклланиш манбаларини аниқ белгилаш ва иқтисодий мазмунига мос равишда ҳисобга олиш геология корхоналарида самарали бошқарув қарорларини қабул қилишнинг муҳим шарти ҳисобланади.[2,7]

Амалиёт шуни кўрсатмоқдаки, геология-қидирув ишларида харажатларни ҳисобга олиш кўп ҳолларда умумий ишлаб чиқариш харажатларини акс эттиришга йўналтирилган анъанавий ёндашувлар асосида амалга оширилмоқда. Бундай ёндашув айрим ҳолларда харажатларнинг ҳақиқий шаклланиш сабабларини аниқлаш, алоҳида геологик объектлар ёки лойиҳалар самарадорлигини баҳолаш ҳамда бошқарув қарорларини ахборот билан таъминлаш имкониятларини чеклайди. Хусусан, геология-қидирув ишларида харажатлар кўп босқичли технологик жараёнлар орқали шаклланганлиги сабабли уларни оддий харажат моддалари бўйича ҳисобга олиш етарли даражада самарали натижа бермаслиги мумкин.

Шу нуқтаи назардан, харажатларни объектлар, геологик лойиҳалар, қидирув майдонлари ва харажат марказлари кесимида ҳисобга олиш масаласи долзарб аҳамият касб этади. Бундай ёндашув ҳар бир қидирув объекти бўйича сарфланган маблағларнинг самарадорлигини таҳлил қилиш, харажатларнинг юзага келиш сабабларини аниқлаш ва ресурслардан фойдаланиш самарадорлигини ошириш имконини беради. Шунингдек, харажатларни уларни юзага келтирувчи омиллар, яъни харажат драйверлари асосида тақсимлаш замонавий бошқарув ҳисобининг муҳим йўналишларидан бири сифатида намоён бўлмоқда.

Таннарх калькуляцияси геология-қидирув ташкилотларида нафақат сарфланган маблағларни ҳисоблаш воситаси, балки иқтисодий қарорларни қабул қилиш учун зарур бўлган бошқарув ахборотларини шакллантириш механизми ҳисобланади.[2,9,25] Геологик ишлар жараёнида турли босқичларда амалга ошириладиган харажатларни аниқ баҳолаш, уларни тегишли объектларга тақсимлаш ва якуний натижа билан боғлаш корхонанинг молиявий барқарорлигини таъминлашда муҳим ўрин тутади. Шу боис таннархни ҳисоблаш усулларини такомиллаштириш, босқичли калькуляция тизимини шакллантириш ва замонавий бошқарув ҳисоби элементларини жорий этиш зарурати юзага келмоқда.

Халқаро амалиётда харажатларни бошқариш тизимини такомиллаштириш мақсадида фаолиятга асосланган калькуляция (Activity-Based Costing - ABC), харажат марказлари бўйича ҳисоб юритиш ва харажат драйверлари асосида тақсимлаш усуллари кенг қўлланилмоқда.[3,4,23] Мазкур ёндашувлар билвосита харажатларни уларни келтириб чиқарувчи реал омиллар билан боғлаш, маҳсулот ёки хизмат таннархини аниқроқ шакллантириш ва бошқарув қарорларининг сифатини ошириш имконини беради. Геология-қидирув соҳасида ҳам ушбу

усуллардан фойдаланиш харажатларнинг шаффофлиги ва таҳлилий имкониятларини кенгайтиришга хизмат қилиши мумкин.

Ўзбекистонда геология соҳасини модернизация қилиш, инвестицияларни жалб этиш ва минерал-хомашё базасини ривожлантириш бўйича амалга оширилаётган ислоҳотлар шароитида харажатлар ҳисобини такомиллаштириш масалалари алоҳида аҳамият касб этмоқда. Геология-қидирув ишларида харажатларни туркумлашнинг илмий асосланган тизимини шакллантириш, таннарх калькуляциясининг самарали усулларини жорий этиш ва бошқарув ҳисоби имкониятларидан кенг фойдаланиш соҳадаги корхоналарнинг рақобатбардошлигини оширишга хизмат қилади.

Шу муносабат билан мазкур мақолада геология-қидирув ишларида харажатларнинг иқтисодий мазмуни, уларни туркумлаш мезонлари, харажат марказлари бўйича ҳисобга олиш хусусиятлари ҳамда таннарх калькуляциясини такомиллаштириш йўналишлари илмий жиҳатдан тадқиқ этилади. Тадқиқот натижалари геология-қидирув ташкилотларида харажатлар ҳисобини янада такомиллаштириш, бошқарув қарорларини қабул қилиш учун ишончли ахборот базасини шакллантириш ва соҳада иқтисодий самарадорликни оширишга қаратилган амалий тавсияларни ишлаб чиқишга йўналтирилган.

**Адабиётлар шарҳи**

Геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини такомиллаштириш масалалари бухгалтерия ҳисоби, бошқарув ҳисоби, харажатлар назарияси ҳамда саноат корхоналари иқтисодиёти доирасида кенг ўрганилган илмий йўналишлардан бири ҳисобланади. Мазкур масала бўйича олиб борилган тадқиқотлар харажатларнинг иқтисодий мазмунини очиб бериш, уларни ҳисоб объектлари бўйича тақсимлаш, таннархни шакллантириш усулларини такомиллаштириш ва бошқарув қарорларини қабул қилиш учун зарур бўлган ахборотларни шакллантиришга қаратилган.

Бухгалтерия ҳисоби назариясининг шаклланишида харажатларни ҳисобга олиш ва хўжалик жараёнларини тизимли акс эттириш масалалари муҳим ўрин эгаллаган. Бухгалтерия ҳисобининг асосчиси сифатида эътироф этиладиган Luca Pacioli томонидан илгари сурилган иккиёқлама ёзув тамойиллари кейинчалик харажатлар, даромадлар ва молиявий натижаларни ҳисобга олиш тизимининг назарий пойдеворини шакллантирди. Ушбу ёндашув хўжалик операцияларини тизимли қайд этиш, ҳисоб маълумотларининг ишончлилигини таъминлаш ва иқтисодий жараёнларни таҳлил қилиш имконини берди.[1]

Харажатлар ҳисоби ва таннарх калькуляцияси назариясининг ривожланишида Charles T. Horngrenнинг илмий қарашлари алоҳида аҳамиятга эга. Олим харажатларнинг иқтисодий мазмунига кўра таснифланиши, уларни доимий ва ўзгарувчан, бевосита ва билвосита турларга ажратиш ҳамда калькуляция жараёнида харажатларни тўғри тақсимлаш зарурлигини асослаб берган. Унинг тадқиқотлари замонавий бошқарув ҳисоби тизимида харажатлар тўғрисидаги ахборотдан самарали фойдаланишнинг назарий асосларини яратишга хизмат қилди.[2]

Замонавий бошқарув ҳисоби тизимида харажатларни ҳисобга олишнинг янги усулларини шакллантиришда Robert S. Kaplan ва Robin Cooper томонидан ишлаб чиқилган фаолиятга асосланган калькуляция (Activity-Based Costing - ABC) усули муҳим аҳамият касб этади. Мазкур ёндашувга кўра, харажатлар анъанавий тақсимлаш усулларидан фарқли равишда уларни юзага келтирувчи фаолият турлари ва харажат драйверлари асосида тақсимланиши лозим. Ушбу концепция геология-қидирув ишларида ҳам муҳим аҳамиятга эга бўлиб, геологик тадқиқотлар, бурғилаш ишлари, лаборатория таҳлиллари ва бошқа технологик жараёнлар бўйича харажатларни аниқ ҳисоблаш имкониятини кенгайтиради.[3,4]

Геология ва қазиб чиқариш соҳаларида харажатларни ҳисобга олиш масалалари халқаро амалиётда ҳам кенг тадқиқ этилган. Хусусан, табиий ресурсларни қидириш ва ўзлаштириш билан боғлиқ фаолиятларда харажатларни шакллантириш, уларни капиталлаштириш, ҳисобдан чиқариш ва иқтисодий натижалар билан боғлаш масалалари халқаро молиявий ҳисобот стандартлари доирасида ўрганилган. Айниқса, МҲХС-6 “Фойдали қазилмаларни қидириш ва баҳолаш” стандарти геология-қидирув ишларида харажатларни тан олиш ва баҳолаш бўйича муҳим услубий асос ҳисобланади. Ушбу стандарт талаблари қидирув харажатларини иқтисодий мазмунига мувофиқ акс эттириш, қидирув активларини шакллантириш ва уларнинг ҳаққонийлигини таъминлашга йўналтирилган.

Рус бухгалтерия ҳисоби мактаби вакилларининг илмий ишларида ҳам харажатларни ҳисобга олиш, калькуляция қилиш ва ҳисоб объектларини белгилаш масалалари кенг ёритилган. Хусусан, Я.В. Соколов бухгалтерия ҳисоби назариясининг ривожланиши, ҳисоб объектларининг иқтисодий мазмуни ва ҳисоб маълумотларининг шаклланиш тамойилларини тадқиқ қилган. В.Ф. Палийнинг ишларида харажатларни ҳисобга олиш ва бошқарув қарорларини қабул қилишда бухгалтерия ахборотларидан фойдаланиш масалаларига алоҳида эътибор қаратилган. Шунингдек, М.И. Кутер ва В.Б. Ивашкевичларнинг илмий

ишларида бошқарув ҳисоби, харажатларни назорат қилиш ва калькуляция тизимларини такомиллаштириш масалалари чуқур ўрганилган.[11,12,13,14]

Ўзбекистонлик олимларнинг тадқиқотларида бухгалтерия ҳисоби ва аудит тизимини миллий иқтисодиёт шароитига мослаштириш, бошқарув ҳисоби элементларини жорий этиш ва харажатларни самарали бошқариш масалаларига кенг ўрин берилган. Жумладан, Н.К. Ризаев, А.Н. Ибрагимов, М.Қ. Пардаев ва Р.Д. Дусмуратовларнинг илмий ишларида бухгалтерия ҳисоби, аудит, иқтисодий таҳлил ва бошқарув қарорларини ахборот билан таъминлаш масалалари тадқиқ этилган. Ушбу тадқиқотлар миллий ҳисоб тизимининг хусусиятларини ҳисобга олган ҳолда харажатларни ҳисобга олиш ва назорат қилиш механизмларини такомиллаштириш учун муҳим назарий асос бўлиб хизмат қилади.[5,16,17,18]

Шу билан бирга, мавжуд илмий тадқиқотларни таҳлил қилиш натижасида аниқландики, аксарият ишлар умумий саноат корхоналарида харажатларни ҳисобга олиш ва таннарх калькуляцияси масалаларига бағишланган бўлиб, геология-қидирув ишларининг ўзига хос хусусиятларини ҳисобга олган ҳолда харажатларни туркумлаш ва калькуляция қилиш масалалари етарлича тадқиқ этилмаган. Геология соҳасида харажатлар шаклланиши кўп босқичли технологик жараёнлар, юқори даражадаги ноаниқлик, геологик объектларнинг индивидуал хусусиятлари ва катта ҳажмдаги билвосита харажатлар билан боғлиқ бўлганлиги сабабли, ушбу йўналишда махсус услубий ёндашувларни ишлаб чиқиш зарурати мавжуд.

Хусусан, геологик лойиҳалар кесимида харажатларни бошқариш, харажат марказларини шакллантириш, харажат драйверлари асосида тақсимлаш, босқичли калькуляция моделини жорий этиш ва бошқарув ҳисоби имкониятларидан самарали фойдаланиш масалалари ҳали тўлиқ илмий ечимини топмаган. Шу сабабли геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини такомиллаштириш бўйича илмий изланишларни давом эттириш мазкур соҳанинг иқтисодий самарадорлигини ошириш нуқтаи назаридан муҳим аҳамият касб этади.

Мазкур мақолада айнан ушбу илмий муаммоларни ҳал этишга қаратилган ҳолда геология-қидирув ишларида харажатларни шакллантириш хусусиятлари, уларни ҳисоб объектлари бўйича тақсимлаш механизмлари ва таннарх калькуляциясини такомиллаштириш йўналишлари тадқиқ этилади.

**Методология**

Мазкур тадқиқотда геология-қидирув ишларида харажатларни туркумлаш, уларни ҳисобга олиш тизимини такомиллаштириш ва таннарх калькуляциясини

самарали ташкил этиш масалаларини илмий жиҳатдан ўрганиш мақсадида комплекс методологик ёндашувдан фойдаланилди. Тадқиқот методологияси геология-қидирув фаолиятининг технологик хусусиятлари, харажатларнинг шаклланиш жараёни, бошқарув ҳисоби тамойиллари ҳамда замонавий калькуляция усулларини ўзаро боғлиқ ҳолда таҳлил қилишга асосланди.

Геология-қидирув ишлари оддий ишлаб чиқариш жараёнларидан фарқли равишда кўп босқичли, узоқ муддатли ва юқори даражадаги ноаниқлик билан тавсифланади. Шу сабабли тадқиқот жараёнида харажатларни фақат бухгалтерия ҳисоби объектлари сифатида эмас, балки уларнинг юзага келиш сабаблари, технологик жараёнлар ва бошқарув қарорлари билан боғлиқ иқтисодий категория сифатида ўрганишга алоҳида эътибор қаратилди.

Тадқиқотнинг назарий-услубий асосини бухгалтерия ҳисоби, бошқарув ҳисоби, харажатлар назарияси, таннарх калькуляцияси ва фаолиятга асосланган калькуляция (Activity-Based Costing) соҳасидаги илмий ёндашувлар ташкил этди.[3,4,7,23] Шунингдек, геология-қидирув ишларида харажатларни ҳисобга олиш бўйича халқаро тажриба, хусусан, МҲХС талаблари ва қазиб чиқариш соҳасида қўлланиладиган ҳисоб усуллари ўрганилди.[5,6]

Тадқиқот давомида қуйидаги илмий усуллардан фойдаланилди:

**Тизимли ёндашув усули** орқали геология-қидирув ишларида харажатларни шакллантириш жараёни яхлит тизим сифатида кўриб чиқилди. Бунда харажатларнинг пайдо бўлиш манбалари, уларнинг технологик жараёнлар билан боғлиқлиги ва ҳисоб тизимида акс эттириш механизми ўзаро боғлиқ ҳолда таҳлил қилинди.

**Қиёсий таҳлил усули** миллий ва халқаро ҳисоб амалиётида қўлланилаётган харажатларни туркумлаш ва калькуляция қилиш усулларини таққослаш имконини берди. Ушбу усул орқали анъанавий харажат ҳисоби тизими ҳамда замонавий бошқарув ҳисоби ёндашувларининг афзалликлари ва чекловлари аниқланди.

**Илмий абстракция усули** геология-қидирув ишларига хос бўлган кўплаб иқтисодий жараёнлар орасидан харажатларни бошқариш ва калькуляция қилиш учун муҳим бўлган асосий омилларни ажратиб олишда қўлланилди.

**Гуруҳлаш ва таснифлаш усули** ёрдамида геология-қидирув харажатларини иқтисодий мазмуни, технологик жараёндаги ўрни, харажат марказлари ва ҳисоб объектлари бўйича туркумлаш имкониятлари тадқиқ этилди.

**Таҳлил ва синтез усуллари** орқали мавжуд харажатлар ҳисоби тизимининг ҳолати ўрганилиб, уни такомиллаштириш бўйича илмий хулосалар шакллантирилди.

**Мантиқий таҳлил усули** харажатларни тақсимлаш механизмларини баҳолаш, уларни юзага келтирувчи омилларни аниқлаш ва таннарх калькуляциясини такомиллаштириш бўйича таклифларни ишлаб чиқишда қўлланилди.

Тадқиқотнинг ахборот базасини бухгалтерия ҳисоби ва молиявий ҳисобот соҳасидаги меъёрий-ҳуқуқий ҳужжатлар, бухгалтерия ҳисоби миллий стандартлари, халқаро молиявий ҳисобот стандартлари, геология-қидирув соҳасига оид услубий материаллар, шунингдек, хорижий ва маҳаллий олимларнинг илмий ишлари ташкил этди.

Геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини такомиллаштириш бўйича қўлланилган асосий методологик ёндашувлар қуйидаги жадвалда келтирилган.

**1-жадвал**

**Геология-қидирув ишларида харажатлар ҳисоби ва таннарх калькуляциясини тадқиқ этишда қўлланилган методологик ёндашувлар[1]**

| Методологик ёндашув | Тадқиқот жараёнида қўлланилиши | Амалий аҳамияти |
|---|---|---|
| Тизимли ёндашув | Геология-қидирув жараёнида харажатларнинг шаклланиши, ҳисобга олиниши ва бошқарилиши ягона тизим сифатида ўрганилди | Харажатларнинг ўзаро боғлиқ элементларини аниқлаш ва ҳисоб тизимини такомиллаштириш имконини беради |
| Қиёсий таҳлил | Миллий ҳисоб амалиёти ва халқаро ёндашувлар, жумладан, ABC калькуляция ва харажат марказлари бўйича ҳисоб усуллари таққосланди | Самарали ҳисоб усулларини танлаш ва уларни миллий шароитга мослаштириш имконини яратади |
| Таснифлаш ва гуруҳлаш | Харажатлар иқтисодий мазмуни, технологик жараёнлар ва ҳисоб объектлари бўйича ўрганилди | Харажатларни аниқ назорат қилиш ва таҳлил қилиш имкониятини оширади |
| Сабаб-оқибат таҳлили | Харажатларни юзага келтирувчи омиллар ва харажат драйверлари ўрганилди | Билвосита харажатларни адолатли тақсимлашга хизмат қилади |
| Калькуляцион таҳлил | Таннархни шакллантириш усуллари ва босқичли калькуляция имкониятлари баҳоланди | Геологик лойиҳалар бўйича ҳақиқий харажатларни аниқлаш имконини беради |

| | | |
|---|---|---|
| Меъёрий таҳлил | Бухгалтерия ҳисоби стандартлари ва халқаро талаблар ўрганилди | Ҳисоб тизимини амалдаги талабларга мувофиқ такомиллаштиришга асос бўлади |
| Аналитик усул | Харажат марказлари ва геологик объектлар кесими[25]да ҳисоб маълумотлари таҳлил қилинди | Бошқарув қарорларини қабул қилиш учун сифатли ахборот базасини шакллантиради |

Тадқиқот методологиясининг муҳим жиҳати шундаки, унда геология-қидирув ишларида харажатларни ҳисобга олиш масаласи фақат молиявий ҳисоб нуқтаи назаридан эмас, балки бошқарув қарорларини қўллаб-қувватловчи ахборот тизими сифатида қаралди. Бу ёндашув харажатларнинг ҳақиқий шаклланиш сабабларини аниқлаш, уларни тегишли объектларга тақсимлаш ва таннарх кўрсаткичларининг ишончлилигини таъминлаш имконини беради.

Шунингдек, тадқиқот жараёнида харажатларни ҳисобга олишнинг замонавий усулларидан бири бўлган Activity-Based Costing ёндашувининг геология-қидирув соҳаси учун мос жиҳатлари таҳлил қилинди.[3,4,7,23] Мазкур усул харажатларни фақат иш ҳажми ёки умумий кўрсаткичлар асосида эмас, балки уларни келтириб чиқарувчи технологик жараёнлар ва харажат драйверлари асосида тақсимлаш имконини бериши билан аҳамиятлидир.

Шундай қилиб, танланган методологик ёндашувлар геология-қидирув ишларида харажатларни туркумлаш, уларни ҳисоб объектлари бўйича тақсимлаш ва таннарх калькуляциясини такомиллаштириш бўйича илмий асосланган хулоса ва таклифлар ишлаб чиқиш имконини берди.

**Натижалар ва муҳокама**

Олиб борилган тадқиқот натижалари геология-қидирув ишларида харажатларни ҳисобга олиш тизими оддий ишлаб чиқариш корхоналаридаги харажатлар ҳисобидан бир қатор хусусиятлари билан фарқ қилишини кўрсатди. Геология-қидирув жараёнларида харажатлар шаклланиши бевосита табиий шароитлар, геологик объектларнинг мураккаблиги, қидирув ишларининг давомийлиги, технологик жараёнларнинг кўп босқичлилиги ҳамда олинган натижаларнинг олдиндан аниқ бўлмаслиги билан боғлиқ. Шу сабабли мазкур соҳада харажатларни ҳисобга олиш ва таннархни шакллантиришга нисбатан анъанавий ёндашувлар ҳар доим ҳам тўлиқ самара бермайди.

Тадқиқот жараёнида геология-қидирув ишларида амалга ошириладиган харажатлар таркиби таҳлил қилиниб, уларни иқтисодий мазмуни, технологик

[1] Тадқиқотчи ишланмалари

жараёндаги ўрни ва бошқарув қарорларига таъсири нуқтаи назаридан туркумлаш зарурлиги аниқланди. Амалдаги ҳисоб тизимларида кўп ҳолларда харажатлар умумлаштирилган моддалар бўйича акс эттирилади. Бу эса алоҳида геологик объектлар, қидирув майдонлари ёки лойиҳалар бўйича ҳақиқий харажатларни аниқлаш, уларнинг самарадорлигини баҳолаш ва келгуси инвестиция қарорларини асослаш имкониятларини чеклайди.

Геология-қидирув ишларида харажатларни тўғри туркумлаш, аввало, уларни бошқариш самарадорлигини оширишга хизмат қилади. Тадқиқот натижаларига кўра, харажатларни қуйидаги асосий белгилар бўйича гуруҳлаш мақсадга мувофиқ ҳисобланади: технологик жараёнлар бўйича, харажат марказлари бўйича, геологик объектлар бўйича ва иқтисодий мазмунига кўра. Бундай ёндашув харажатларнинг қайси жараёнда, қайси объект учун ва қандай сабабларга кўра юзага келганини аниқлаш имконини беради.

Геология-қидирув ишларида харажатларнинг асосий қисми бевосита қидирув жараёни билан боғлиқ бўлгани ҳолда, маълум қисми билвосита хусусиятга эга бўлади. Масалан, геологик тадқиқотлар, бурғилаш ишлари, намуна олиш, лаборатория таҳлиллари каби харажатлар муайян объект билан тўғридан-тўғри боғланиши мумкин. Бироқ бошқарув, техник хизмат кўрсатиш, ускуналардан фойдаланиш ва умумий ишлаб чиқариш харажатларини тақсимлашда анъанавий усуллар етарли даражада аниқ натижа бермаслиги мумкин. Шу боис тадқиқотда харажатларни уларни юзага келтирувчи омиллар - харажат драйверлари асосида тақсимлаш зарурлиги асосланди.

Таҳлиллар натижасида геология-қидирув ишларида таннарх калькуляциясини такомиллаштириш учун босқичли калькуляция моделидан фойдаланиш мақсадга мувофиқлиги аниқланди. Мазкур ёндашувга кўра, харажатлар қидирув жараёнининг ҳар бир босқичи бўйича алоҳида шакллантирилади ва якуний таннарх кўрсаткичи босқичлар кесимида йиғилади. Бу усул қидирув ишларининг қайси босқичида асосий харажатлар юзага келаётганини аниқлаш, ресурслардан фойдаланиш самарадорлигини баҳолаш ва ортиқча харажатларни камайтириш имконини беради.

Тадқиқот натижаларини умумлаштирган ҳолда геология-қидирув ишларида харажатларни ҳисобга олиш ва таннарх калькуляциясини такомиллаштиришнинг асосий йўналишлари қуйидаги жадвалда келтирилган.

**2-жадвал**

**Геология-қидирув ишларида харажатлар ҳисоби ва таннарх калькуляциясини такомиллаштириш йўналишлари[26]**

| Муаммоли жиҳат | Амалдаги ҳолатнинг хусусияти | Таклиф этилаётган такомиллаштириш йўналиши | Кутиладиган натижа |
|---|---|---|---|
| Харажатларнинг умумий кўринишда ҳисобга олиниши | Харажатлар алоҳида объектлар ва лойиҳалар кесимида етарлича деталлаштирилмайди | Харажатларни геологик объектлар, лойиҳалар ва харажат марказлари бўйича аналитик ҳисобга олиш | Ҳар бир қидирув объекти бўйича ҳақиқий харажатларни аниқлаш имконияти ошади |
| Билвосита харажатларни тақсимлаш муаммоси | Умумий харажатлар шартли базалар асосида тақсимланиши мумкин | Харажат драйверлари асосида тақсимлаш усулини жорий этиш | Таннарх кўрсаткичларининг аниқлиги ва ишончлилиги ошади |
| Таннархни ҳисоблашда босқичлар инобатга олинмаслиги | Барча харажатлар умумий натижа сифатида шакллантирилади | Қидирув жараёнлари бўйича босқичли калькуляция тизимини қўллаш | Ҳар бир жараён самарадорлигини баҳолаш имкони пайдо бўлади |
| Бошқарув қарорлари учун ахборот етишмаслиги | Ҳисоб маълумотлари асосан ташқи ҳисобот мақсадларига йўналтирилган | Бошқарув ҳисоби элементларини кенгайтириш | Раҳбарият учун тезкор ва асосланган қарор қабул қилиш имконияти яратилади |
| Харажатларнинг иқтисодий мазмуни бўйича етарлича таснифланмаслиги | Харажат турлари ўртасидаги фарқлар тўлиқ очиб берилмайди | Иқтисодий мазмун, технологик жараён ва мақсад бўйича комплекс туркумлаш тизимини жорий этиш | Харажатларни назорат қилиш ва таҳлил қилиш самарадорлиги ошади[27] |

Тадқиқот натижалари шуни кўрсатдики, геология-қидирув ишларида харажатларни ҳисобга олиш тизимини такомиллаштириш учун фақат ҳисоб объектларини кенгайтиришнинг ўзи етарли эмас, балки харажатларнинг шаклланиш сабабларини чуқур ўрганиш ҳам талаб этилади. Шу нуқтаи назардан, харажат драйверлари асосидаги ёндашув геология соҳаси учун самарали воситалардан бири бўлиши мумкин. Чунки мазкур усул харажатларни шартли

[26] Тадқиқотчининг ишланмалари

тақсимлашдан воз кечиб, уларни аниқ технологик жараёнлар билан боғлаш имконини беради.

Шунингдек, тадқиқот жараёнида геологик лойиҳалар бўйича харажатларни алоҳида назорат қилиш зарурлиги аниқланди. Ҳар бир қидирув объектининг истиқболлилиги, сарфланган маблағлар ҳажми ва олинган натижаларини солиштириш орқали инвестицияларнинг самарадорлигини баҳолаш мумкин бўлади. Бу эса нафақат бухгалтерия ҳисобини такомиллаштириш, балки стратегик бошқарув қарорларини қабул қилиш сифатини ҳам оширади.

Халқаро тажриба таҳлили шуни кўрсатадики, ривожланган мамлакатларда қазиб чиқариш ва геология соҳасида фаолият юритувчи корхоналар харажатларни бошқаришда замонавий ҳисоб усулларидан, жумладан, Activity-Based Costing, харажат марказлари бўйича ҳисоб ва рақамли таҳлил воситаларидан кенг фойдаланмоқда. Ушбу ёндашувларни миллий геология-қидирув амалиётига мослаштириш соҳада ҳисоб маълумотларининг сифатини ошириш ва харажатларни самарали бошқариш имконини беради.[3,5,20,21,22,23]

Умуман олганда, тадқиқот натижалари геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини такомиллаштириш корхоналарнинг иқтисодий самарадорлигини ошириш, молиявий ахборотларнинг шаффофлигини таъминлаш ва инвестиция қарорларининг асосланганлигини кучайтириш учун муҳим омил эканлигини кўрсатди.

**Хулоса ва таклифлар**

Ушбу тадқиқотда геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини ташкил этишнинг назарий-услубий ҳамда амалий жиҳатлари комплекс тарзда таҳлил қилинди. Таҳлил натижалари мазкур соҳада қўлланилаётган ҳисоб тизими геология-қидирув ишларининг технологик хусусиятлари, юқори инвестиция таваккалчилиги, қидирув ишларининг давомийлиги ва натижаларнинг ноаниқлиги билан боғлиқ омилларни тўлиқ ҳисобга олмаслигини кўрсатди. Бу эса харажатларнинг иқтисодий мазмунини холис акс эттириш, таннархни аниқ шакллантириш ҳамда бошқарув қарорларини ишончли ахборот билан таъминлаш имкониятларини маълум даражада чеклайди.

Тадқиқот давомида харажатларни туркумлашнинг амалдаги ёндашувлари баҳоланиб, геология-қидирув соҳаси учун уларнинг айрим жиҳатлари етарли эмаслиги аниқланди. Хусусан, харажатларни фақат иқтисодий элементлар ёки калькуляция моддалари бўйича ҳисобга олиш қидирув ишларининг ҳақиқий иқтисодий мазмунини тўлиқ очиб бермайди. Шу муносабат билан харажатларни геологик лойиҳалар, қидирув объектлари, технологик босқичлар, харажат

марказлари ва масъулият марказлари кесимида аналитик ҳисобга олиш концепцияси илмий жиҳатдан асосланди. Мазкур ёндашув ҳар бир геологик объект бўйича ресурслардан фойдаланиш самарадорлигини баҳолаш, таннархнинг шаклланиш манбаларини аниқлаш ва молиявий ахборотнинг аналитик қийматини ошириш имконини беради.

Тадқиқотнинг муҳим натижаларидан бири сифатида геология-қидирув ишларида таннарх калькуляциясини шакллантиришда босқичли ёндашувни қўллашнинг афзалликлари асослаб берилди. Қидирув жараёнининг ҳар бир технологик босқичида юзага келадиган харажатларни мустақил ҳисоб объектлари сифатида шакллантириш кейинги босқичларда таннархнинг изчил ва иқтисодий жиҳатдан асосланган тарзда ҳисобланишини таъминлайди. Бу эса геологик тадқиқотлар, геофизик ишлар, бурғилаш, лаборатория таҳлиллари ва бошқа технологик жараёнлар бўйича ресурслар сарфини баҳолаш ҳамда харажатлар динамикасини доимий мониторинг қилиш имкониятини кенгайтиради.

Таҳлил натижалари билвосита харажатларни тақсимлашда қўлланилаётган анъанавий ёндашувлар ҳам барча ҳолатларда иқтисодий жиҳатдан асосланган натижа бермаслигини кўрсатди. Шу муносабат билан харажатларни уларни келтириб чиқарувчи омиллар, яъни харажат драйверлари асосида тақсимлаш усулининг геология-қидирув соҳаси учун мослиги асосланди. Ушбу ёндашув билвосита харажатларнинг ҳақиқий манбаларини аниқлаш, уларни тегишли объектларга асосланган тарзда тақсимлаш ва таннарх ҳисоб-китобларининг ишончлилигини ошириш имконини яратади. Натижада бошқарув ҳисоби маълумотларининг таҳлилий имкониятлари кенгаяди ҳамда стратегик қарорларни қабул қилиш учун зарур бўлган ахборот сифати яхшиланади.

Тадқиқотнинг назарий аҳамияти геология-қидирув ишларида харажатларни туркумлашнинг иқтисодий мазмунга асосланган такомиллаштирилган концептуал ёндашуви ишлаб чиқилганлиги билан изоҳланади. Илмий жиҳатдан асосланган мазкур ёндашув геология соҳасида харажатларнинг шаклланиш жараёнини комплекс баҳолаш, уларнинг функционал вазифалари ва технологик хусусиятларини ҳисобга олиш имконини беради. Шу билан бирга, тадқиқот натижалари харажатлар ҳисоби, бошқарув ҳисоби ва таннарх калькуляцияси назариясини геология-қидирув фаолияти хусусиятлари билан бойитишга хизмат қилади.

Тадқиқотнинг амалий аҳамияти шундан иборатки, таклиф этилган услубий ёндашувлар геология-қидирув ташкилотларида бухгалтерия ҳисоби ва бошқарув

ҳисоби тизимини такомиллаштириш, аналитик ҳисобнинг деталлаштирилиш даражасини ошириш, харажатлар мониторингини кучайтириш ҳамда ички назорат самарадорлигини юксалтириш учун илмий асос бўлиб хизмат қилиши мумкин. Шунингдек, ушбу таклифлар рақамли бухгалтерия тизимлари ва корпоратив ахборот платформаларига интеграция қилинганда харажатларни реал вақт режимида кузатиш, таҳлил қилиш ва прогнозлаш имкониятларини кенгайтиради.

Мақоланинг илмий янгилиги геология-қидирув ишларида харажатларни туркумлаш, уларни геологик лойиҳалар ва технологик босқичлар кесимида аналитик ҳисобга олиш, билвосита харажатларни харажат драйверлари асосида тақсимлаш ҳамда босқичли таннарх калькуляцияси моделини комплекс тарзда таклиф этилганлиги билан белгиланади. Ушбу ёндашувлар геология-қидирув соҳасида молиявий ва бошқарув ҳисоби ўртасидаги интеграцияни кучайтириш ҳамда ҳисоб ахборотининг бошқарув қийматини оширишга хизмат қилади.

Келгусидаги илмий изланишларда геология-қидирув ишларида рақамли бухгалтерия технологиялари, сунъий интеллект ва катта маълумотлар (Big Data) асосида харажатларни прогнозлаш, геологик лойиҳаларнинг иқтисодий самарадорлигини баҳолаш ҳамда экологик ва ижтимоий харажатларни таннарх таркибига интеграция қилиш масалаларини тадқиқ этиш мақсадга мувофиқ ҳисобланади. Бу йўналишларда олиб бориладиган тадқиқотлар геология-қидирув ташкилотларида замонавий бошқарув ҳисоби моделини шакллантиришга ва соҳанинг рақобатбардошлигини оширишга хизмат қилади.

Умуман олганда, тадқиқот натижалари геология-қидирув ишларида харажатларни туркумлаш ва таннарх калькуляциясини такомиллаштириш ҳисоб тизимининг шаффофлигини ошириш, ресурслардан фойдаланиш самарадорлигини юксалтириш, геологик лойиҳаларнинг иқтисодий натижадорлигини холис баҳолаш ва инвестиция қарорларининг илмий асосланганлигини таъминлашда муҳим аҳамият касб этишини тасдиқлади. Таклиф этилган услубий ёндашувларни амалиётга жорий этиш геология-қидирув ташкилотларида молиявий бошқарув сифатини яхшилаш, миллий ҳисоб амалиётини халқаро илғор ёндашувларга яқинлаштириш ҳамда тармоқнинг барқарор иқтисодий ривожланишига муносиб ҳисса қўшиши мумкин.

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# TURKIY SAVDO-SANOAT PALATASI ITTIFOQINING O‘ZBEKISTON IQTISODIY HAMKORLIK MUNOSABATLARIDA TUTGAN O‘RNI

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***Annotatsiya:*** *Maqolada Turkiy davlat davlatlar tashkilotiga a’zo bo‘lib kirganidan boshlab O‘zbekistonning tashkilot doirasidagi va uning tarkibidagi mamlakatlar bilan tashqi iqtisodiy aloqalari hamda Turkiy savdo-sanoat palatasi ittifoqining tashkil qilinishi bilan amalga oshirilgan islohotlar tarixi va ularning natijasi tahlil qilingan.*

***Kalit so‘zlar:*** *Tukiy davlatlar tashkiloti, xalqaro iqtisodiy hamkorlik tarixi, Turkiy investitisiya jamg‘armasi, Turkiy savdo-sanoat palatasi ittifoqi, xorijiy investitsiyalar, yashil iqtisodiyot.*

***Аннотация:*** *В статье анализируются результаты реформ, проведенных с созданием Тюркской торгово-промышленной палаты после вступления Тюркского государства в Организацию государств, внешнеэкономические отношения Узбекистана со странами-членами организации и ее структура, а также истории результаты реформ, проведенных с созданием Тюркской торгово-промышленной палаты.*

***Ключевые слова:*** *Тюркская государственная организация, история международного экономического сотрудничества, Турецкий инвестиционный фонд, Тюркская торгово-промышленная палата, иностранные инвестиции, зеленая экономика.*

***Abstract:*** *The article analyzes the results of the reforms implemented with the establishment of the Turkic Chamber of Commerce and Industry Union since the Turkic State became a member of the Organization of States, the foreign economic relations of Uzbekistan with the countries within the organization and its structure, and the results of the reforms implemented with the establishment of the Turkic Chamber of Commerce and Industry Union.*

***Keywords:*** *Turkic State Organization, history of international economic cooperation, Turkish Investment Fund, Turkic Chamber of Commerce and Industry Union, foreign investments, green economy.*

**Kirish.** TDT tashkil etilgandan buyon iqtisodiy hamkorlik bo‘yicha jami 13 vazirlik va 15 ishchi guruh yig‘ilishi o‘tkazildi [1]. Ushbu yig‘ilishlarda erishilgan kelishuvlarga muvofiq TDT doirasida amalga oshirilayotgan iqtisodiy hamkorlikni yanada samarali yo‘lga qo‘yilishini ta’minlovchi asosiy mexanizm- tuzilmalar ishga tushirildi. Ulardan eng asosiylari: 1) Turkiy Savdo-sanoat palatasi ittifoqi, 2) Savdoni osonlashtirish qo‘mitasi, 3) Turkiy Investitsiya Jamg‘armasi hisoblanadi.

**Asosiy qism**. 2019-yilning 17-may kuni Qozog‘iston poytaxti Nur-Sultonda[28] Turkiy tilli davlatlar sanoat va savdo palatasi Nizomini imzolash marosimi bo‘lib o‘tdi [2]. Turkiyzabon davlatlar sanoat va savdo palatasi tarkibiga Ozarboyjon Respublikasi Tadbirkorlar-Ish beruvchilar tashkilotlari milliy konfederatsiyasi, Qozog‘iston Respublikasi Tadbirkorlar milliy palatasi, Qirg‘iziston Respublikasi Savdo-sanoat palatasi, Turkiya savdo palatalari va tovar-xomashyo ittifoqi, Turkmaniston Respublikasi Savdo-sanoat palatasi va O‘zbekiston Savdo-sanoat palatasi kiradi. Vengriya hamda 2024-yilgacha Turkmaniston iqtisodiy tuzilmaning kuzatuvchisi hisoblangan.

2019-yilning 31-iyul kuni Istanbulda Turkiya, Ozarboyjon, Qozog‘iston, Qirg‘iziston, Turkmaniston va O‘zbekiston o‘rtasidagi o‘zaro savdo va investitsiya imkoniyatlarini kengaytirishni qo‘llab-quvvatlash maqsadida tashkil etilgan Turkiyzabon davlatlar Savdo-sanoat palatasining birinchi yig‘ilishi bo‘lib o‘tadi [3]. Unda Turkiy tilli davlatlar Savdo-sanoat palatasining tashkiliy tuzilmasi tasdiqlandi. Savdo-sanoat palatasining maqsadi turkiyzabon davlatlarning biznes sohasida hamkorlikni rivojlantirish va shu orqali iqtisodiy integratsiya, iqtisodiy va ijtimoiy rivojlanishga erishish deb belgilandi.

2019-yilning 14-oktyabr kunida Boku shahrida Turkiy tilli davlatlar biznes forumi ham bo‘lib o‘tdi. Turkiy tilli davlatlar savdo-sanoat palatalari ittifoqi tomonidan tashkil etilgan forumda Turkiy kengashga a’zo davlatlar ishbilarmon doiralarining 600 ga yaqin vakillari ishtirok etdi. Bu davrda Turkiy tilli davlatlar savdo-sanoat palatalari uyushmasiga Ozarboyjon, Turkiya, Qirg‘iziston, Qozog‘iston savdo-sanoat palatalari a’zo, Vengriya savdo-sanoat palatasi kuzatuvchi maqomiga ega bo‘lgan. Bokudagi anjumanda mazkur masala yakuniy bosqichda ko‘rib chiqildi va O‘zbekiston Savdo-sanoat palatasi Turkiy tilli davlatlar savdo-sanoat palatalari uyushmasiga a’zo bo‘lib kirishiga doir bayonnoma imzolandi. Bundan tashqari, “O‘zavtosanoat” aksiyadorlik

[28] Nur-Sulton shahri (avvalgi va hozirgi nomi – Ostona) – 2019-yil 23-mart oyidan 2022-yil 17-sentyabrgacha Qozog‘iston Respublikasi poytaxti bo‘lgan. 2022-yil 17-sentyabrda shaharga Ostona nomi qaytarilgan va hozirgi kunda ham Ostona shahri mamlakat poytaxti hisoblanadi (*M.B.*).

jamiyati, “O‘zeltexsanoat”, “O‘zcharmpoyabzal” uyushmalari va boshqa tarmoqlarga qarashli korxonalar Ozarboyjon tomoni bilan qator istiqbolli kelishuvlarga erishdi [4].

Navbatdagi vazifa Toshkentdagi biznes forumida O‘zbekiston Savdo-sanoat palatasi Turkiy tilli davlatlar savdo-sanoat palatalari ittifoqiga a’zo bo‘lib kirishi masalasini amalga oshirish edi. O‘zbekiston Turkiy kengashning rasmiy a’zoligiga qabul qilingach, Turkiy tilli davlatlar savdo-sanoat palatalari ittifoqi a’zoligiga ham qo‘shildi.

2021-yilning 10-noyabr kuni Istanbul shahrida Turkiy savdo-sanoat palatasi Bosh assambleyasi hamda Turkiy tilli mamlakatlar biznes forumi tashkil qilinadi [5]. Unda Turkiy Kengashga a’zo davlatlar – Ozarboyjon, Qozog‘iston, Qirg‘iziston, Turkiya va O‘zbekiston savdo-sanoat palatalari raislari ham ishtirok etishdi. O‘zbekiston tomoni forumda pandemiya bilan bog‘liq qiyinchiliklarga qaramay, mamlakatimiz Savdo-sanoat palatasi Turkiy Kengashga a’zo mamlakatlar savdo-sanoat palatalari bilan faol hamkorlik qilishni davom ettirayotganini hamda tashkilotga a’zo davlatlar o‘rtasidagi savdo aylanmasini oshirish uchun eksport qiluvchi kompaniyalar uchun bojxona imtiyozlarini berish va turkiy mamlakatlar o‘rtasida savdo tartib-qoidalarini soddalashtirish orqali tashqi bozorlarga chiqish uchun zarur shart-sharoitlarni yaratishni taklif qildi. Shu kabi ilgari surilgan g‘oya va takliflar hamda amalga oshiriliyotgan tadbirlar Turkiy savdo-sanoat palatasining iqtisodiy hamkorlik tarixida alohida o‘ringa ega tuzilmaga aylanganligini anglatar edi. 2021-yining noyabr oyidan boshlab Istanbulda Turkiy Savdo-sanoat palatasi ittifoqi doimiy kotibiyati ish boshlaydi.

2023-yilning 3-iyul kuni O‘zbekiston Savdo-sanoat palatasi tashabbusi bilan Toshkentda Turkiy tilli davlatlar savdo-sanoat palatalari ittifoqining navbatdan tashqari yig‘ilishi bo‘lib o‘tdi. Yig‘ilish “Yangi O‘zbekiston: Biznes va investitsiyalar uchun yangi istiqbollar” deb nomlandi [6]. Yig‘ilish ishtirokchilari tomonidan so‘nggi yillarda mamlakatda biznes yuritish uchun yaratilgan qulay investitsiya sharoitlari uchun O‘zbekiston rahbariyatiga turkiy dunyo tadbirkorlari nomidan minnatdorchilik bildirib, Yangi O‘zbekistonda amalga oshirilayotgan izchil islohotlar biznesni jadal rivojlantirish uchun keng imkoniyatlar yaratganini, mamlakatning investitsiya jozibadorligi keskin oshganini va xorijiy kapital ishtirokidagi korxonalar soni qariyb to‘rt baravar ko‘payganini ta’kidlandi. Demak, O‘zbekistonda bu davrga kelib savdo, investitsiya, transport, energetika sohasidagi hamkorliklarni o‘z ichiga olgan ko‘p tomonlama iqtisodiy hamkorlikni kengaytirish choralalarini amalga oshirishga katta ahamiyat berildi va bu borada tarixiy natijalar qayd etib borildi.

Turkiy davlatlar Savdo-sanoat palatalari ittifoqi Bosh assambleyasining 2024-yilning 6-mart kuni onlayn formatda o‘tkazilgan navbatdan tashqari yig‘ilishida [7] Turkmaniston Savdo-sanoat palatasining Ittifoqqa to‘laqonli a’zo sifatida qo‘shilishi muhokama qilinib, barcha Ittifoq a’zolari Turkmaniston Savdo-sanoat palatasining tashkilotga qo‘shilishini bir ovozdan ma’qulladi [8]. Qozog‘iston Respublikasi 2026-yilda Turkiy tilli Davlatlar Savdo-sanoat palatalari ittifoqiga (TCCI) raislik qiladi [9].

**Xulosa.** Turkiy davlatlar tashkilotiga a’zo davlatlar bilan imzolangan bitim va kelishuvlar asosida uning negizida faoliyat ko‘rsatuvchi iqtisodiy tuzilmalarga va bo‘limlarga ham asos solindi. 2019-yilda Qozog‘istonda Turkiy tilli davlatlar sanoat va savdo palatasi Nizomi imzolandi. TDTning 2022-yil Samarqandda bo‘lib o‘tgan 9-sammitida Turk davlatlari rahbarlari tomonidan TDT Savdoni yengillashtirish Strategiyasini qabul qilib, ushbu hujjat asosida Savdoni osonlashtirish qo‘mitasi (SOQ) tashkil etildi. “Turkiy investitsiya jamg‘armasi **(**TIJ)ni ta’sis etish to‘g‘risidagi Bitim” 2023-yilda Anqarada imzolandi. Bunday tuzilmalarga asos solinishdan ko‘zlangan asosiy maqsad iqtisodiy sohada aloqalarni kushaytirishda yangi marralarni qo‘lga kiritish edi.

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# HUDUDIY NEFT BAZALARI FAOLIYATIGA DAVLAT-XUSUSIY SHERIKLIK MEXANIZMLARI HAMDA XUSUSIY INVESTITSIYALARNI JALB QILISHNING IQTISODIY SAMARADORLIGI

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***Annotatsiya.*** *Mazkur tezisda hududiy neft bazalarini modernizatsiya qilish va ularning operatsion samaradorligini oshirishda davlat-xususiy sheriklik (DXSh) mexanizmlaridan foydalanishning iqtisodiy asoslari tadqiq etilgan. Tadqiqotda institutsional tahlil, hayotiy sikl xarajatlari, diskontlangan pul oqimi, Value for Money va ssenariy-sezgirlik usullari uyg‘unlashtirildi. Neft bazalari uchun mavjud aktivni rekonstruksiya qilish–moliyalashtirish–boshqarish–topshirish elementlarini birlashtirgan gibrid model, natijaga bog‘langan tarif va KPI tizimi taklif etildi. Shartli model hisobida 100 mlrd so‘mlik investitsiya, 12 yillik davr va 16 foizlik diskont stavkasida loyiha NPVsi 32,45 mlrd so‘m, IRR 23,25 foiz va PI 1,325 ni tashkil etdi. Biroq salbiy ssenariyda NPVning manfiylashishi DXSh samaradorligi avtomatik emasligini, talab, tarif va qurilish xatarlarini asosli taqsimlash zarurligini ko‘rsatdi. Ilmiy yangilik sifatida moliyaviy, budjet va ijtimoiy-ekologik natijalarni alohida hisoblaydigan uch konturli baholash modeli asoslandi.*

***Kalit so‘zlar:*** *hududiy neft bazasi, davlat-xususiy sheriklik, xususiy investitsiya, iqtisodiy samaradorlik, NPV, IRR, Value for Money, risklarni taqsimlash, logistika, raqamlashtirish.*

## Kirish

Hududiy neft bazalari neft mahsulotlarini qabul qilish, saqlash, sifatini nazorat qilish va iste’molchilarga uzluksiz yetkazib berish zanjirining tayanch bo‘g‘inidir. Mazkur obyektlarda rezervuar parkining jismoniy eskirishi, o‘lchash va hisobga olish tizimlarining yetarli avtomatlashtirilmagani, yuklash-tushirishdagi texnologik yo‘qotishlar, energiya sarfi hamda ekologik xavfsizlik talablarining kuchayishi kapital sig‘imli modernizatsiyani talab qiladi. Faqat budjet mablag‘iga tayanish esa yangilash sur’atini sekinlashtirishi va aktivning butun hayotiy sikli bo‘yicha xarajatlarni optimal boshqarishga imkon bermasligi mumkin.

O‘zbekiston Respublikasining “Davlat-xususiy sheriklik to‘g‘risida”gi O‘RQ–537-son Qonunida DXSh davlat va xususiy sherikning muayyan muddatga yuridik jihatdan rasmiylashtirilgan, resurslarni birlashtirishga asoslangan hamkorligi sifatida belgilangan; loyiha konsepsiyasi esa qiymat, moliyalashtirish manbai, rentabellik, samaradorlik va dolzarblik asoslarini qamrab olishi lozim [1]. 2024-yil 30-avgustdagi PQ–308-son qaror bilan 2030-yilga qadar DXSh loyihalariga kamida 30 mlrd AQSH dollari miqdorida xususiy investitsiya jalb qilish maqsadi belgilangan [2]. Bu institutsional yo‘nalish hududiy ishlab chiqarish va logistika infratuzilmasida xususiy kapital, texnologiya hamda boshqaruv kompetensiyasini birlashtirish uchun imkoniyat yaratadi.

Shu bilan birga, DXSh oddiy moliyalashtirish manbai yoki davlat qarzini balansdan tashqariga chiqarish vositasi sifatida talqin qilinmasligi kerak. Jahon banki va OECD yondashuvlarida DXShning asosiy mezoni xususiy moliya faktining o‘zi emas, balki an’anaviy davlat xaridiga nisbatan yaxshiroq “narx–sifat” natijasi, hayotiy sikl bo‘yicha xarajatlarning kamayishi, raqobat va xatarlarning ularni eng yaxshi boshqara oladigan tomonga berilishidir [4; 5]. Demak, tadqiqotning maqsadi hududiy neft bazalariga xususiy investitsiya jalb qilishning maqbul DXSh konfiguratsiyasini ishlab chiqish va uning iqtisodiy samaradorligini baholash mezonlarini asoslashdan iborat.

Tadqiqot gipotezasi shundan iboratki, modernizatsiya, moliyalashtirish va ekspluatatsiya majburiyatlari yagona uzoq muddatli shartnomada birlashtirilib, to‘lovlar aniq o‘lchanadigan natija ko‘rsatkichlariga bog‘lansa, texnologik yo‘qotishlar va operatsion xarajatlar kamayadi, aktivlardan foydalanish koeffitsiyenti oshadi hamda davlatning bir martalik kapital yuklamasi pasayadi. Biroq ushbu natija faqat to‘liq boshlang‘ich audit, raqobatli tanlov, realistik tarif modeli va shartli budjet majburiyatlarini cheklash sharti bilan yuzaga keladi.

**Tadqiqot metodologiyasi va samaradorlik mezonlari**

Tadqiqotda tizimli va institutsional tahlil, qiyosiy baholash, hayotiy sikl xarajatlari (Life-Cycle Costing), diskontlangan pul oqimi (DCF), ssenariy hamda sezgirlik tahlili qo‘llanildi. Loyiha samaradorligini baholash to‘rtta o‘zaro bog‘liq, ammo bir-biriga qo‘shib yuborilmaydigan kesimda olib borilishi zarur: birinchisi — loyiha pul oqimlari bo‘yicha moliyaviy samaradorlik; ikkinchisi — xususiy investor kapitalining daromadliligi; uchinchisi — davlat budjeti uchun to‘g‘ridan-to‘g‘ri va shartli majburiyatlar; to‘rtinchisi — hududiy iqtisodiyot uchun ijtimoiy-ekologik samara. Bunday ajratish bir tomondagi foydani boshqa tomondagi yashirin xarajat hisobiga “samaradorlik” sifatida ko‘rsatish xavfini kamaytiradi.

Moliyaviy baholashda sof joriy qiymat (NPV), ichki daromadlilik normasi (IRR), rentabellik indeksi (PI), oddiy va diskontlangan qoplash muddati qo‘llanadi. NPV quyidagicha aniqlanadi:

$$NPV = -I_0 + \Sigma_{t=1}^{n} NCF_t/(1+r)^t + RV/(1+r)^n \quad (1)$$

bu yerda $I_0$ — boshlang‘ich investitsiya; $NCF_t$ — t-yildagi sof pul oqimi; r — loyiha xatarlarini aks ettiruvchi diskont stavkasi; RV — shartnoma yakunidagi qoldiq qiymat; n — loyiha muddati. PI diskontlangan tushumlarning boshlang‘ich investitsiyaga nisbati sifatida aniqlanadi. NPV > 0, IRR kapitalning talab etiladigan daromadlilik me’yoridan yuqori va PI > 1 bo‘lsa, loyiha moliyaviy jihatdan qabul qilinishi mumkin. Biroq bu holatning o‘zi DXSh shakli eng yaxshi variant ekanini isbotlamaydi.

DXShning davlat uchun nisbiy afzalligi Value for Money (VfM) orqali an’anaviy davlat xaridi bilan taqqoslanadi:

$$VfM = PSC_r - PPP_r \quad (2)$$

bu yerda $PSC_r$ — davlat tomonidan an’anaviy moliyalashtirish va boshqarish variantining xatarlar hamda raqobat neytralligi tuzatmalaridan keyingi diskontlangan qiymati; $PPP_r$ — DXSh variantidagi davlat to‘lovlari, kafolatlar, kompensatsiyalar va davlat zimmasida qolgan xatarlarning diskontlangan qiymati. VfM musbat bo‘lsa, DXSh nisbatan samarali deb qaraladi. Hisobda mahsulot yo‘qotishining qisqarishi, energiya va ta’mirlash tejamkorligi, qo‘shimcha terminal xizmatlari, bekor turishning kamayishi hamda asosli hisoblangan ekologik xatarlar qiymati inobatga olinadi. Sug‘urta to‘lovi bilan qoplanadigan zarar va “oldi olingan zarar”ni bir vaqtning o‘zida kiritish kabi ikki karra hisobga olishga yo‘l qo‘yilmaydi.

Amaliy loyihaoldi tadqiqoti uchun kamida so‘nggi uch–besh yillik yuk aylanmasi, mahsulotlar kesimidagi tabiiy va texnologik yo‘qotishlar, elektr energiyasi sarfi, ta’mirlash xarajatlari, avariya va bekor turishlar, rezervuarlarning texnik holati, o‘lchash xatolari, debitorlik, yer va mulk huquqlari hamda tarixiy ekologik majburiyatlar inventarizatsiyasi zarur. Ana shunday bazaviy ko‘rsatkichlar bo‘lmasa, KPI bo‘yicha tejalgan mablag‘ni aniqlash va xususiy operator natijasini xolis baholash imkonsiz bo‘ladi.

**Hududiy neft bazalari uchun maqbul DXSh modeli**

Mavjud hududiy neft bazalari uchun “rekonstruksiya–moliyalashtirish–ekspluatatsiya–topshirish” (ROT/DBFOM elementlari) gibrid modeli maqsadga muvofiq. Bunda davlat sherigi mavjud yer maydoni, rezervuarlar, temir yo‘l yoki avtomobil kirish infratuzilmasi va strategik xizmat vazifasini loyiha doirasiga kiritadi. Maxsus loyiha kompaniyasi esa texnik audit asosida rezervuarlarni rekonstruksiya

qiladi, avtomatlashtirilgan o‘lchash va dispetcherlik tizimini, sath va ortiqcha to‘lishdan himoya vositalarini, yong‘in xavfsizligi, bug‘larni tutish, oqova suv va sizib chiqishni nazorat qilish yechimlarini joriy etadi, moliyalashtiradi hamda belgilangan davrda obyektni boshqaradi. Shartnoma yakunida aktivlar oldindan belgilangan texnik holatda davlatga qaytariladi.

Texnik talablar faqat uskunalar ro‘yxati bilan emas, natija parametrlari bilan ifodalanishi kerak. IFCning xom neft va neft mahsulotlari terminallari bo‘yicha EHS qo‘llanmasi quruqlikdagi va qirg‘oqdagi saqlash terminallarining qabul qilish, saqlash va jo‘natish jarayonlaridagi ekologik, mehnat va jamoat xavfsizligi xatarlarini qamrab oladi [6]. API 2350 standarti esa neft saqlash rezervuarlarida ortiqcha to‘lishning oldini olish tizimi, signalga javob va boshqaruv dasturlariga urg‘u beradi [7]. Ushbu xalqaro yaxshi amaliyotlarni loyiha spetsifikatsiyasiga moslashtirish texnik xatarni xususiy sherikka o‘tkazishning o‘lchanadigan asosini yaratadi.

Daromad mexanizmi uch komponentdan tuzilishi mumkin: birinchisi, neft mahsulotlarini qabul qilish, saqlash va jo‘natish uchun hajmga bog‘liq terminal tarifi; ikkinchisi, davlatning strategik zaxira quvvatini doimiy tayyor holda saqlash uchun mavjudlik to‘lovi; uchinchisi, laboratoriya, aralashtirish, markirovkalash va kompleks logistika kabi qo‘shimcha xizmatlardan bozor daromadi. O‘RQ–537-son Qonun DXSh bitimida haq to‘lash, erkin foydalanish uchun to‘lov, foydalanganlik uchun to‘lov hamda daromadni taqsimlash shartlarini belgilash imkonini beradi [1]. Shuning uchun davlat kafolati butun talabni qoplashga emas, faqat strategik tayyorlik kabi o‘lchanadigan jamoat xizmatiga yo‘naltirilishi lozim.

To‘lov formulasi “bazaviy tarif × tasdiqlangan hajm + mavjudlik to‘lovi − KPI chegirmalari” tamoyiliga asoslanadi. Asosiy KPIlar sifatida mahsulot balansi tafovuti, texnologik yo‘qotishning kontrakt bazasiga nisbatan kamayishi, uskunalarning texnik tayyorlik koeffitsiyenti, bir tonna yuk aylanmasiga energiya sarfi, yuklash vaqti, o‘lchash tizimining metrologik ishonchliligi, ekologik hodisalar va mehnat xavfsizligi ko‘rsatkichlari olinadi. KPI buzilishi avtomatik chegirma, takroriy buzilish esa operatorni almashtirish yoki davlatning vaqtincha boshqaruvga kirish huquqini keltirib chiqarishi kerak.

Xatarlarni “eng ko‘p xususiy sektorga berish” emas, balki ularni eng past umumiy xarajat bilan boshqara oladigan tomonga biriktirish lozim [4]. Tavsiya etiladigan taqsimot quyidagi jadvalda umumlashtirilgan.

| Xatar turi | Davlat sherigi | Xususiy sherik | Taqsimlash tamoyili |
|---|---|---|---|
| Yer, mulk huquqi va tarixiy ifloslanish | Asosiy | Auditda aniqlangan yangi zarar | Topshirishgacha mavjud majburiyat davlatda; operatsion davrdagi yangi zarar operatorda |
| Loyihalash, qurilish va xarajat oshishi | Nazorat | Asosiy | Belgilangan narx va muddat; faqat davlat tashabbusidagi o‘zgarishlar kompensatsiya qilinadi |
| Talab va yuk aylanmasi | Strategik quvvat qismi | Bozor qismi | Minimal hajm kafolati o‘rniga cheklangan mavjudlik to‘lovi va daromad koridori |
| Tarif va qonunchilik o‘zgarishi | Asosiy/ shared | Samaradorlik majburiyati | Indeksatsiya formulasi va qonun o‘zgarishi bo‘yicha aniq kompensatsiya chegarasi |
| Operatsion yo‘qotish, xavfsizlik va ekologiya | Mustaqil monitoring | Asosiy | KPI chegirmasi, sug‘urta, zarar qoplash va favqulodda boshqaruv rejimi |

*Manba: muallif ishlanmasi, Jahon bankining xatarlarni ularni eng yaxshi boshqara oladigan tomonga taqsimlash tamoyili asosida [4].*

**Shartli iqtisodiy hisob-kitob va natijalar**

Taklif etilayotgan mexanizmning hisoblash mantig‘ini ko‘rsatish uchun shartli hududiy neft bazasi modeli tuzildi. Ushbu raqamlar muayyan korxonaning moliyaviy hisoboti emas va investitsiya qarori uchun texnik-iqtisodiy asos o‘rnini bosa olmaydi. Bazaviy farazlar: boshlang‘ich investitsiya — 100 mlrd so‘m; operatsiya davri — 12 yil; yillik sof pul oqimi — 25 mlrd so‘m; qoldiq qiymat — 15 mlrd so‘m; diskont stavkasi — 16 foiz. Yillik sof pul oqimi mahsulot yo‘qotishlari kamayishi, energiya va ta’mirlash tejamkorligi, qo‘shimcha yuk aylanmasi va xizmatlar marjasi hamda asosli baholangan bekor turish xatarining qisqarishidan shakllanadi.

| Ssenariy | CAPEX, mlrd so‘m | Yillik NCF, mlrd so‘m | Diskont, % | NPV, mlrd so‘m | IRR, % | PI |
|---|---|---|---|---|---|---|
| Salbiy | 110 | 20 | 18 | −12,08 | 15,25 | 0,890 |

| Ssenariy | CAPEX, mlrd so‘m | Yillik NCF, mlrd so‘m | Diskont, % | NPV, mlrd so‘m | IRR, % | PI |
|---|---|---|---|---|---|---|
| **Bazaviy** | **100** | **25** | **16** | **32,45** | **23,25** | **1,325** |
| Ijobiy | 95 | 30 | 14 | 77,92 | 30,48 | 1,820 |

*Izoh: barcha ssenariylarda muddat 12 yil va qoldiq qiymat 15 mlrd so‘m deb olingan. Hisob-kitob muallif tomonidan (1)-formula asosida bajarilgan.*

Bazaviy ssenariyda NPV 32,45 mlrd so‘m, IRR 23,25 foiz, PI 1,325, oddiy qoplash muddati 4 yil va diskontlangan qoplash muddati taxminan 6,89 yilni tashkil etadi. Bu farazlar doirasida loyiha qo‘shilgan qiymat yaratadi. 16 foiz diskont stavkasi va 15 mlrd so‘mlik qoldiq qiymatda NPVni nolga tenglashtiradigan yillik sof pul oqimi taxminan 18,76 mlrd so‘mdir. Demak, kontraktda texnologik va tijorat samarasi kamida shu chegaradan yuqori bo‘lishini ta’minlovchi operatsion model ko‘zda tutilishi kerak.

Salbiy ssenariyda kapital xarajatning 10 foizga oshishi, yillik sof pul oqimining 20 mlrd so‘mgacha tushishi va diskont stavkasining 18 foizga ko‘tarilishi NPVni −12,08 mlrd so‘mga olib keladi. Bu natija talabni haddan tashqari optimistik baholash, tarifni siyosiy qarorlar bilan muzlatib qo‘yish yoki rekonstruksiya paytida yashirin texnik nuqsonlar aniqlanishi loyihani moliyaviy jihatdan zaiflashtirishini ko‘rsatadi. Shu sababli tenderdan oldin rezervuarlar va quvurlarni instrumental diagnostika qilish, yuk aylanmasi bo‘yicha mustaqil bozor prognozi tuzish va kamida uchta ssenariyda qarzga xizmat ko‘rsatish koeffitsiyentini tekshirish zarur.

Davlat nuqtayi nazaridan ijobiy NPV yetarli mezon emas. Budjet tahlili mavjudlik to‘lovlari, kapital grant, soliq preferensiyalari, valyuta yoki minimal daromad kafolati, muddatidan oldin bekor qilish kompensatsiyasi va favqulodda holatdagi davlat xarajatlarini yagona fiskal reyestrda aks ettirishi lozim. Ijtimoiy-iqtisodiy tahlilda esa yoqilg‘i ta’minoti uzluksizligi, transport masofasining qisqarishi, mahalliy biznes uchun logistika xarajatlari, bandlik, emissiya va avariya xatari kabi tashqi samaralar alohida iqtisodiy narxlarda baholanadi. Moliyaviy NPV, budjet ta’siri va iqtisodiy ENPVni bir ko‘rsatkichka mexanik qo‘shish qarorning shaffofligini pasaytiradi.

Xususiy investitsiyalarni jalb qilish bo‘yicha tashkiliy-iqtisodiy takliflar

Birinchidan, hududiy neft bazalarini texnik holat, yuk aylanmasi, bozor radiusi, temir yo‘l va avtomobil tarmoqlariga ulanishi, ekologik xavf va modernizatsiya ehtiyojiga ko‘ra reytinglash lozim. Iqtisodiy jihatdan o‘zini oqlaydigan obyektlar tijorat

DXSh paketiga, strategik ahamiyatga ega, ammo talab zichligi past obyektlar esa cheklangan mavjudlik to‘lovi bilan aralash modelga kiritiladi. Doimiy subsidiya talab qiladigan va bozor talabi bo‘lmagan aktiv bo‘yicha DXSh emas, optimallashtirish yoki konservatsiya varianti ko‘rib chiqilishi kerak.

Ikkinchidan, loyiha tenderga chiqarilishidan oldin “toza boshlang‘ich nuqta” shakllantiriladi: aktiv va inventar qiymati, tarixiy ifloslanish, yer huquqi, texnik qarz, mavjud shartnomalar va xodimlar majburiyati tasdiqlanadi. O‘RQ–537-son Qonunga ko‘ra loyiha davlat yoki xususiy tashabbuskor tomonidan taklif qilinishi mumkin, biroq xususiy tashabbus ham innovatsion yondashuv va taraflar uchun mutanosib nafni asoslashga majbur [1]. Xususiy tashabbus raqobatni cheklamasligi; bozorda qiziqish sinovi va ochiq tanlov saqlanishi zarur.

Uchinchidan, tender mezoni eng yuqori bir martalik to‘lov emas, balki hayotiy sikl bo‘yicha eng yaxshi iqtisodiy taklif bo‘lishi kerak. Baholashda so‘ralayotgan mavjudlik to‘lovi, terminal tarifi, xususiy kapital ulushi, energiya sarfi, kafolatlangan texnik tayyorlik, mahsulot yo‘qotishi, rekonstruksiya muddati va aktivni qaytarish holati birlashtiriladi. Moliyaviy modelning elektron nusxasi, asosiy farazlar va sezgirlik natijalari vakolatli organ tomonidan stress-test qilinadi.

To‘rtinchidan, xususiy kapital va qarz mablag‘lari o‘rtasidagi nisbat kreditor talabi bilan emas, loyiha pul oqimining barqarorligi bilan belgilanadi. Haddan tashqari qarz yuklamasi tarifni oshiradi va qayta moliyalashtirish xavfini kuchaytiradi. Shartnomada dividend to‘lashdan oldin qarz xizmatiga zaxira, majburiy sug‘urta, kapital ta’mir jamg‘armasi va aktivni topshirish zaxirasi shakllantirilishi ko‘zda tutilishi maqsadga muvofiq.

Beshinchidan, raqamli monitoring “yagona haqiqat manbai” tamoyiliga qurilishi kerak. Rezervuar sathi, kirim-chiqim o‘lchovlari, laboratoriya natijalari, energiya sarfi, yuklash vaqti va favqulodda signal ma’lumotlari davlat sherigi hamda mustaqil muhandis uchun real vaqt yoki belgilangan davriylikda ochiq bo‘ladi. Ma’lumotni qayta yozishdan himoyalangan jurnal va davriy metrologik verifikatsiya KPI manipulyatsiyasi xavfini kamaytiradi.

Oltinchidan, dastlab bir yoki ikki turli hududdagi obyekt bo‘yicha pilot loyiha amalga oshirilib, natijalar standart shartnoma, risk matritsasi va KPI katalogiga aylantirilishi kerak. OECD hududiy DXShlar murakkab va maxsus kompetensiya talab qilishini, ayniqsa mahalliy darajada institutsional salohiyat yetishmasligi xatarini ta’kidlaydi [5]. Shu bois loyiha ofisi, hududiy davlat sherigi, texnik regulyator va mustaqil muhandis vakolatlari aniq ajratilishi, shartnoma boshqaruvi uchun uzoq muddatli professional guruh shakllantirilishi lozim.

**Xulosa**

Hududiy neft bazalarini DXSh asosida modernizatsiya qilish xususiy kapitalni jalb etish bilan birga, texnologik yangilanish, operatsion intizom va aktivning hayotiy sikli bo‘yicha boshqaruvni yaxshilash imkonini beradi. Eng maqbul shakl mavjud aktivni davlat mulkida saqlagan holda, rekonstruksiya, moliyalashtirish va ekspluatatsiyani natijaga bog‘langan uzoq muddatli shartnomada birlashtiruvchi gibrid ROT/DBFOM modelidir.

Shartli hisobda bazaviy ssenariyning NPVsi 32,45 mlrd so‘m va IRR ko‘rsatkichi 23,25 foiz bo‘lib, loyiha moliyaviy jihatdan jozibador ekanini ko‘rsatdi. Ayni paytda salbiy ssenariyda NPVning −12,08 mlrd so‘mga tushishi samaradorlikning talab, kapital xarajat va moliyalashtirish qiymatiga yuqori sezgirligini tasdiqladi. Shunday ekan, DXSh bo‘yicha qaror faqat bazaviy prognozga emas, stress-test va NPVning kritik chegaralariga tayanishi kerak.

Tadqiqot natijasida uch konturli baholash yondashuvi taklif etildi: loyiha va investor uchun moliyaviy samaradorlik; davlat uchun VfM va fiskal barqarorlik; hudud uchun ijtimoiy-ekologik ENPV. Ushbu konturlarni alohida hisoblash, so‘ng qaror matritsasida birlashtirish davlat manfaatini, investor bankabelligini va hududiy ta’sirni muvozanatlashtiradi.

Umuman, xususiy investitsiya o‘z-o‘zidan iqtisodiy samaradorlikni kafolatlamaydi. Natija raqobatli tanlov, sifatli bazaviy ma’lumot, xatarlarning maqbul taqsimoti, cheklangan va shaffof davlat qo‘llab-quvvatlashi, o‘lchanadigan KPIlar hamda shartnoma davomida professional monitoring mavjud bo‘lgandagina yuzaga keladi. Mazkur yondashuv hududiy neft bazalarini xavfsiz, raqamli va iqtisodiy barqaror logistika infratuzilmasiga aylantirishga xizmat qiladi.

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# MARKAZIY OSIYODA MINTAQAVIY IQTISODIY INTEGRATSIYA: O'ZBEKISTON EKSPORT SALOHIYATINI OSHIRISH STRATEGIYASI

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***Annotatsiya***. *Mazkur tezis Markaziy Osiyoda mintaqaviy iqtisodiy integratsiya sharoitida O'zbekistonning eksport salohiyatini oshirish yo'llarini Balassa nisbiy ustunlik indeksi (RCA) va gravitatsion model asosida tahlil qiladi. Tadqiqotda O'zbekistonning Qozog'iston, Qirg'iziston, Tojikiston va Turkmaniston bilan savdo aloqalari 2024-yil bo'yicha Butunjahon Savdo Tashkiloti va BMT Comtrade ma'lumotlari asosida ko'rib chiqiladi, eksport tarkibidagi ustuvor tovar guruhlari aniqlanadi va ularning nisbiy ustunlik darajasi baholanadi. Natijalar shuni ko'rsatadiki, O'zbekiston eksporti oltin va boshqa metallarga yuqori darajada bog'liq bo'lib, mintaqa ichidagi savdo salmog'i hamon cheklangan darajada qolmoqda. Gravitatsion tahlil transport masofasi, umumiy chegara mavjudligi va savdo kelishuvlarining eksport hajmiga ta'sirini nazariy jihatdan izohlaydi. Tadqiqot yakunida eksportni diversifikatsiya qilish, standartlarni muvofiqlashtirish va logistika infratuzilmasini rivojlantirishga qaratilgan aniq strategik takliflar ishlab chiqilgan.*

***Kalit so'zlar****: mintaqaviy integratsiya; eksport salohiyati; Balassa indeksi; nisbiy ustunlik; gravitatsion model; Markaziy Osiyo; tashqi savdo; eksport diversifikatsiyasi; O'zbekiston.*

***Abstract***. *This thesis examines strategies for strengthening Uzbekistan's export potential within the framework of regional economic integration in Central Asia, applying the Balassa Revealed Comparative Advantage (RCA) index and the gravity model of trade. Drawing on 2024 data from the World Trade Organization and UN Comtrade, the study reviews Uzbekistan's trade relations with Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, identifies the leading commodity groups in its export structure, and assesses their revealed comparative advantage. The findings indicate that Uzbekistan's exports remain heavily concentrated in gold and other metals, while intraregional trade volumes stay comparatively modest. The gravity-model discussion*

*sets out, on theoretical grounds, how distance, shared borders and trade agreements are expected to shape bilateral export flows. The thesis concludes with concrete strategic proposals for export diversification, standards harmonization and logistics development.*

***Keywords**: regional integration; export potential; Balassa index; revealed comparative advantage; gravity model; Central Asia; foreign trade; export diversification; Uzbekistan.*

***Аннотация.** В данной работе рассматриваются стратегии укрепления экспортного потенциала Узбекистана в условиях региональной экономической интеграции в Центральной Азии с применением индекса выявленных сравнительных преимуществ Балассы (RCA) и гравитационной модели торговли. На основе данных Всемирной торговой организации и базы UN Comtrade за 2024 год анализируются торговые отношения Узбекистана с Казахстаном, Кыргызстаном, Таджикистаном и Туркменистаном, определяются ведущие товарные группы в структуре экспорта страны и оцениваются их выявленные сравнительные преимущества. Результаты исследования показывают, что экспорт Узбекистана по-прежнему в значительной степени сосредоточен на золоте и других металлах, в то время как объёмы внутрирегиональной торговли остаются сравнительно невысокими. В рамках гравитационной модели с теоретической точки зрения рассматривается влияние расстояния, наличия общих границ и торговых соглашений на двусторонние экспортные потоки. В заключении сформулированы конкретные стратегические предложения по диверсификации экспорта, гармонизации стандартов и развитию логистической инфраструктуры.*

***Ключевые слова:** региональная интеграция; экспортный потенциал; индекс Балассы; выявленные сравнительные преимущества; гравитационная модель; Центральная Азия; внешняя торговля; диверсификация экспорта; Узбекистан.*

## KIRISH

So'nggi o'n yil ichida Markaziy Osiyoda mintaqaviy iqtisodiy hamkorlik masalasi nafaqat besh davlat hukumatlari, balki xalqaro moliya institutlari diqqatini ham tobora ko'proq jalb etib bormoqda. Osiyo Taraqqiyot Bankining CAREC 2030 strategiyasida qayd etilganidek, mintaqa transport, energetika va savdo yo'nalishlarida chuqurroq bog'lanishga muhtoj, chunki mavjud infratuzilma va institutsional to'siqlar mamlakatlar

o'rtasidagi tovar oqimini sun'iy ravishda cheklab turibdi[29]. O'zbekiston uchun bu masala alohida ahamiyat kasb etadi: mamlakat Markaziy Osiyoning barcha to'rt davlati — Qozog'iston, Qirg'iziston, Tojikiston va Turkmaniston — bilan quruqlikdan chegaradosh bo'lgan yagona davlat bo'lib, o'zi ham ikki karra dengizga chiqish imkoniyatidan mahrum hududda joylashgan[30]. Ana shu geografik holat O'zbekiston eksportining raqobatbardoshligiga bevosita ta'sir ko'rsatadi: tashqi bozorlarga chiqish yo'llari uzoq, tranzit vaqti va xarajatlari esa qo'shni davlatlarga nisbatan yuqori.

2024-yilda O'zbekistonning tashqi savdo aylanmasi 65,9 milliard AQSh dollarini tashkil etdi, shundan tovar eksporti (Butunjahon Savdo Tashkiloti va BMT Comtrade ma'lumotlariga ko'ra) 19,7 milliard dollarga yetdi[31]. Shu bilan birga, O'zbekiston Respublikasi Statistika Agentligining hisob-kitoblariga ko'ra — bu ko'rsatkichga xizmatlar eksporti ham qo'shilgan holda — yalpi eksport hajmi 26,9 milliard dollarni tashkil etadi; ikki raqam o'rtasidagi farq, birinchi navbatda, xizmatlar eksporti (taxminan 7,2 milliard dollar) hisobiga hamda ikki manbaning hisob-kitob metodologiyasidagi tafovutlar bilan izohlanadi[32]. Har qanday holatda ham, mintaqa ichidagi savdo ulushi hali ham nisbatan kichik: Qozog'iston, Qirg'iziston va Tojikistonga yo'naltirilgan eksport 2024-yilda jami tovar eksportining o'ndan bir qismidan sal ko'prog'ini tashkil etdi, holbuki bu uchta davlat O'zbekistonning eng yaqin va tarixiy jihatdan chambarchas bog'liq bozorlaridir.

Mintaqa ichidagi savdoning cheklanganligi faqat geografik omillar bilan izohlanmaydi. Bojxona rasmiylashtiruvi jarayonlarining murakkabligi, fitosanitariya va texnik standartlarning davlatlar o'rtasida muvofiqlashtirilmaganligi, shuningdek transport-logistika infratuzilmasining yetarli darajada rivojlanmaganligi savdo xarajatlarini oshiradigan asosiy omillar sifatida qayd etiladi[33]. Bunday to'siqlar, ayniqsa, xom ashyodan tashqari mahsulotlar — tayyor tekstil buyumlari, oziq-ovqat va qishloq xo'jaligi mahsulotlari — eksportiga salbiy ta'sir ko'rsatadi, chunki ularning marjasi transport va bojxona xarajatlaridagi o'sishga xom ashyo eksportiga nisbatan ancha sezgirroq bo'ladi.

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[29]Asian Development Bank. CAREC 2030: Connecting the Region for Shared and Sustainable Development. — Manila: ADB, 2017. URL: https://www.adb.org/documents/carec-2030-connecting-region-sustainable-development (murojaat sanasi: 11.08.2026).

[30]Umarova, S. Trade Dynamics in Central Asia: Insights from Uzbekistan's Perspective // International Affairs. — 2024. — № 7–8 (109–110). — P. 102.

[31]World Trade Organization. Tariff & Trade Data: Uzbekistan — Member profile (BMT Comtrade ma'lumotlari asosida), 2024-yil ko'rsatkichlari. URL: https://ttd.wto.org/en/profiles/uzbekistan (murojaat sanasi: 11.08.2026).

[32]Uzbekistan's foreign trade turnover reached US$65.9 billion in 2024 // UzDaily, O'zbekiston Respublikasi Statistika Agentligi ma'lumotlari asosida, 2025-yil yanvar. URL: https://www.uzdaily.uz/en/uzbekistans-foreign-trade-turnover-reached-us659-billion-in-2024/ (murojaat sanasi: 11.08.2026).

[33]Umarova, S. Ko'rsatilgan asar. — P. 103–104.

Mintaqaviy bozorlarning O'zbekiston uchun strategik ahamiyati faqat qo'shni ekanligi bilan emas, balki umumiy tarixiy savdo yo'llari va ishlab chiqarish zanjirlari bilan ham bog'liq. CAREC dasturi doirasida shakllantirilgan olti transport yo'lagi Markaziy Osiyoni Xazar dengizidan Xitoygacha bo'lgan hududda bir-biriga bog'lab, mintaqa ichidagi va undan tashqaridagi savdoni jadallashtirishga xizmat qiladi[34]. Ayni paytda O'zbekiston, o'zining markaziy geografik joylashuvi tufayli, ushbu yo'laklarning katta qismida tabiiy tranzit bo'g'ini vazifasini bajaradi, biroq bu salohiyatni to'liq ishga solish transport infratuzilmasi va institutsional muvofiqlashtirish darajasiga bog'liq bo'lib qolmoqda. Shu bilan birga, Qozog'iston, Qirg'iziston va Tojikiston bozorlari — ularning nisbatan kichik hajmiga qaramay — O'zbekiston uchun geografik yaqinligi tufayli transport xarajatlari eng past bo'lgan bozorlar hisoblanadi, bu esa ayniqsa kichik va o'rta biznes uchun ularni birlamchi eksport yo'nalishiga aylantirish imkonini beradi.

Yuqoridagilardan kelib chiqqan holda, ushbu tadqiqotning muammosi quyidagicha shakllantiriladi: O'zbekiston Markaziy Osiyo bozorlarida qaysi tovar guruhlari bo'yicha nisbiy eksport ustunligiga ega va bu ustunlik hozirgi kunda qanday darajada ishga solinmoqda? Tadqiqot maqsadi — Markaziy Osiyodagi integratsion jarayonlar sharoitida O'zbekistonning mahsulotlar kesimidagi nisbiy eksport ustunliklarini aniqlash, mintaqa mamlakatlari bilan savdo oqimlariga ta'sir qiluvchi omillarni baholash hamda foydalanilmagan eksport salohiyatini ishga solish bo'yicha strategik takliflar ishlab chiqishdan iborat.

Tadqiqot obyekti sifatida O'zbekistonning Qozog'iston, Qirg'iziston, Tojikiston va Turkmaniston bilan tashqi savdo munosabatlari olingan, predmeti esa — ushbu munosabatlarning tovar tarkibi, nisbiy ustunlik darajasi va ularga ta'sir etuvchi iqtisodiy hamda institutsional omillardir. Tadqiqotda qiyosiy tahlil, statistik guruhlash usullari, shuningdek Balassa nisbiy ustunlik indeksi va gravitatsion model nazariy asoslariga tayanuvchi tavsifiy tahlil qo'llanildi. Ishning ilmiy ahamiyati shundaki, u O'zbekiston–Markaziy Osiyo savdo aloqalarini yagona metodologik asosda — RCA va gravitatsion yondashuvni birlashtirgan holda — tahlil qiladi; amaliy ahamiyati esa aniqlangan tovar guruhlari va tavsiyalarning davlat organlari, eksportni qo'llab-quvvatlash tashkilotlari va tadbirkorlar tomonidan bevosita qo'llanilishi mumkinligidadir.

## ADABIYOTLAR TAHLILI

Nisbiy ustunlik nazariyasining zamonaviy o'lchov vositasi sifatida Balassa taklif etgan indeks XX asrning ikkinchi yarmidan buyon xalqaro savdo tahlilining asosiy asboblaridan biriga aylandi. Balassa o'z ishida bir mamlakatning muayyan tovar

[34]Asian Development Bank. CAREC 2030: Connecting the Region for Shared and Sustainable Development. Ko'rsatilgan manba.

bo'yicha eksport ulushini uning umumiy eksportidagi ulushi bilan solishtirish orqali, davlat tashqi savdo siyosatidan qat'i nazar, qaysi sohalarda “namoyon bo'lgan” ustunlikka ega ekanligini ko'rsatib berish mumkinligini asoslab berdi[35]. Bu yondashuvning afzalligi uning soddaligi va istalgan ikkita mamlakat yoki mamlakatlar guruhi o'rtasida qo'llanilishi mumkinligidadir, biroq shu bilan birga u faqat real eksport statistikasida aks etgan ustunlikni qayd etadi, hali rivojlanmagan yoki yashiringan salohiyatni esa ko'rsatib bermaydi. Aynan shu cheklov RCA indeksining turli modifikatsiyalari yaratilishiga turtki bo'lgan; xususan, Nurmatov O'zbekiston agrar sektorining Qozog'iston bozoridagi raqobatbardoshligini baholashda RCA'ga yondosh ko'rsatkichlardan foydalanib, mintaqaviy bozor kesimida tor ixtisoslashuvni ochib bergan[36].

Gravitatsion modelning tashqi savdoga tatbiq etilishi Tinbergenning 1962-yildagi ishiga borib taqaladi; u Nyuton tortishish qonuniga o'xshash tarzda, ikki mamlakat o'rtasidagi savdo hajmi ularning iqtisodiy “massasi” (odatda YAIM bilan o'lchanadigan) ko'paytmasiga to'g'ri proporsional va ular orasidagi masofaga teskari proporsional bo'lishini taklif qildi[37]. Uzoq vaqt davomida bu model empirik jihatdan yaxshi natija bergan bo'lsa-da, uning nazariy asosi zaif hisoblangan. Anderson va van Vinkup ushbu bo'shliqni to'ldirib, “ko'p tomonlama qarshilik” (multilateral resistance) tushunchasini kiritdilar: ularning fikricha, ikki mamlakat o'rtasidagi savdo nafaqat ular orasidagi bevosita savdo to'siqlariga, balki har bir mamlakatning barcha boshqa hamkorlar bilan bog'liq nisbiy savdo xarajatlariga ham bog'liq bo'ladi[38]. Bu nazariy yutuq gravitatsion tenglamani shunchaki empirik regressiyadan chinakam nazariy asoslangan modelga aylantirdi. Ekonometrik baholash borasida esa Santos Silva va Tenreyroning hissasi alohida o'rin tutadi: ular ko'rsatib berishicha, an'anaviy usulda — tenglamani logarifmik shaklga keltirib, oddiy eng kichik kvadratlar (OLS) usuli bilan baholash — geteroskedastiklik sharoitida siljigan baholarga olib keladi, bundan tashqari, savdo hajmi nolga teng bo'lgan juftliklar tahlildan chetlashtiriladi[39]. Ular buning o'rniga Puasson psevdo-maksimal ehtimollik (PPML) usulini taklif qildilar, bu

[35]Balassa, B. Trade Liberalisation and “Revealed” Comparative Advantage // The Manchester School. — 1965. — Vol. 33, No. 2. — P. 99–123. https://doi.org/10.1111/j.1467-9957.1965.tb00050.x

[36]Nurmatov, N. Uzbekistan agrarian sector export competitiveness in Kazakhstan: Paper presented at the IAMO Forum, Samarkand, 2016. https://doi.org/10.22004/ag.econ.249953

[37]Tinbergen, J. Shaping the World Economy: Suggestions for an International Economic Policy. — New York: The Twentieth Century Fund, 1962. — 330 p.

[38]Anderson, J. E., Van Wincoop, E. Gravity with Gravitas: A Solution to the Border Puzzle // American Economic Review. — 2003. — Vol. 93, No. 1. — P. 170–192. https://doi.org/10.1257/000282803321455214

[39]Santos Silva, J. M. C., Tenreyro, S. The Log of Gravity // The Review of Economics and Statistics. — 2006. — Vol. 88, No. 4. — P. 641–658. https://doi.org/10.1162/rest.88.4.641

usul bugungi kunda gravitatsion tadqiqotlarning aksariyatida standart baholash vositasiga aylangan.

Markaziy Osiyo va O'zbekiston kontekstida ushbu ikki yondashuvni birlashtirgan tadqiqotlar so'nggi yillarda sezilarli darajada ko'paydi. Zinchenko va Radionov Yevroosiyo Iqtisodiy Ittifoqi (YEII) doirasida savdo to'siqlarining bekor qilinishi O'zbekiston eksportiga qanday ta'sir ko'rsatishini RCA va mintaqaviy yo'nalganlik (RO) indekslari yordamida baholab, O'zbekiston eksportining sezilarli qismi uchun bunday liberallashtirish ijobiy natija berishini, ayniqsa nobojxona to'siqlarining kamayishi eksport o'sishiga hissa qo'shishini ko'rsatib berdilar[40]. Sudakov va Zinchenko esa O'zbekiston uchun eksport salohiyatini baholash metodologiyasini ishlab chiqib, mamlakat eksportining amaldagi va potensial hajmi o'rtasidagi tafovutni aniqlashga alohida e'tibor qaratdilar[41]. Talipova, Islamov va Turdibayeva Markaziy Osiyo davlatlarining tashqi iqtisodiy jarayonlarini gravitatsion model asosida modellashtirib, mintaqa ichidagi savdo juftliklarini reyting shaklida tartiblashtirdilar hamda matematik vositalarning bashoratlash uchun zarurligini asosladilar[42].

Xalqaro miqyosda Sesluk va Gurshevning ishlari alohida ahamiyatga ega: ular YEII kengayishi va Rossiyaning JST'ga a'zo bo'lishidan keyingi davrda Markaziy Osiyo davlatlarining savdo siyosatini uch bosqichli eng kichik kvadratlar (3SLS) gravitatsion model yordamida tahlil qilib, Tojikiston va O'zbekiston uchun YEII'ga qo'shilish muqobil variantlar — masalan, Xitoy yoki Eron bilan ikki tomonlama kelishuvlar — bilan solishtirganda ancha yuqori savdo yutuqlarini berishi mumkinligini ko'rsatdilar[43]. Ularning keyingi tadqiqoti Armaniston va Qirg'izistonning YEII'ga qo'shilish tajribasini o'rganib, kichik iqtisodiyotlar uchun integratsiyaning savdo natijalari nafaqat ittifoqqa a'zolikning o'zi, balki faol milliy siyosat choralariga ham bog'liqligini ta'kidlaydi[44].

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[40]Zinchenko, A. A., Radionov, S. A. Analysis of the Effects Produced by Trade Liberalization in the Republic of Uzbekistan and the EAEU // Studies on Russian Economic Development. — 2023. — Vol. 34, No. 1. — P. 142–149. https://doi.org/10.1134/S1075700723010197

[41]Sudakov, S. S., Zinchenko, A. A. Export Potential Assessment Methodology: The Case of the Republic of Uzbekistan // Финансовый журнал (Financial Journal). — 2024. — № 1. — P. 61–77. https://doi.org/10.31107/2075-1990-2024-1-61-77

[42]Talipova, N. T., Islamov, B. A., Turdibaeva, M. M. Gravity Model of Foreign Economic Processes of Central Asia Countries // Lecture Notes in Computer Science, Vol. 14543. — Springer, Cham, 2024. https://doi.org/10.1007/978-3-031-60997-8_29

[43]Cieślik, A., Gurshev, O. Trade policies in Central Asia after EAEU enlargement and after Russian WTO accession: regionalism and integration into the world economy revisited // Eurasian Geography and Economics. — 2023. — P. 656–678. https://doi.org/10.1080/15387216.2022.2162098

[44]Cieślik, A., Gurshev, O. How does regional economic integration impact trade in small economies? Evidence from Armenia and Kyrgyzstan's EAEU accession // Eurasian Geography and Economics. — 2025. https://doi.org/10.1080/15387216.2025.2475904

O'zbekistonlik tadqiqotchi Umarova o'z maqolasida mamlakatning ikki karra quruqlik ichida joylashganligi tufayli yuzaga keladigan transport xarajatlari va tranzit muddatlarining eksport raqobatbardoshligiga salbiy ta'sirini batafsil yoritib, savdoni yengillashtirish choralari — bojxona jarayonlarini zamonaviylashtirish, transport infratuzilmasini rivojlantirish va mintaqaviy hamkorlikni kuchaytirish — orasidagi bog'liqlikni gravitatsion model asosida asoslab berdi[45]. Iqtisodiy Hamkorlik va Taraqqiyot Tashkiloti (OECD)ning 2025-yildagi hisobotida esa Jahon banki savdo ma'lumotlar bazasi (WITS) asosida hisoblangan RCA ko'rsatkichlari keltirilgan bo'lib, unga ko'ra O'zbekiston 2017–2022-yillar davomida metallar, tosh-shisha buyumlari hamda to'qimachilik va kiyim-kechak mahsulotlari bo'yicha barqaror nisbiy ustunlikka ega bo'lgan[46]. Bu xulosa Herfindahl-Xirshman indeksi (HHI) va RCA'ni birgalikda qo'llagan so'nggi tadqiqotda ham tasdiqlanadi: Sapaev va Bakoeva O'zbekistonning paxta va rangli metallar bo'yicha raqobatbardosh niyshalarini alohida ta'kidlaydi, biroq eksport bozorlarining geografik konsentratsiyasi hamon yuqori ekanligini, bu esa mamlakatni tashqi shoklarga zaif qilishini qayd etadi[47].

Nihoyat, Sultonovning 2026-yilda e'lon qilingan tadqiqoti Markaziy Osiyo davlatlarida xalqaro savdo va YAIM o'sishi o'rtasidagi sababiy bog'liqlikni Grenjer testlari yordamida o'rganib, ayrim davlatlarda — jumladan O'zbekistonda — iqtisodiy o'sishning o'zi mintaqa ichidagi savdo hajmini avtomatik ravishda oshirmasligini, aksincha, bunday o'sishga erishish uchun maqsadli siyosat choralari zarurligini ko'rsatadi[48]. Shu tariqa, mavjud adabiyotda ikkita yo'nalish aniq ko'zga tashlanadi: birinchisi — RCA va gravitatsion model orqali O'zbekiston eksportining tarkibiy xususiyatlarini tasvirlash, ikkinchisi — integratsion jarayonlarning (YEII, JST, mintaqaviy kelishuvlar) savdo oqimlariga ta'sirini baholash. Biroq ushbu ikki yo'nalishni bitta tadqiqotda — aynan Markaziy Osiyoning to'rt davlati kesimida va eng so'nggi (2024-yil) statistik ma'lumotlar asosida — birlashtirgan ishlar hali yetarli emas; mazkur tezis aynan shu bo'shliqni to'ldirishga qaratilgan.

## TADQIQOT METODOLOGIYASI

[45]Umarova, S. Ko'rsatilgan asar. — P. 108–109.
[46]OECD. Trade-investment nexus in Uzbekistan: Roadmap for Sustainable Investment Policy Reforms in Uzbekistan. — 2025. — Table 3.4 (WITS ma'lumotlari asosida, 2017–2022-yillar). URL: https://www.oecd.org/en/publications/roadmap-for-sustainable-investment-policy-reforms-in-uzbekistan_20865f29-en (murojaat sanasi: 11.08.2026).
[47]Sapaev, Sh. D., Bakoeva, G. M. Diversifying Uzbekistan's Export Markets: The Potential of South and Southeast Asian Countries // Modern American Journal of Business, Economics, and Entrepreneurship. — 2025. — Vol. 1, No. 3. — P. 141–154.
[48]Sultonov, M. Trade-growth dynamics in Central Asia: a causal analysis of international trade and GDP interactions // Journal of Contemporary East Asia Studies. — 2026. — Vol. 14, No. 2. — P. 237–260. https://doi.org/10.1080/24761028.2026.2637289

Tadqiqot 2015–2025-yillar oralig'idagi ma'lumotlarga tayanishga harakat qildi, biroq 2025-yil bo'yicha bir qator ko'rsatkichlar — xususan, mahsulot kodlari kesimidagi ikki tomonlama eksport statistikasi — hali to'liq e'lon qilinmagani sababli, tahlilning asosiy qismi 2024-yilning yakuniy statistik ma'lumotlariga tayangan holda olib borildi; bu — mavjud eng so'nggi to'liq yil hisoblanadi va ushbu cheklov shu bilan ochiq qayd etiladi.

Asosiy ma'lumot manbalari sifatida quyidagilar xizmat qildi: Butunjahon Savdo Tashkilotining Tarif va Savdo Ma'lumotlar bazasi, u o'z navbatida BMT Comtrade ma'lumotlariga tayanadi va mahsulot hamda hamkor davlatlar kesimidagi eksport-import statistikasini taqdim etadi[49]; Jahon banki Jahon Taraqqiyot Ko'rsatkichlari (World Development Indicators) bazasi — YAIM va aholi jon boshiga daromad ko'rsatkichlari uchun[50]; O'zbekiston Respublikasi Statistika Agentligining rasmiy hisobotlari — milliy miqyosdagi tashqi savdo aylanmasi bo'yicha[51]; shuningdek Iqtisodiy Murakkablik Observatoriyasi (OEC) va Butunjahon Savdo Tashkilotining Global Savdo Istiqbollari hisoboti — jahon eksporti hajmlarini taqqoslash uchun asos sifatida[52]. Turkmaniston bilan bog'liq ba'zi ko'rsatkichlar uchun 2024-yilning to'liq yakuniy ma'lumotlari ochiq manbalarda topilmagani sababli, mavjud bo'lgan 2024-yil birinchi yarim yilligiga oid ma'lumotlar qo'llanildi va bu holat tegishli jadvalda alohida izohlandi.

Balassa nisbiy ustunlik indeksi quyidagi formula asosida hisoblab chiqildi: $RCA_{ij} = (X_{ij} / X_{it}) / (Xw_j / Xw_t)$, bu yerda $X_{ij}$ — O'zbekistonning j-mahsulot bo'yicha eksporti, $X_{it}$ — O'zbekistonning jami eksporti, $Xw_j$ — jahon miqyosida j-mahsulot bo'yicha eksport, $Xw_t$ — jahon miqyosidagi jami eksport hajmi. Bazaviy hudud sifatida jahon bozori tanlab olindi, chunki bu RCA indeksining klassik va xalqaro miqyosda taqqoslanadigan shaklidir; Markaziy Osiyo bozorini alohida baza sifatida olish, mintaqa ichidagi savdo hajmining o'zi hali nisbatan kichikligi sababli, natijalarni tasodifiy tebranishlarga ko'proq moyil qilgan bo'lar edi. RCA qiymati birdan katta bo'lsa — nisbiy ustunlik mavjud, ikkidan katta bo'lsa — sezilarli ustunlik, to'rtdan katta

[49]World Trade Organization. Tariff & Trade Data: Uzbekistan. Ko'rsatilgan manba.
[50]World Bank. World Development Indicators: GDP (current US$), GDP per capita (current US$) — O'zbekiston, Qozog'iston, Qirg'iziston, Tojikiston, Turkmaniston, 2024-yil. URL: https://data.worldbank.org (murojaat sanasi: 11.08.2026).
[51]UzDaily, O'zbekiston Respublikasi Statistika Agentligi ma'lumotlari. Ko'rsatilgan manba.
[52]The Observatory of Economic Complexity (OEC). Cotton (HS: 52) Product Trade, Exporters and Importers, 2024. URL: https://oec.world/en/profile/hs/cotton (murojaat sanasi: 11.08.2026); World Trade Organization. Global Trade Outlook and Statistics, April 2025. — P. 4 (jahon tovar eksporti — 24,43 trln AQSh dollari, 2024-yil). URL: https://www.wto.org/english/res_e/booksp_e/trade_outlook25_e.pdf (murojaat sanasi: 11.08.2026).

bo'lsa — kuchli ixtisoslashuv sifatida talqin qilindi; birdan kichik qiymatlar aniqlangan ustunlikning yo'qligini bildiradi.

Hisob-kitoblar, imkon qadar, Garmonlashtirilgan Tizim (HS)ning ikkinchi darajasidagi (HS-2) kengroq tovar guruhlari darajasida olib borildi, chunki aynan shu darajada ham O'zbekiston, ham jahon eksporti bo'yicha tekshirilgan ma'lumotlar mavjud edi. Olti xonali (HS-6) darajadagi tor tovar toifalari — masalan, muayyan turdagi paxta ipi yoki mis simi — bo'yicha jahon eksporti hajmi haqida yetarlicha ishonchli, alohida-alohida tekshirilgan statistika ushbu tadqiqot doirasida topilmadi, shu sababli bunday tor toifalar uchun aniq RCA qiymati hisoblanmadi va tegishli jadval katakchalarida bu holat “hisoblash uchun ma'lumot yetarli emas” deb ochiq ko'rsatildi.

Gravitatsion model uchun quyidagi umumiy spesifikatsiya asos qilib olindi: $Export_{ijt} = \exp[\beta_0 + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnDistance_{ij} + \beta_4 Border_{ij} + \beta_5 ExchangeRate_{ijt} + \beta_6 TradeAgreement_{ijt} + \beta_7 Logistics_{ijt} + \mu_{ij} + \tau_t] + \varepsilon_{ijt}$. Modelni real bilateral panel ma'lumotlar (masofa, yillik almashinuv kurslari, savdo kelishuvlari dammi o'zgaruvchilari va boshqalar) asosida to'liq ekonometrik baholash ushbu tezis doirasida amalga oshirilmadi, chunki bunday baholash uchun zarur bo'lgan to'liq panel ma'lumotlar to'plamiga (kamida 2015–2024-yillar uchun barcha besh davlat juftliklari bo'yicha) ushbu tadqiqot jarayonida to'liq kirish imkoniyati bo'lmadi. Shu sababli, quyida keltirilgan tahlil model spesifikatsiyasi, o'zgaruvchilar va ularning nazariy kutilayotgan ta'sir yo'nalishini tavsiflash bilan chegaralanadi; hech qanday regressiya koeffitsiyenti, standart xato yoki p-qiymat o'ylab topilmadi yoki taxminiy tarzda keltirilmadi. Buning o'rniga, mavjud rasmiy statistik ko'rsatkichlar (YAIM, masofa, umumiy chegara mavjudligi, savdo kelishuvlari) asosida faqat tavsifiy xulosalar chiqarildi — bu, real ekonometrik natijalarni emas, balki har bir o'zgaruvchining nazariy jihatdan qanday yo'nalishda ta'sir ko'rsatishi kutilishini aks ettiradi. Nol qiymatli savdo oqimlari va geteroskedastiklik muammosi tufayli, agar kelgusida to'liq panel ma'lumotlar mavjud bo'lganda, baholash uchun PPML usuli tavsiya etiladi, chunki u aynan shu ikki muammoni bartaraf etish uchun ishlab chiqilgan.

## TAHLIL VA NATIJALAR

2024-yilda O'zbekistonning Markaziy Osiyo davlatlari bilan savdo dinamikasi bir xil emas edi (1-jadval). Qozog'iston an'anaviy ravishda mintaqadagi eng yirik sherik bo'lib qolmoqda: unga yo'naltirilgan eksport 1,26 milliard dollarni, ya'ni jami tovar eksportining 6,4 foizini tashkil etdi[53]. Qirg'iziston va Tojikiston bilan savdo ancha kichik hajmda — mos ravishda 504 va 381,4 million dollar (2,6 va 1,9 foiz) — davom

[53]World Trade Organization. Tariff & Trade Data: Uzbekistan. Ko'rsatilgan manba.

etmoqda. Turkmaniston bilan munosabatlar boshqacha xususiyatga ega: bu yerda O'zbekiston, aksincha, importchi rolida ustunlik qiladi, chunki Turkmanistondan tabiiy gaz va boshqa energiya resurslari import qilinadi (2024-yilda O'zbekiston importining 2,9 foizi, ya'ni 1,02 milliard dollar Turkmanistonga to'g'ri keldi), O'zbekistonning Turkmanistonga eksporti esa ancha kamroq bo'lib, 2024-yilning birinchi yarim yilligida atigi 60 million dollarni tashkil etib, o'tgan yilning shu davriga nisbatan ham pasaygan[54]. Bu holat shuni ko'rsatadiki, O'zbekiston–Turkmaniston savdo balansi tarkibiy jihatdan energetika mahsulotlari hisobiga shakllanadi va O'zbekistonning tayyor mahsulot eksporti uchun bu yo'nalish hali yetarlicha o'zlashtirilmagan.

**1-jadval. O'zbekistonning tashqi savdo tarkibi va Markaziy Osiyo davlatlariga eksporti, 2024-yil**

| Ko'rsatkich | Qiymati | Ulushi | Manba |
|---|---|---|---|
| Jami tovar eksporti (Comtrade, tovarlar bo'yicha) | 19 735,4 mln AQSh dollari | 100% | WTO / UN Comtrade |
| shu jumladan Qozog'istonga | 1 256,2 mln AQSh dollari | 6,4% | WTO / UN Comtrade |
| shu jumladan Qirg'izistonga | 504,0 mln AQSh dollari | 2,6% | WTO / UN Comtrade |
| shu jumladan Tojikistonga | 381,4 mln AQSh dollari | 1,9% | WTO / UN Comtrade |
| Turkmanistonga (2024-yil I yarim yillik, oraliq ko'rsatkich) | ≈ 60 mln AQSh dollari | ma'lumot yetarli emas (yillik) | Tashkent Times |
| Jami eksport, tovar va xizmatlar (Statistika Agentligi) | 26 940 mln AQSh dollari | — | O'zbekiston Respublikasi Statistika Agentligi |

Eksport tarkibini tahlil qilish shuni ko'rsatadiki, O'zbekiston eksporti yuqori darajada kontsentratsiyalashgan: yagona tovar guruhi — qayta ishlanmagan yoki yarim tayyor holdagi oltin — 2024-yilda jami tovar eksportining 37,9 foizini, ya'ni 7,48 milliard dollarni tashkil etdi[55]. Qolgan eksport tabiiy gaz (3,2%), rafinatsiyalangan mis (2,3%), mis simi (1,7%), paxta ipi (jami taxminan 3%), bug'doy uni (1,6%) va paxtali

[54]Uzbekistan's 2024 H1 international trade unveiled // Tashkent Times, 22.07.2024. URL: https://tashkenttimes.uz/economy/13394-uzbekistan-s-2024-h1-international-trade-unveiled (murojaat sanasi: 11.08.2026).

[55]World Trade Organization. Tariff & Trade Data: Uzbekistan — Exports by products HS 2022 (710813 — Gold). Ko'rsatilgan manba.

trikotaj buyumlari (1,5%) kabi tovar guruhlari o'rtasida taqsimlangan. Bu tarkib — quyida keltirilgan Balassa RCA hisob-kitoblari bilan birga ko'rib chiqilganda — O'zbekistonning nisbiy ustunligi, birinchi navbatda, qazib olish sanoati va uni dastlabki qayta ishlash mahsulotlarida mujassamlanganligini tasdiqlaydi (2-jadval).

**2-jadval. O'zbekiston eksportining asosiy tovar guruhlari va Balassa RCA indeksi, 2024-yil**

| HS kodi | Mahsulot guruhi | UZ eksportidagi ulushi | RCA qiymati | Talqin | Asosiy MO bozori | Kengaytirish imkoniyati |
|---|---|---|---|---|---|---|
| 7108 | Oltin (yarim tayyor, monetar bo'lmagan) | 37,9% | ≈ 15,8 | Kuchli ixtisoslashuv | Markaziy Osiyodan tashqari bozorlar | Diversifikatsiya zarur — bitta tovarga bog'liqlikni kamaytirish |
| 52 | Paxta ipi (taroqlangan va taroqlanmagan) | ≈ 3,0% | ≈ 1,4 | Nisbiy ustunlik mavjud | Qozog'iston, Tojikiston | Qo'shilgan qiymatni oshirish — tayyor gazlama |
| 2711 / 2710 | Tabiiy gaz va neft mahsulotlari | 5,1% | ma'lumot yetarli emas | Sifat jihatdan yuqori (OECD, 2025) | Qozog'iston | Mintaqaviy energiya savdosini kengaytirish |
| 7403 / 7408 | Rafinatsiyalangan mis va mis simi | 4,0% | ma'lumot yetarli emas | Sifat jihatdan yuqori (OECD, 2025) | Qozog'iston | Qayta ishlash chuqurligini oshirish |
| 1101 | Bug'doy va meslin uni | 1,6% | ma'lumot yetarli emas | Sifat jihatdan o'rtacha | Tojikiston, Afg'oniston | Mintaqaviy oziq-ovqat xavfsizligi zanjiri |
| 6109 | Paxtali trikotaj buyumlar (T-shirt) | 1,5% | ma'lumot yetarli emas | Sifat jihatdan yuqori (Sapaev-Bakoeva, 2025) | Qirg'iziston | Tayyor kiyim eksportini kengaytirish |

| | | | | | | |
|---|---|---|---|---|---|---|
| 999999 | Boshqa aniqlanmagan tovar guruhlari | 4,7% | hisoblanmagan | — | — | — |

2-jadvaldan ko'rinib turibdiki, oltin bo'yicha O'zbekistonning RCA qiymati g'oyat yuqori — bu ko'rsatkich mamlakatning jahon oltin savdosidagi taxminiy ulushi (jahon oltin eksporti ≈ 586,2 mlrd dollar, jami jahon tovar eksporti esa 24,43 trln dollarni tashkil etgani hisobga olinganda, taxminan 2,4 foiz)[56]ni uning umumiy eksportidagi oltin ulushi (37,9 foiz) bilan solishtirganda olingan bo'lib, kuchli ixtisoslashuv chegarasidan bir necha barobar yuqoridir. Bu — bir tomondan, O'zbekistonning tabiiy resurslarga boyligini aks ettirsa, ikkinchi tomondan, eksport tarkibining diversifikatsiyalanmaganligidan dalolat beradi: yagona tovar guruhiga bunday yuqori bog'liqlik jahon bozoridagi narx tebranishlariga nisbatan zaiflikni keltirib chiqaradi. Paxta toifasi (HS-52, jahon savdosi ≈ 51,1 mlrd dollar) bo'yicha ham RCA birdan yuqori bo'lib[57], bu mamlakatning an'anaviy qishloq xo'jaligi ixtisoslashuvi hamon saqlanib qolganidan dalolat beradi, garchi paxta xomashyosining o'zi emas, balki undan ishlab chiqarilgan ip va gazlama mahsulotlari eksportda ustunlik qilsa-da. Rangli metallar, tabiiy gaz va g'alla mahsulotlari bo'yicha jahon miqyosidagi taqqoslanadigan eksport ko'rsatkichlari ushbu tadqiqot doirasida yetarlicha ishonchli tarzda topilmadi, shu sababli bu toifalar uchun RCA qiymati aniq son sifatida emas, balki OECD (2025) va Zinchenko–Radionov (2023) tadqiqotlarida qayd etilgan sifat jihatidan baholash — ya'ni metallar va tekstil-kiyim mahsulotlari bo'yicha barqaror nisbiy ustunlik mavjudligi — asosida talqin qilindi[58].

Eksportning tovar tarkibidan tashqari, uning geografik tarkibi ham yuqori konsentratsiyani namoyon etadi. Sapaev va Bakoeva Herfindahl–Xirshman indeksi (HHI) yordamida o'tkazgan hisob-kitoblarida O'zbekiston eksportining chegaralangan sondagi hamkor davlatlarga sezilarli darajada bog'liqligini ko'rsatib berishgan[59]; bu xulosa ushbu tezisda keltirilgan ma'lumotlar bilan ham uyg'un keladi — Rossiya, Xitoy, Qozog'iston va Turkiya jami eksportning yarmidan ortig'ini o'z ichiga oladi, qolgan o'nlab davlatlar esa ancha kichik ulushlarga ega. Tovar va geografik konsentratsiyaning

[56]Tendata. Main Global Gold Exports by Country // Tendata Insight, 2024 (ITC Trade Map va BMT Comtrade ma'lumotlari asosida; jahon oltin — HS 7108 — eksporti taxminan 586,2 mlrd AQSh dollari, 2024-yil). URL: https://www.tendata.com/blogs/insight/6108.html (murojaat sanasi: 11.08.2026). Ushbu ko'rsatkich savdo ma'lumotlarini yig'uvchi tashkilotning hisob-kitobi bo'lib, rasmiy Comtrade so'rovi bilan farq qilishi mumkinligi alohida qayd etiladi.
[57]The Observatory of Economic Complexity (OEC). Ko'rsatilgan manba (jahon paxta — HS 52 — savdosi taxminan 51,1 mlrd AQSh dollari, 2024-yil).
[58]OECD. Ko'rsatilgan manba, Table 3.4; Zinchenko, A. A., Radionov, S. A. Ko'rsatilgan asar. — P. 145–147.
[59]Sapaev, Sh. D., Bakoeva, G. M. Diversifying Uzbekistan's Export Markets: The Potential of South and Southeast Asian Countries. Ko'rsatilgan asar.

bir vaqtda yuqori bo'lishi — ya'ni bitta tovar guruhi (oltin) ham, bitta yoki bir nechta hamkor davlat ham eksportning katta qismini belgilashi — mamlakat eksport daromadlarining tashqi shoklarga, masalan oltin narxining pasayishi yoki yirik hamkor bozoridagi talab qisqarishiga, nisbatan zaifligini kuchaytiradi. Shu nuqtai nazardan, Markaziy Osiyo bozorlarini kengaytirish nafaqat mintaqaviy integratsiya, balki umumiy eksport xavfsizligini mustahkamlash vositasi sifatida ham qaralishi mumkin.

Amaldagi savdo hajmi bilan kutilayotgan salohiyat o'rtasidagi tafovutni to'liq ekonometrik baholash, yuqorida qayd etilganidek, ushbu tezis doirasida amalga oshirilmadi. Biroq mavjud tavsifiy ma'lumotlar allaqachon ayrim tendensiyalarni ko'rsatib turibdi: Markaziy Osiyoning o'zi 2022-yilda jami 86 milliard dollarlik tovar eksport qilgan bo'lsa, undan atigi taxminan 15 foizi O'zbekiston hissasiga to'g'ri kelgan, Qozog'iston esa 60 foizdan ortiq ulushni egallagan[60]; bu nisbat mintaqa ichidagi savdo salohiyatining katta qismi hamon energiya resurslariga boy Qozog'iston va Turkmaniston atrofida shakllanayotganini, O'zbekistonning tayyor mahsulot va qayta ishlangan tovarlar bilan bu bo'shliqni to'ldirish imkoniyati esa hali to'liq ishga solinmaganini ko'rsatadi.

Gravitatsion model nuqtai nazaridan olib qaraganda (3-jadval), O'zbekiston–Markaziy Osiyo savdosiga ta'sir etuvchi asosiy omillar orasida masofa va umumiy chegara mavjudligi alohida o'rin tutadi: nazariy jihatdan, masofa oshgani sari savdo hajmi kamayishi, umumiy chegara mavjudligi esa savdoni kengaytirishi kutiladi — bu, ayniqsa, Qozog'iston bilan savdoning nisbatan yuqori hajmini izohlashi mumkin. Iqtisodiy massa o'zgaruvchisi (YAIM) bo'yicha esa besh davlat o'rtasida katta assimetriya kuzatiladi (4-jadval): Qozog'istonning 2024-yildagi YAIM hajmi (291,5 milliard dollar) O'zbekistonnikidan (115 milliard dollar) va undan ham ko'proq Tojikiston (14,2 milliard dollar) hamda Qirg'iziston (17,5 milliard dollar) ko'rsatkichlaridan sezilarli darajada yuqori[61]. Gravitatsion nazariyaga ko'ra, kattaroq iqtisodiy massaga ega davlat bilan savdo hajmi, boshqa sharoitlar teng bo'lganda, yuqoriroq bo'lishi kutiladi — bu, o'z navbatida, nima uchun Qozog'iston O'zbekiston eksportining eng yirik mintaqaviy iste'molchisi ekanligini nazariy jihatdan asoslaydi, biroq shu bilan birga Tojikiston va Qirg'iziston kabi kichikroq iqtisodiyotlar bilan savdoni kengaytirish imkoniyatlari ularning iqtisodiy hajmi bilan ham cheklanganligini ko'rsatadi.

**3-jadval. Gravitatsion model o'zgaruvchilari**

[60]Umarova, S. Ko'rsatilgan asar. — P. 105 (Jahon banki ma'lumotlari asosida).
[61]World Bank. World Development Indicators. Ko'rsatilgan manba.

| O'zgaruvchi | Belgisi | O'lchov birligi | Ma'lumot manbasi | Nazariy kutilayotgan ta'sir |
|---|---|---|---|---|
| Eksport importyor davlatiga | $Export_{ijt}$ | mln AQSh dollari | WTO / UN Comtrade | qaram o'zgaruvchi |
| Eksportyor YAIM | $GDP_{it}$ | mln AQSh dollari | World Bank WDI | musbat |
| Importyor YAIM | $GDP_{jt}$ | mln AQSh dollari | World Bank WDI | musbat |
| Masofa | $Distance_{ij}$ | km | CEPII GeoDist (ushbu tezisda qo'llanilmadi) | manfiy |
| Umumiy chegara | $Border_{ij}$ | dammi (0/1) | muallif kodlashtiruvi | musbat |
| Almashinuv kursi | $ExchangeRate_{ijt}$ | milliy valyuta / USD | Markaziy banklar | noaniq |
| Savdo kelishuvi mavjudligi | $TradeAgreement_{ijt}$ | dammi (0/1) | muallif kodlashtiruvi | musbat |
| Logistika sifati | $Logistics_{ijt}$ | indeks | World Bank LPI (ushbu tezisda qo'llanilmadi) | musbat |

**4-jadval. Markaziy Osiyo davlatlarining asosiy makroiqtisodiy ko'rsatkichlari, 2024-yil**

| Davlat | YAIM (joriy narxlarda, mlrd AQSh dollari) | Aholi jon boshiga YAIM (AQSh dollari) |
|---|---|---|
| O'zbekiston | 115,0 | 3 161,7 |
| Qozog'iston | 291,5 | 14 154,6 |
| Qirg'iziston | 17,5 | 2 420,2 |
| Tojikiston | 14,2 | 1 341,2 |
| Turkmaniston | 51,4 | 6 856,7 |

Savdo kelishuvlari o'zgaruvchisiga kelsak, O'zbekiston va Turkmaniston o'rtasida 2024-yilda amalga oshirilgan erkin savdo kelishuvi ijobiy misol bo'la oladi: uni joriy etilishidan so'ng ikki davlat o'rtasidagi savdo aylanmasi yilning birinchi choragida 23

foizga o'sgan[62]. Biroq bu o'sish, yuqorida qayd etilganidek, asosan Turkmanistondan O'zbekistonga eksport hisobiga — ya'ni bir tomonlama tarzda — sodir bo'lgan, bu esa savdo kelishuvining o'zi savdo hajmini oshirishi mumkinligini, biroq savdo balansining tarkibiy assimetriyasini avtomatik ravishda bartaraf eta olmasligini ko'rsatadi.

## O'ZBEKISTON EKSPORT SALOHIYATINI OSHIRISH STRATEGIYASI

Yuqorida keltirilgan tahlil natijalaridan kelib chiqib, O'zbekistonning Markaziy Osiyo bozorlaridagi eksport salohiyatini oshirish bo'yicha quyidagi strategik yo'nalishlar taklif etiladi (5-jadval). Takliflar shior darajasida emas, balki aniqlangan muammolarga — eksportning yuqori kontsentratsiyasi, mintaqa ichidagi savdoning cheklanganligi va tayyor mahsulot ulushining pastligiga — bevosita bog'liq holda shakllantirildi.

Birinchi yo'nalish yuqori RCA ko'rsatkichiga ega tovar guruhlarini — birinchi navbatda, paxta ipi va tolali mahsulotlar hamda rangli metallarni — mintaqa bozorlariga chuqurroq olib kirishga qaratilgan bo'lib, bu borada mavjud ustunlikni yo'qotmasdan turib, uni yangi bozorlarga tarqatish nazarda tutiladi. Ikkinchi yo'nalish xomashyo va yarim tayyor mahsulot eksportidan qo'shilgan qiymati yuqori tayyor mahsulotlarga o'tishni, xususan tekstil va oziq-ovqat sanoatida, taqozo etadi — bu, o'z navbatida, mavjud RCA ustunligini chuqurlashtirish, uni faqat xom ashyo darajasida emas, balki qayta ishlangan mahsulot darajasida ham saqlab qolish imkonini beradi. Uchinchi yo'nalish bojxona va standartlashtirish sohasidagi to'siqlarni bartaraf etishga qaratilgan, chunki adabiyotlar tahlilida qayd etilganidek, aynan shu omillar savdo xarajatlarining sezilarli qismini tashkil etadi. To'rtinchi yo'nalish esa transport-logistika infratuzilmasini rivojlantirish, xususan O'zbekiston–Qirg'iziston–Xitoy temir yo'li kabi loyihalarni jadallashtirishdir, bu esa nafaqat Markaziy Osiyo ichidagi, balki mintaqadan tashqariga chiqadigan savdo yo'llarini ham kengaytiradi.

**5-jadval. O'zbekiston eksport salohiyatini oshirish bo'yicha strategik takliflar**

| Aniqlangan muammo | Taklif qilinayotgan chora | Mas'ul institutlar | Amalga oshirish muddati | Kutiladigan iqtisodiy natija | Natijani o'lchash ko'rsatkichi |
|---|---|---|---|---|---|
| Eksportning oltin va xom ashyoga yuqori | Paxta ipi, tekstil va oziq-ovqat mahsulotlarini qayta ishlash | Investitsiyalar, sanoat va savdo vazirligi; | O'rta muddatli (3–5 yil) | Eksport tarkibida tayyor mahsulot | Oltindan tashqari eksportning |

[62]Uzbekistan and Turkmenistan Implement Free Trade Agreement // The Times of Central Asia, 13.03.2025. URL: https://timesca.com/uzbekistan-and-turkmenistan-implement-free-trade-agreement/ (murojaat sanasi: 11.08.2026).

| | | | | | |
|---|---|---|---|---|---|
| bog'liqligi (37,9%) | quvvatlarini kengaytirish, qo'shilgan qiymati yuqori mahsulotlar ishlab chiqarishni rag'batlantirish | Eksportni rivojlantirish agentligi | | ulushining oshishi | yillik o'sish sur'ati (%) |
| Bojxona va standartlar bo'yicha muvofiqlashtirilmaganlik | Fitosanitariya, texnik va sifat standartlarini Markaziy Osiyo davlatlari bilan o'zaro tan olish kelishuvlari orqali muvofiqlashtirish, bojxona jarayonlarini raqamlashtirish | Davlat bojxona qo'mitasi; Standartlashtirish agentligi | Qisqa-o'rta muddatli (2–4 yil) | Chegara o'tish vaqtining qisqarishi | O'rtacha bojxona rasmiylashtirish muddati (soat) |
| Tojikiston va Qirg'iziston kabi kichik bozorlarga past eksport hajmi | Chegaraoldi savdo va hududlararo sanoat kooperatsiyasini rivojlantirish, kichik va o'rta biznes uchun mintaqaviy bozor ma'lumotlari platformasini yaratish | Hududiy hokimliklar; Eksportni rivojlantirish agentligi; Tadbirkorlar palatasi | Qisqa muddatli (1–3 yil) | Kichik eksportchilar sonining ortishi | Qirg'iziston va Tojikistonga eksport qiluvchi korxonalar soni |
| Transport-logistika infratuzilmasining yetarli emasligi | CAREC yo'laklari va O'zbekiston–Qirg'iziston–Xitoy temir yo'li loyihasini jadallashtirish, logistika | Transport vazirligi; «O'zbekiston temir yo'llari» AJ | Uzoq muddatli (5–7 yil) | Tranzit vaqti va xarajatlarining qisqarishi | O'rtacha tranzit muddati (kun) |

| | | | | | |
|---|---|---|---|---|---|
| | markazlarini rivojlantirish | | | | |
| Elektron savdo va raqamli sertifikatlashtirishning rivojlanmaganligi | Eksportchilar uchun elektron savdo platformalarini joriy etish, raqamli kelib chiqish sertifikatlari tizimini yo'lga qo'yish | Investitsiyalar, sanoat va savdo vazirligi; Raqamli texnologiyalar vazirligi | Qisqa-o'rta muddatli (2–3 yil) | Kichik eksportchilarning mintaqaviy bozorlarga kirishi osonlashishi | Elektron sertifikatlar orqali rasmiylashtirilgan bitimlar ulushi (%) |

## XULOSA VA TAKLIFLAR

O'tkazilgan tahlil shuni ko'rsatadiki, O'zbekistonning Markaziy Osiyo mintaqasidagi eksport salohiyati bugungi kunda faqat qisman ishga solingan. Mamlakat eksporti tarkibi hamon oltin va boshqa qazib olish sanoati mahsulotlariga yuqori darajada bog'liq bo'lib qolmoqda, bu esa, bir tomondan, tabiiy ustunlikni aks ettirsa, ikkinchi tomondan, tashqi bozor sharoitlariga nisbatan zaiflikni kuchaytiradi. Qozog'iston mintaqadagi eng yirik savdo sherigi bo'lib qolayotgan bo'lsa-da, uning ulushi ham jami eksportning atigi olti foizidan sal ko'progini tashkil etadi; Tojikiston va Qirg'iziston bilan savdo esa undan ham kichikroq hajmda davom etmoqda. Gravitatsion nazariya nuqtai nazaridan bu holat qisman iqtisodiy massa assimetriyasi va masofa omillari bilan izohlansa-da, bojxona hamda standartlashtirish sohasidagi institutsional to'siqlar ham muhim rol o'ynaydi.

Tadqiqot davomida aniqlangan asosiy natijalar quyidagilardan iborat: birinchidan, Balassa RCA indeksi bo'yicha O'zbekiston oltin va paxta mahsulotlarida yuqori nisbiy ustunlikka ega, biroq bu ustunlik asosan xom ashyo yoki yarim tayyor mahsulot darajasida namoyon bo'lmoqda; ikkinchidan, mintaqa ichidagi savdo salmog'i Markaziy Osiyoning umumiy tashqi savdo salohiyatiga nisbatan sezilarli darajada past, bu esa foydalanilmagan imkoniyatlar mavjudligidan dalolat beradi; uchinchidan, savdo kelishuvlari — masalan, O'zbekiston–Turkmaniston erkin savdo bitimi — savdo hajmini oshirishga qodir bo'lsa-da, savdo balansining tarkibiy assimetriyasini o'z-o'zidan bartaraf eta olmaydi, bu esa qo'shimcha, maqsadli siyosat choralarini talab qiladi.

Ushbu xulosalar asosida ishlab chiqilgan strategik takliflar — eksportni diversifikatsiya qilish, standartlarni muvofiqlashtirish, transport-logistika infratuzilmasini rivojlantirish va raqamli savdo vositalarini joriy etish —

O'zbekistonning nafaqat Markaziy Osiyodagi, balki undan tashqaridagi bozorlardagi raqobatbardoshligini ham mustahkamlashga xizmat qiladi. Kelgusi tadqiqotlar uchun, ayniqsa, gravitatsion modelni to'liq bilateral panel ma'lumotlar asosida PPML usuli bilan real ekonometrik baholash, shuningdek HS-6 darajasidagi tor tovar toifalari bo'yicha jahon eksport ko'rsatkichlarini chuqurroq o'rganish tavsiya etiladi — bu, o'z navbatida, ushbu tezisda ochiq qoldirilgan ba'zi bo'shliqlarni to'ldirishga xizmat qiladi.

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# 10. SOCIAL SCIENCES AND HUMANITIES, LAW, AND POLITICAL SCIENCE

# ADVOKATLAR FAOLIYATINING TASHKILIY-HUQUQIY ASOSLARINI TAKOMILLASHTIRISH MASALALARI

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***Annotatsiya:*** *Ushbu maqolada O‘zbekiston Respublikasida advokatura institutini isloh qilishning hozirgi holati va istiqbollari chuqur ilmiy-nazariy jihatdan tahlil qilinadi. Tadqiqotning asosiy e’tibori advokatlik faoliyatini tashkil etishning huquqiy mexanizmlarini mustahkamlash, shuningdek advokatlarning mustaqilligini ta’minlash hamda ularning sud protsessidagi teng huquqliligini oshirish masalalariga qaratilgan. Sohadagi mavjud qonunchilik bo‘shliqlari o‘rganilib, advokatlik tuzilmalarining tashkiliy shakllarini kengaytirish, advokaturani fuqarolik jamiyatining mustaqil instituti sifatidagi rolini oshirish va raqamlashtirish jarayonlarini joriy etish bo‘yicha konkret takliflar ilgari surilgan. Tadqiqot natijalari jismoniy va yuridik shaxslarga malakali huquqiy yordam ko‘rsatish sifatini oshirish hamda advokatlik kasbining nufuzini ko‘tarishga xizmat qiladi.*

***Kalit so‘zlar:*** *advokatura, himoya, tashkiliy-huquqiy asos, advokatlik faoliyati, protsessual tenglik, malakali huquqiy yordam, islohot, huquqiy maqom, fuqarolik jamiyati, raqamlashtirish.*

***Аннотация:*** *В данной статье анализируются современное состояние и перспективы реформирования института адвокатуры в Республике Узбекистан. Основное внимание в исследовании уделяется укреплению правовых механизмов организации адвокатской деятельности, а также обеспечению независимости адвокатов и повышению их равноправия в судебном процессе. Изучены существующие пробелы в законодательстве в данной сфере, выдвинуты предложения по расширению организационных форм адвокатских образований и внедрению процессов цифровизации.*

*Результаты исследования послужат повышению качества оказания квалифицированной юридической помощи физическим и юридическим лицам, а также поднятию престижа профессии адвоката.*

***Ключевые слова:*** *адвокатура, защита, организационно-правовая основа, адвокатская деятельность, процессуальное равенство, квалифицированная юридическая помощь, реформа, правовой статус.*

***Abstract:*** *This article analyzes the current state and prospects for reforming the institution of the bar in the Republic of Uzbekistan. The main focus of the study is on strengthening the legal mechanisms for organizing advocacy, as well as ensuring the independence of lawyers and increasing their equality in judicial proceedings. Existing legislative gaps in the field were studied, and proposals were put forward to expand the organizational forms of legal structures and introduce digitalization processes. The results of the study will serve to improve the quality of providing qualified legal assistance to individuals and legal entities, as well as to raise the prestige of the legal profession.*

***Keywords:*** *advocacy, defense, organizational and legal framework, advocacy, procedural equality, qualified legal assistance, reform, legal status, civil society, digitalization.*

So‘nggi yillarda O‘zbekiston Respublikasida inson huquq va erkinliklarini himoya qilish kafolatlarini kuchaytirish, aholiga malakali yuridik yordam ko‘rsatish tizimini takomillashtirish hamda odil sudlovni ta’minlash borasida keng ko‘lamli islohotlar amalga oshirilmoqda.

Jumladan, Yangi O‘zbekistonning taraqqiyot strategiyasi va 2023-yilda qabul qilingan yangi tahrirdagi O‘zbekiston Respublikasining Konstitutsiyasi advokatura institutini fuqarolik jamiyatining eng muhim va mustaqil bo‘g‘inlaridan biri sifatida mustahkamladi. Konstitutsiyaning 141-moddasida advokatura faoliyati qonuniylik, mustaqillik va o‘zini o‘zi boshqarish prinsiplariga asoslanishi qat’iy belgilab qo‘yildi [63]

Shunga qaramay, bugungi kunda advokatura faoliyatining tashkiliy-huquqiy asoslarini yanada takomillashtirish, advokatlarning protsessual maqomini kuchaytirish hamda ularning faoliyatiga to‘sqinlik qiluvchi omillarni bartaraf etish dolzarb vazifalardan biri bo‘lib qolmoqda. Bu, o‘z navbatida, advokatlik tuzilmalarining faoliyatini ilmiy-nazariy jihatdan chuqur tahlil qilishni va tegishli qonunchilik hujjatlarini takomillashtirishni taqozo etadi.

Zamonaviy O‘zbekiston advokaturasining tashkiliy tuzilishi ikkita o‘zaro chambarchas bog‘liq yo‘nalishlarni o‘z ichiga oladi. Bular bir tomondan,

[63] O‘zbekiston Respublikasining yangi tahrirdagi Konstitutsiyasi. - T.: “O‘zbekiston”, 2023-yil. 141-modda.

advokatlarning aholi bilan faoliyat olib borishga mo‘ljallangan bevosita advokatlik tuzilmalarining tizimi bo‘lsa, ikkinchi tomondan esa bu advokaturaga nisbatan rahbarlik va boshqaruv funksiyasini amalga oshiruvchi rahbariy advokatlik tuzilmalaridir (O‘zbekiston Respublikasi Advokatlar palatasi va uning hududiy boshqarmalari). Advokaturani tashkiliy jihatidan mazkur ikkita yo‘nalishlar bo‘yicha taqsimlash yondashuviga nisbatan Rossiya advokaturasi misolida A.N.Vedernikov ham ma’qullab shu kabi o‘z fikrini bildiradi [64] .

Advokatura institutining samaradorligi ko‘p hollarda advokatlar faoliyatining tashkiliy-huquqiy shakllarining optimalligiga bog‘liqdir.

Bunda advokatlar faoliyatining tashkiliy shakllari bir tomondan advokaturaning o‘z oldida turgan vazifalarini bajarilishi bo‘yicha salohiyatini imkon qadar to‘laqonli ochib berilishiga va amalda namoyon qilinishiga xizmat qilsa, ikkinchi tomondan esa, ular malakali yuridik yordamga muhtoj shaxslarga advokatura xizmatini olish imkoniyatiga zarur sharoit yaratadi.

Xususan, advokatlik faoliyatining tashkiliy-huquqiy shakllari advokatlar faoliyatining samarali bo‘lishiga ta’sir ko‘rsatuvchi omillar qatorida muhimligi va dolzarbligi haqida A.I.Jo‘rayev e’tirof etadiki: “Advokatlik faoliyatini amalga oshirishning tashkiliy-huquqiy shakllari fuqarolarning malakali yuridik yordamni olishda samarali imkoniyatlarni yaratishda, shuningdek advokaturaning mustaqilligini va professionalligini mustahkamlash vazifasini hal qilishda hal qiluvchi ahamiyatga egadir” [65] .

Shuningdek, huquqshunos olim Yu.X.Tojiboyevning ta’kidlashicha: “Tashkiliy-huquqiy shaklning tanlanishi advokatlik faoliyatining samaradorligiga, uni aholi uchun yaqin bo‘lishiga, shuningdek ma’muriy va sud organlari tomonidan tashqi turli ta’sirlarga nisbatan mustahkamlikni saqlashga bevosita o‘z ta’sirini ko‘rsatadi”[66] .

Shu o‘rinda, advokatlik kasbiy faoliyati bir qator talab va xosliklariga ega ekanligi bilan ajralib turadi va shu kabi xususiyatlar uni barcha boshqa turdagi malakali yuridik yordamni ko‘rsatish faoliyatlaridan chegaralab turadi. Bunda avvalambor advokatlik maqomiga ega bo‘lish uchun maxsus huquqiy talablarga rioya etilishi talab etiladi.

[64] Ведерников А.Н. Организационное построение современной российской адвокатуры как структуры гражданского общества // Вестник Томского государственного университета, 2011, № 345. – Б. 101-102.

[65] Жўраев А.И. Понятия и виды организационно-правовых форм осуществления адвокатской деятельности в Республике Узбекистан //INTERNATIONAL CONFERENCE OF NATURAL AND SOCIAL-HUMANITARIAN SCIENCES, Volume 02, Issue 03, 2025, Belgium, Brussels. - Б. 36.

[66] Тожибоев Ю.Х. Адвокатура в системе правовой помощи населению. - Ташкент, 2019. - Б. 41.

Jumladan, har qanday shaxs ham advokat bo‘la olmaydi, buning uchun u avvalambor O‘zbekiston Respublikasining fuqarosi bo‘lishi lozim. Bundan tashqari, u: birinchidan, oliy darajadagi yuridik ma’lumotga ega bo‘lishi;

ikkinchidan, mazkur faoliyat turi bilan shug‘ullanishi mumkinligi haqidagi tegishli litsenziyasiga ega bo‘lishi; uchinchidan, muomalaga to‘la layoqatli;

to‘rtinchidan, bordi-yu ilgari sudlangan bo‘lsa, unda bunday holatda uning sudlanganlik holati tugallangan yoki sudlanganligi olib tashlangan bo‘lishi kerak [67].

Shu o‘rinda, advokatning faoliyatida mustaqillik va demak xolislikni ta’minlash maqsadida u tomonidan haq to‘lanishi orqali olib borilishi mumkin bo‘lgan faoliyatining sohalari va turlari qonunchilik bilan chegaralanib qo‘yiladi. Xususan, advokatga haq to‘lanilishiga yo‘l qo‘yilishi asosida faqatgina quyidagi yo‘nalishlarda bir vaqtda faoliyat olib borishi mumkin bo‘ladi: pedagogik va ilmiy faoliyat; advokatlar palatasi tuzilmalaridagi faoliyat; mediator va patent vakili sifatidagi faoliyat;

davlat tashkilotlaridagi yuridik xizmati xodimi maqomidagi faoliyat;

hakamlik va xalqaro sudlarida sudya maqomidagi faoliyat; iqtisodiy va fuqarolik sud ishlarini yuritishni amalga oshirish bo‘yicha advokatlik faoliyati uchun litsenziya olgan taqdirda sud boshqaruvchisi sifatidagi faoliyat [68] .

Bundan tashqari, advokatlik maqomiga ega bo‘lish tegishli maxsus tartib orqali amalga oshiriladi. Xususan, advokatlik faoliyati bilan shug‘ullanish huquqini beruvchi litsenziya tegishli malaka komissiyalarining qarorlari asosida adliya organlari tomonidan beriladi. Bunda litsenziyani qo‘lga kiritish uchun advokat maqomiga talabgor kamida uch oy biror-bir advokatlik tuzilmasida stajirovka o‘tashi va tegishli malaka imtihonini topshirishi kerak bo‘ladi.

Biroq, bordi-yu advokatlik maqomiga da’vogar shaxs kamida uch yil davlat tashkilotlarining yuridik xizmati xodimi bo‘lib yoki sudya, tergovchi, surishtiruvchi, shuningdek prokuror lavozimida ishlagan va demak yuridik mutaxassisligi bo‘yicha tegishli ish stajiga ega bo‘lgan bo‘lsa, unda bunday holatda unga nisbatan advokatlik tuzilmasida stajirovkadan o‘tish talabi qo‘llanilmaydi va u bevosita malaka imtihoniga qo‘yiladi.

Shuningdek, malaka imtihonini muvaffaqiyatsiz topshirgan taqdirda olti oy o‘tgach qayta topshirishga ruxsat beriladi.

[67] “Advokatura to‘g‘risida”gi O‘zbekiston Respublikasining Qonuni, 1996-yil 27-dekabr. Qonun hujjatlari ma’lumotlari milliy bazasi (www.lex.uz).

[68] O‘zbekiston Respublikasining “Advokatlik faoliyatining kafolatlari va advokatlarning ijtimoiy himoyasi to‘g‘risida”gi Qonuni, 1998-yil 25-dekabr. (www.lex.uz).

Ijobiy topshirilgan malaka imtihonidan so‘ng da’vogar uch oy davrida tegishli darajadagi adliya organiga litsenziyani olish haqida o‘z murojaatini yo‘llashi kerak bo‘ladi, aks holda u imtihonni qayta topshirishi lozim bo‘ladi.

Shu o‘rinda, advokatlik faoliyatini litsenziyalash tartibi O‘zbekiston Respublikasi Vazirlar Mahkamasining 2022-yil 5-avgustdagi “Advokatlik faoliyatini maxsus elektron tizim orqali litsenziyalash tartibi to‘g‘risidagi nizomni tasdiqlash haqida»gi 432-sonli qarori bilan yangi, zamonaviy bosqichga ko‘tarildi.[69] Ushbu qaror sohada byurokratiyani kamaytirib, «Yagona darcha» tamoyili asosida litsenziya berishning shaffof tizimini yaratdi.

O‘z navbatida, litsenziyaga ega bo‘lgan shaxs uch oydan kechiktirmay yakka tartibda yoki litsenziya olgan boshqa shaxslar bilan birgalikda o‘zining advokatlik tuzilmasini tuzishi yoxud boshqa biror bir faoliyat yuritayotgan advokatlik tuzilmasiga kirishi lozim bo‘ladi. Faoliyat olib borish uchun advokatlik tuzilmasining shakli rasmiy aniq bo‘lganidan so‘ng da’vogar shaxsga ikki ish kuni ichida advokatlik guvohnomasi taqdim etiladi.

Guvohnomani olganlik advokat maqomiga egalikni va advokatlar palatasi a’zosi bo‘lganlikni bildiradi.

Bunda guvohnomani olish bilan bog‘liq holatlar O‘zbekiston Respublikasi Vazirlar Mahkamasining 2023-yil 1-iyundagi “Advokatlik guvohnomasini berish tartibi to‘g‘risidagi nizomni tasdiqlash haqida»gi 226-sonli qarori bilan tartibga solingan [70] .

Endilikda maxsus QR-kodga ega bo‘lgan guvohnomalar advokatlarning vakolatlarini elektron tarzda tasdiqlash imkonini berib, sudlar va huquqni muhofaza qiluvchi organlar bilan muloqotni sezilarli darajada yengillashtirmoqda.

Bu yerda shuni alohida qayd etish joizki, advokatlik maqomini o‘ziga xoslik jihatlaridan biri shunda namoyon bo‘ladiki, unga ko‘ra advokatlikning bevosita faoliyati qonunchilikda batafsil belgilab qo‘yilgan faqatgina ma’lum advokatlik tuzilmalarida o‘tkazilishi mumkin.

Bunda e’tirof etish joizki, bu kabi belgilab qo‘yilgan shakllardan tashqarisida advokatlarning faoliyat olib borishiga yo‘l qo‘yilmaydi, shuningdek advokat faqatgina bitta o‘zi tanlagan advokatlik tuzilmasida o‘z faoliyatini olib borishi mumkin bo‘ladi.

[69] O‘zbekiston Respublikasi Vazirlar Mahkamasining 2022-yil 5-avgustdagi “Advokatlik faoliyatini maxsus elektron tizim orqali litsenziyalash tartibi to‘g‘risidagi nizomni tasdiqlash haqida»gi 432-sonli qarori. (www.lex.uz).

[70] O‘zbekiston Respublikasi Vazirlar Mahkamasining 2023-yil 1-iyundagi “Advokatlik guvohnomasini berish tartibi to‘g‘risidagi nizomni tasdiqlash haqida»gi 226-sonli qarori. (www.lex.uz).

Shu tariqa, advokat maqomini olgan shaxsga uch oy ichida u mintaqaviy reestrga kiritilganidan so‘ng advokatlar palatasini u qaysi advokatlik tuzilmasining turini tanlaganligi haqida xabardor qilishi lozimligi majburiyati yuklatiladi. Uni bu kabi talabni inkor qilib bajarmasligi advokatlik maqomini bekor qilish oqibatlariga olib kelishi mumkin.

Undan tashqari qayd etish joizki, advokatlik tuzilmalarining faoliyatiga oid boshqa turdagi munosabatlarning huquqiy tartibga solinishi ularning o‘zlari tomonidan ishlab chiqiladigan va tasdiqlanadigan ustav yoki nizomlari, shuningdek ta’sis shartnomalari orqali amalga oshirib kelinadi. Bu kabi masalalar qatoriga advokatlik tuzilmalarini boshqarish bilan bog‘liq jihatlar, xususan, ularning rahbariy organlarini shakllantirish, a’zolarini maqomiga ko‘ra huquq va majburiyatlarini belgilash, ichki tuzilma va shtatlarini aniqlash, moliyalashtirish jihatlari taalluqlidir.

Bu yerda yana shuni e’tirof etish kerakki, agarda advokatlik tuzilmasi firma yoki hay’at shaklida tashkil etiladigan bo‘lsa, unda ularning joylashish joyi yashash uchun mo‘ljallanmagan binolarda (noturar joylarda) bo‘lishi lozim. Bundan farqli o‘laroq, advokatlik byurolari nafaqat noturar joylarida, balki qonuniy tartibda advokatlarning o‘zlariga taalluqli bo‘lgan turar joylarida ham joylashtirilishi mumkin. Biroq, amaliyot shuni ko‘rsatmoqdaki, noturar joy fondi bilan bog‘liq cheklovlar ko‘pincha yosh advokatlarning firma yoki hay’atlar ochishiga to‘sqinlik qilmoqda, sababi tijorat binolarining ijara narxi yuqoriligi advokatlik faoliyatining iqtisodiy samaradorligiga salbiy ta’sir etmoqda[71] .

Shu yerning o‘zida qayd etish joizki, mazkur nom mazmunan bu boradagi ijtimoiy munosabatlar subyektini to‘g‘ri aks ettirmagan. Buning boisi shundaki, advokatura bu ijtimoiy-huquqiy institut va bu institut bevosita ijtimoiy munosabatlar subyekti bo‘lolmaydi. Bunday subyekt sifatida faqatgina advokatlarning o‘zi va ularni tashabbusi asosida ularning o‘zlaridan tashkil topgan turli tuzilmalari bo‘lishi mumkin.

Bundan tashqari, sud-tergov amaliyotida advokatlarning protsessual vakolatlarini amalga oshirish bilan bog‘liq ayrim to‘siqlar saqlanib qolmoqda. Jinoyat va fuqarolik ishlari bo‘yicha sud protsessida tortishuvchanlik tamoyilini ta’minlash uchun advokat tomonidan dalillar to‘plash, turli davlat va nodavlat organlariga advokat so‘rovi yuborish mexanizmining ta’sirchanligini oshirish zarur[72] .

[71] Rahmonov Sh.N. Advokatura institutini raqamlashtirishning zamonaviy tendensiyalari va huquqiy kafolatlari // Huquq va hayot ilmiy jurnali, 2023-yil, №4. – B. 55-58.

[72] Ibragimov S. Jinoyat va fuqarolik ishlari bo‘yicha sud protsessida tortishuvchanlik tamoyilini ta’minlash: advokat maqomi va muammolar // Yuridik fanlar axborotnomasi, 2023-yil. - B. 112-115.

Amaldagi Ma’muriy javobgarlik to‘g‘risidagi kodeksda advokat so‘roviga javob bermaganlik uchun jarima miqdori belgilangan bo‘lsa-da, uning miqdori pastligi mansabdor shaxslarning mas’uliyatini to‘laqonli his qilishiga yetarli emas.

Yuqoridagi tahlillardan kelib chiqib, O‘zbekiston Respublikasida advokatura institutini va advokatlar faoliyatining tashkiliy-huquqiy asoslarini yanada takomillashtirish maqsadida quyidagi xulosa va takliflar ilgari suriladi:

Birinchidan, “Advokatura to‘g‘risida”gi qonunga o‘zgartirish kiritish, ya’ni 4-moddaning nomini aniqlashtirish va qonunni “Advokatlik faoliyatining tashkiliy shakllari” deb nomlanuvchi alohida 41-modda bilan to‘ldirish maqsadga muvofiq.

Ikkinchidan, advokatlik firmalari va hay’atlarini faqat noturar joylarda joylashtirish haqidagi talabni qayta ko‘rib chiqish. Ularni, xuddi advokatlik byurolari kabi, advokatlarga tegishli bo‘lgan turar joylarda (ko‘p qavatli uylarning birinchi qavatlarida) joylashtirishga ruxsat berish sohaning iqtisodiy jozibadorligini oshiradi.

Uchinchidan, davlat hisobidan yuridik yordam ko‘rsatish tizimini to‘liq raqamlashtirish va shaffoflashtirish. Bunda advokatlarni ishga jalb qilish inson omilisiz, maxsus elektron tizim orqali avtomatik tarzda taqsimlanishi korrupsiya va mahalliychilikning oldini oladi.

To‘rtinchidan, advokat so‘rovini bajarmaslik, advokatning kasbiy faoliyatiga to‘sqinlik qilish kabi holatlar uchun ma’muriy va jinoiy javobgarlik choralarini yanada og‘irlashtirish, xususan, jarima miqdorlarini keskin oshirish zarur.

Xulosa o‘rnida shuni ta’kidlash mumkinki, advokatura instituti nafaqat fuqarolarning huquq va manfaatlarini himoya qiluvchi vosita, balki davlat boshqaruvi ustidan kuchli jamoatchilik nazoratini o‘rnatuvchi, odil sudlovning ajralmas qismi hisoblanadi. Shuning uchun ham advokatlarning tashkiliy-huquqiy faoliyatini takomillashtirish orqali biz Yangi O‘zbekistonda qonun ustuvorligiga erishish yo‘lida katta qadam tashlagan bo‘lamiz.

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# O‘ZBEKISTONDA MILLATLARARO BARQARORLIKNI TA’MINLASH VA ETNIK NIZOLAR PROFILAKTIKASIDA SIYOSIY KOMMUNIKATSIYA MEXANIZMLARI

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***Annotatsiya.*** *Maqolada O‘zbekistonda millatlararo totuvlikni mustahkamlash va yuzaga kelishi mumkin bo‘lgan etnik ziddiyatlarning oldini olishda siyosiy kommunikatsiyalarning roli tahlil qilinadi. Muallif respondentlar o‘rtasida o‘tkazilgan so‘rovnoma natijalariga tayanib, nizolar profilaktikasida “yumshoq kuch” (soft power) usullarining samaradorligini ochib beradi. Tadqiqotda mahalla instituti va OAVning etnik xavfsizlikni ta’minlashdagi kommunikativ imkoniyatlari, shuningdek, davlat til siyosatining ijtimoiy barqarorlikka ta’siri yoritilgan. Maqolada hududiy etnik monitoring tizimini takomillashtirish masalalari ko‘rib chiqilib, O‘zbekiston axborot maydonidagi millatlararo munosabatlarning istiqbolli ssenariylari prognoz qilingan. Tadqiqot yakunida etnik nizolarning oldini olishga qaratilgan kommunikativ strategiyalarni rivojlantirish bo‘yicha amaliy tavsiyalar berilgan.*

***Kalit so‘zlar:*** *Etnik barqarorlik, nizolar profilaktikasi, siyosiy kommunikatsiya, yumshoq kuch, mahalla instituti, til siyosati, millatlararo totuvlik, kommunikativ monitoring, axborot xavfsizligi.*

***Аннотация:*** *В статье анализируется роль политических коммуникаций в укреплении межэтнического согласия и предупреждении возможных этнических конфликтов в условиях современного Узбекистана. На основе результатов проведённого социологического опроса автор раскрывает эффективность методов «мягкой силы» (soft power) в профилактике конфликтов. В исследовании освещаются коммуникативные возможности института махалли и СМИ в обеспечении этнической безопасности, а также влияние государственной языковой политики на социальную стабильность. Рассматриваются вопросы совершенствования системы регионального этнического мониторинга и прогнозируются перспективные сценарии развития межэтнических отношений в информационном пространстве Узбекистана. В завершении исследования*

*предложены практические рекомендации по развитию коммуникативных стратегий, направленных на предупреждение этнических конфликтов.*

***Ключевые слова:*** *межэтническая стабильность, профилактика конфликтов, политическая коммуникация, мягкая сила, институт махалли, языковая политика, межэтническое согласие, коммуникативный мониторинг, информационная безопасность.*

***Abstract:*** *The article analyzes the role of political communications in strengthening interethnic harmony and preventing potential ethnic conflicts in the context of modern Uzbekistan. Based on the results of a sociological survey, the author reveals the effectiveness of "soft power" methods in conflict prevention. The research highlights the communicative potential of the "Mahalla" institution and mass media in ensuring ethnic security, as well as the impact of state language policy on social stability. Issues of improving the regional ethnic monitoring system are considered, and promising scenarios for the development of interethnic relations in the information space of Uzbekistan are predicted. The study concludes with practical recommendations for developing communicative strategies aimed at the early prevention of ethnic conflicts.*

***Keywords:*** *interethnic stability, conflict prevention, political communication, soft power, Mahalla institution, language policy, interethnic harmony, communicative monitoring, information security.*

## KIRISH

Zamonaviy siyosiy jarayonlar shuni ko‘rsatmoqdaki, etnik barqarorlik va millatlararo totuvlik har qanday davlatning milliy xavfsizligi hamda barqaror rivojlanishining hal qiluvchi omili hisoblanadi.[73] Bugungi murakkab geosiyosiy vaziyatda axborot makonining globallashuvi va turli mafkuraviy qarama-qarshiliklarning avj olishi millatlararo munosabatlarni boshqarishda yangicha kommunikativ yondashuvlarni taqozo etmoqda. O‘zbekiston Respublikasining rivojlanish strategiyalarida jamiyatda bag‘rikenglik va insonparvarlik madaniyatini yuksaltirish, millatlararo do‘stlik aloqalarini mustahkamlash davlat siyosatining ustuvor yo‘nalishlaridan biri sifatida belgilangan.[74]

[73] O‘zbekiston Respublikasi Konstitutsiyasi. – Toshkent: O‘zbekiston, 2023.b-3.

[74] O‘zbekiston Respublikasi Prezidentining PF-21 Farmoni. «Mamlakat taraqqiyotining 2030-yilgacha mo‘ljallangan ustuvor yo’nalishlari doirasida islohotlarni izchil davom ettirish va yangi bosqichga olib chiqishning qo‘shimcha chora-tadbirlari to‘g‘risida» - Toshkent, 2026-yil 16-fevral, https://lex.uz/uz/docs/-8050769

Shu nuqtai nazardan, siyosiy kommunikatsiya tizimi nafaqat axborot yetkazish vositasi, balki ijtimoiy ongni shakllantirish va nizoli vaziyatlarni barvaqt prognoz qilishning strategik mexanizmi sifatida namoyon bo‘ladi.[75] Ilmiy adabiyotlarda ta’kidlanganidek, samarali yo‘lga qo‘yilgan muloqot va axborot almashinuvi jarayonlari etnik guruhlar o‘rtasidagi tushunmovchiliklarni bartaraf etish hamda umummilliy birdamlikni ta’minlashda asosiy rol o‘ynaydi. Biroq, axborot xurujlari kuchaygan sharoitda milliy-etnik xavfsizlikni ta’minlashning kommunikativ jihatlarini transformatsiya qilish va fuqarolik jamiyati institutlari bilan hamkorlikni kuchaytirish masalasi dolzarbligicha qolmoqda.

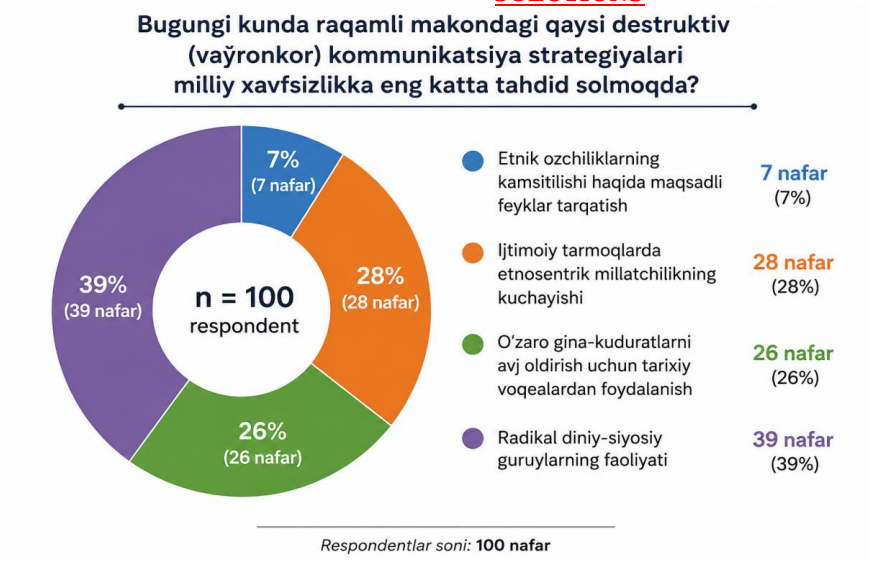
Etnik nizolar profilaktikasida an’anaviy ma’muriy-huquqiy usullardan ko‘ra, ko‘proq ijtimoiy-psixologik va kommunikativ ta’sir vositalari, xususan, “yumshoq kuch” (soft power) konsepsiyasiga tayanish yuqori samaradorlikni ko‘rsatmoqda. J.Nay tomonidan asoslangan ushbu nazariya siyosiy kommunikatsiyalarda majburlash emas, balki jalb qilish, ishontirish va umumiy qadriyatlarni targ‘ib etish orqali barqarorlikka erishishni ko‘zda tutadi.[76] O‘zbekistonning ko‘p millatli jamiyatida millatlararo do‘stlikni targ‘ib qilishda aynan qaysi kommunikativ usullar kutilgan natijani berayotganini aniqlash tadqiqotimizning muhim qismini tashkil etdi. Shu maqsadda o‘tkazilgan so‘rovnomada respondentlarning “yumshoq kuch” vositalariga munosabatini tahlil qilish orqali nizolar profilaktikasining eng samarali yo‘nalishlarini belgilab oldik.

Siyosiy kommunikatsiyalarda “yumshoq kuch” usullarini qo‘llashdan avval, raqamli makon orqali kirib kelayotgan destruktiv tahdidlarning tabiatini aniqlash muhim ahamiyatga ega.[77] Shu maqsadda respondentlarga "Bugungi kunda raqamli makondagi qaysi destruktiv (vayronkor) kommunikatsiya strategiyalari milliy xavfsizlikka eng katta tahdid solmoqda?" degan savol bilan murojaat qilindi.

## TAHLIL VA NATIJALAR

Tadqiqot natijalariga ko‘ra, respondentlarning eng katta qismi, ya’ni 39 foizi milliy xavfsizlikka asosiy tahdid sifatida ”radikal diniy-siyosiy guruhlarning faoliyati”ni belgilaganlar. Bu ko‘rsatkich raqamli makonda diniy omildan siyosiy maqsadlarda foydalanish va radikallashuv jarayonlari hamon eng xatarli kommunikativ strategiya bo‘lib qolayotganidan dalolat beradi. (Diagramma №1)

[75] Почепцов. Г.Г. Терия коммуникации. – Москва.: Refl-buk. 2011. с-26.
[76] Nye, J. S. Soft Power: The Means to Success in World Politics. PublicAffairs. 2004.
[77] Nye, J. S. Soft Power: The Means to Success in World Politics. PublicAffairs. 2004.p-124.




Shuningdek, so‘rovnomada ishtirok etgan mutaxassislarning 28 foizi “ijtimoiy tarmoqlarda etnosentrik millatchilikning kuchayishi”ni hamda 26 foizi “o‘zaro gina-quduratlarni avj oldirish uchun tarixiy voqealardan foydalanish”ni jiddiy xavf sifatida baholaganlar. E’tiborli jihati shundaki, millatchilik va tarixiy omillarning jami 54 foiz ovoz to‘plashi, raqamli kommunikatsiyalarda “tarixni siyosiylashtirish” va “etnik tuyg‘ularni manipulyatsiya qilish” strategiyalari millatlararo barqarorlikka zarba berishning asosiy quroliga aylanayotganini ko‘rsatmoqda.

Eng kam ko‘rsatkich - 7 foiz respondent tomonidan ”etnik ozchiliklarning kamsitilishi haqida maqsadli feyklar tarqatish” varianti tanlangan. Garchi bu strategiya eng kam ovoz to‘plagan bo‘lsa-da, harbiy ekspertlar nazarida yuqoridagi uchta omil (radikalizm, etnosentrizm va tarixiy revizionizm) raqamli makonda ancha tizimli va xavfliroq xarakterga ega ekanligi namoyon bo‘ldi.

Ushbu tahlillar shuni ko‘rsatadiki, raqamli makonda milliy-etnik ziddiyatlarni keltirib chiqarishga qaratilgan kommunikatsiyalar ko‘pincha diniy radikalizm va tarixiy adovatlar niqobi ostida amalga oshirilmoqda. Bu esa davlatning kommunikativ profilaktika ishlarida aynan shu yo‘nalishlarga urg‘u berish zaruriyatini tug‘diradi.

Raqamli makondagi destruktiv tahdidlarning tabiati va ularning milliy xavfsizlikka ta’sir doirasi aniqlangach, ushbu xurujlarga nisbatan eng zaif va moyil ijtimoiy qatlamlarni tahlil qilish mantiqiy zaruriyatga aylanadi.[78] Shu sababli, tadqiqotimizning keyingi bosqichida respondentlarga ”Aholining qaysi guruhlari destruktiv siyosiy kommunikatsiyalarning salbiy ta’siriga ko‘proq moyil?” degan savol bilan murojaat qilindi.

[78] Castells M. Communication Power. Oxford University Press.2009. p-28.

Olingan natijalar shuni ko‘rsatadiki, harbiy ekspertlar xavf guruhlarini aniqlashda asosan ikki muhim omilga - yosh xususiyatlari va ijtimoiy-iqtisodiy holatga alohida e’tibor qaratmoqdalar. Xususan, respondentlarning 42 foizi destruktiv kommunikatsiyalar ta’siriga eng ko‘p ”yoshlar (14–25 yosh)” tushishini ta’kidlaganlar. Ekspertlar buni yoshlarda hali axborotni saralash va unga nisbatan tanqidiy fikrlash ko‘nikmasining to‘liq shakllanmaganligi bilan izohlaydilar.[79] Bu ko‘rsatkich yosh avlodning raqamli makonda eng faol foydalanuvchi ekanligini hisobga olgan holda, ularning ongini manipulyatsiyalardan himoya qilish nafaqat pedagogik, balki milliy xavfsizlik masalasi ekanligini tasdiqlaydi. (Diagramma №2)




Shu bilan birga, so‘rovnomada ishtirok etgan mutaxassislarning salmoqli qismi - 40 foizi “daromadi past bo‘lgan shaxslar”ni xavf guruhi sifatida belgilagan. Bu juda muhim signal bo‘lib, iqtisodiy yetishmovchiliklar sharoitida insonlarning turli populistik va radikal kommunikativ va’dalarga uchuviyroq bo‘lib qolishini ko‘rsatadi. Demak, destruktiv siyosiy kommunikatsiyalar ko‘pincha jamiyatdagi ijtimoiy-iqtisodiy muammolardan oziqlanadi va ushbu qatlamni davlatga qarshi kayfiyatda shakllantirishga urinadi.

Respondentlarning 18 foizi esa ”xorijdan qaytayotgan mehnat migrantlari” variantini tanlaganlar. Garchi bu ko‘rsatkich boshqalarga nisbatan pastroq bo‘lsa-da, uzoq vaqt davomida begona axborot va mafkuraviy muhitda bo‘lgan shaxslarning vataniga qaytganidan so‘ng yangi siyosiy-ijtimoiy voqelikka moslashishi va ularning kommunikativ muhofazasini ta’minlash ham harbiy mutaxassislar diqqat markazida ekanligidan dalolat beradi.

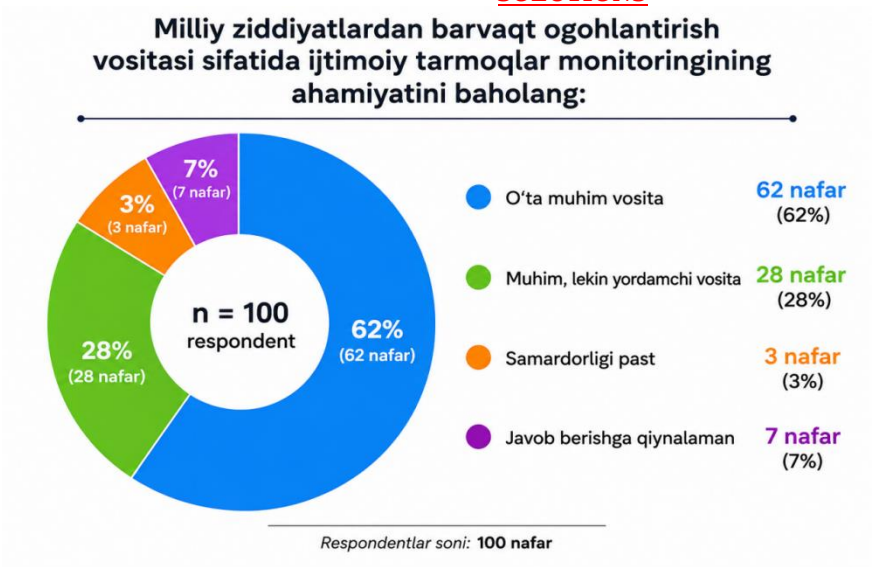
[79] Сулейманова Г. Межэтническое согласие как фактор стабильности общества. - Ташкент. 2021. с-29.

Umumiy tahlil shuni ko‘rsatmoqdaki, destruktiv siyosiy kommunikatsiyalarga moyillik omillari jamiyatda bir xil taqsimlanmagan. Yoshlarning psixologik zaifligi va daromadi past aholining ijtimoiy-iqtisodiy holati vayronkor kuchlar uchun asosiy nishon bo‘lib xizmat qilmoqda. Bu esa milliy-etnik xavfsizlikni ta’minlashda faqat umumiy choralarni emas, balki aynan shu maqsadli guruhlar bilan alohida, manzilli kommunikativ ishlarni olib borishni taqozo etadi.

Destruktiv kommunikatsiyalarga eng moyil ijtimoiy qatlamlar (yoshlar va ijtimoiy himoyaga muhtoj qatlamlar) aniqlanganidan so‘ng, ushbu guruhlarga yo‘naltirilgan xavf-xatarlarni barvaqt aniqlash va ularning oldini olish mexanizmlarini tahlil qilish dolzarb ahamiyat kasb etadi. Shu munosabat bilan, so‘rovnomada respondentlarning raqamli makondagi faollikni nazorat qilishga bo‘lgan munosabati o‘rganildi va ularga ”Milliy ziddiyatlardan barvaqt ogohlantirish vositasi sifatida ijtimoiy tarmoqlar monitoringining ahamiyatini baholang” degan savol bilan murojaat qilindi.

Olingan natijalar harbiy ekspertlar o‘rtasida zamonaviy xavfsizlik tizimida raqamli monitoringning o‘rni haqida deyarli yakdil fikr shakllanganini ko‘rsatdi. Respondentlarning mutlaq ko‘pchiligi, ya’ni 62 foizi ushbu vositani ”o‘ta muhim vosita” deb baholaganlar. Ushbu yuqori ko‘rsatkich harbiy soha vakillari ijtimoiy tarmoqlarni nafaqat axborot almashish maydoni, balki milliy-etnik ziddiyatlarning belgilari paydo bo‘ladigan va ularni operativ aniqlash zarur bo‘lgan strategik nuqta deb bilishlarini tasdiqlaydi.

Shu bilan birga, so‘rovnoma ishtirokchilarining 28 foizi monitoringni ”muhim, lekin yordamchi vosita” sifatida qayd etganlar. Bu yondashuv shuni anglatadiki, ekspertlarning salmoqli qismi raqamli monitoringni zarur deb hisoblasa-da, uni boshqa an’anaviy razvedka va profilaktika usullari (masalan, joylardagi bevosita ishlar) bilan uyg‘unlikda olib borish lozim degan fikrda. Jami hisobda respondentlarning 90 foizi ijtimoiy tarmoqlar monitoringini ijobiy baholashi, raqamli muhitning xavfsizlik arxitekturasidagi o‘rni beqiyos ekanligidan dalolat beradi. (Diagramma №3)




Monitoringning ”samaradorligi past” deb hisoblovchilar atigi 3 foizni tashkil etgan bo‘lsa, 7 foiz respondent bu masalada ”javob berishga qiynalishi”ni bildirgan. Ushbu minimal ko‘rsatkichlar harbiy ekspertlar hamjamiyatida texnologik nazorat va axborot tahlili borasidagi skeptitsizm (shubha bilan qarash) juda past darajada ekanligini anglatadi.

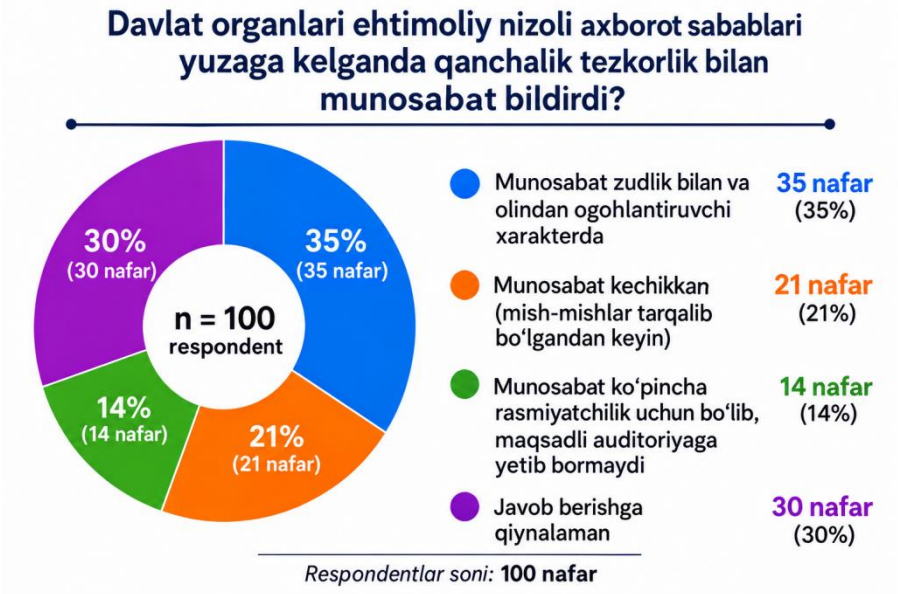
Xulosa qilib aytganda, raqamli monitoring milliy-etnik munosabatlar kontekstida “erta ogohlantirish tizimi” vazifasini o‘tashi zarur. Respondentlarning bergan baholari shuni tasdiqlaydiki, etnik ziddiyatlarning oldini olishda davlatning kommunikativ strategiyasi aynan ijtimoiy tarmoqlardagi kayfiyatlarni doimiy tahlil qilib borish va kutilayotgan tahdidlarga “proaktiv” (oldindan ta’sir qiluvchi) munosabat bildirish tizimiga tayanishi lozim. Bu esa o‘z navbatida, xavfsizlik organlari va axborot texnologiyalari mutaxassislarining hamkorligini yangi bosqichga ko‘tarishni talab etadi.

Ijtimoiy tarmoqlar monitoringi orqali xavfni barvaqt aniqlash jarayonning faqatgina birinchi bosqichidir. Aniqlangan axborot xurujlari yoki nizoli signallarga nisbatan davlat organlari tomonidan beriladigan munosabatning tezligi va sifati ziddiyatlarni mahalliylashtirishda hal qiluvchi ahamiyatga ega. Shu sababli, tadqiqotimizning navbatdagi qismida respondentlarning davlat tuzilmalari (huquqni muhofaza qiluvchi tuzilamalar, AOKA va boshqalar) faoliyatining operativligiga bo‘lgan munosabati o‘rganildi va ularga ”Davlat organlari ehtimoliy nizoli axborot sabablari yuzaga kelganda qanchalik tezkorlik bilan munosabat bildiradi?” degan savol o‘rtaga tashlandi.

Olingan natijalar harbiy ekspertlar o‘rtasida davlatning kommunikativ reaksiyasi borasida qarashlar turlicha ekanligini ko‘rsatdi. Respondentlarning 35 foizi davlat

organlarining munosabatini ”zudlik bilan va oldindan ogohlantiruvchi xarakterda” deb baholaganlar. Ushbu ko‘rsatkich xavfsizlik organlarining axborot makonida ma’lum darajada proaktiv (oldindan harakat qiluvchi) strategiyaga ega ekanligini va bu mutaxassislar tomonidan e’tirof etilayotganini anglatadi.

Biroq, tahlillar natijasida davlat kommunikatsiyalaridagi ayrim tizimli bo‘shliqlar ham ko‘zga tashlanadi. Xususan, respondentlarning 21 foizi munosabat ”kechikkan”, ya’ni “mish-mishlar tarqalib bo‘lgandan keyin” bildirilishini qayd etgan bo‘lsa, yana 14 foizi munosabat ko‘pincha ”rasmiyatchilik uchun bo‘lib, maqsadli auditoriyaga yetib bormasligini” ta’kidlagan. Jami 35 foiz ekspertning davlat kommunikatsiyasidan qoniqmasligi (kechikish va rasmiyatchilik) shuni ko‘rsatadiki, raqamli asrda an’anaviy “press-relizlar” uslubi tezkor tarqalayotgan destruktiv feyklar va manipulyatsiyalar bilan raqobatda samaradorligini yo‘qotmoqda. (Diagramma №4)

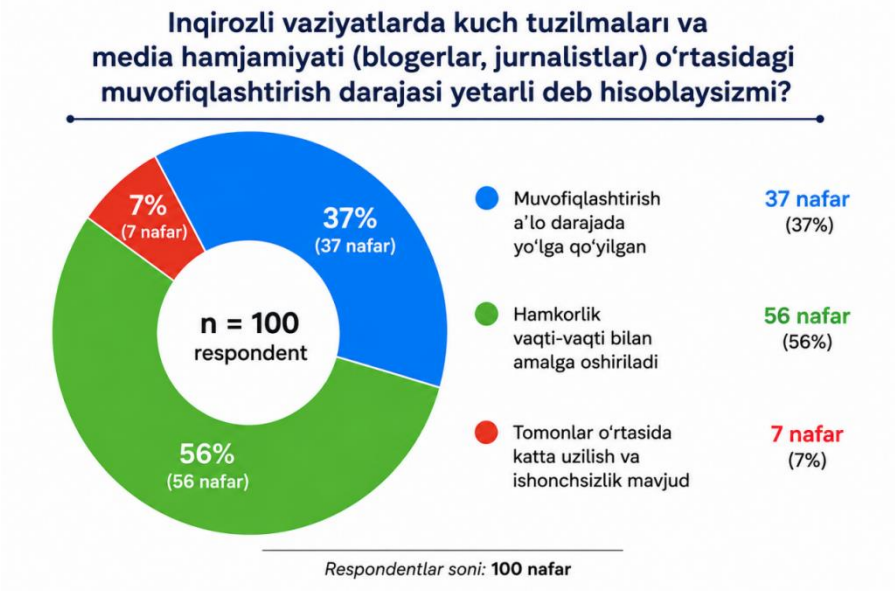



Ayniqsa, respondentlarning 30 foizi ushbu savolga ”javob berishga qiynalishi” diqqatga sazovordir. Bu holat harbiy soha vakillari o‘rtasida davlat organlarining axborot siyosati va uning natijalari har doim ham aniq va tushunarli emasligini yoki muayyan holatlarda muloqot kanallari yopiq qolayotganini ko‘rsatishi mumkin.

Umumiy xulosa shundan iboratki, monitoring tizimi (oldingi savolda ko‘rilganidek) yuqori baholangan bo‘lsa-da, aniqlangan xavflarga qarshi kommunikativ chora ko‘rish (reaksiya) tizimini yanada takomillashtirish zarur. Harbiy ekspertlarning fikricha, milliy xavfsizlikka daxldor axborot maydonida davlat organlari nafaqat “javob beruvchi” (reaktiv), balki voqealar rivojidan o‘zib ketuvchi (proaktiv)

axborot yetakchisiga aylanishi lozim. Zero, axborot vakuumini davlat to‘ldirmasa, uni destruktiv kuchlar to‘ldirishi muqarrar.

Davlat organlarining axborot xurujlariga munosabat bildirish tezligi va sifati ko‘p jihatdan ularning zamonaviy media makonining asosiy drayverlari - jurnalistlar va blogerlar bilan qanchalik uyg‘un harakat qilishiga bog‘liq. Zero, inqirozli vaziyatlarda rasmiy axborotning tezkor tarqalishi va jamoatchilik ishonchini qozonishda professional media hamjamiyati bilan o‘rnatilgan ko‘prik hal qiluvchi rol o‘ynaydi. Shu munosabat bilan, respondentlarning ushbu yo‘nalishdagi hamkorlikka bo‘lgan ishonchini aniqlash maqsadida ularga ”Inqirozli vaziyatlarda kuch tuzilmalari va media hamjamiyati (blogerlar, jurnalistlar) o‘rtasidagi muvofiqlashtirish darajasini yetarli deb hisoblaysizmi?” degan savol berildi. (Diagramma №5)




So‘rovnoma natijalari shuni ko‘rsatadiki, harbiy mutaxassislarning yarmidan ko‘pi, ya’ni 56 foizi bu hamkorlikni ”vaqti-vaqti bilan amalga oshiriladi” deb baholaganlar. Ushbu ko‘rsatkich kuch tuzilmalari va media vakillari o‘rtasidagi aloqalar hali tizimli xarakterga ega emasligini, aksincha, muayyan voqea yoki inqiroz yuz bergandagina “situatsion” ko‘rinishda faollashishini anglatadi. Milliy-etnik xavfsizlikni ta’minlashdek nozik masalada hamkorlikning bunday “uzuq-yuluq” xarakterga egaligi, inqirozli pallada axborot boshqaruvini qo‘ldan chiqarish xavfini oshiradi.

Shu bilan birga, respondentlarning 37 foizi muvofiqlashtirish jarayonini ”a’lo darajada yo‘lga qo‘yilgan” deb hisoblaydi. Bu ijobiy ko‘rsatkich so‘nggi yillarda O‘zbekiston axborot siyosatida ochiqlik tamoyilining kuchaygani va ayrim kuch tuzilmalarining jamoatchilik bilan muloqot qilishda yangicha metodlarni

o‘zlashtirayotganidan dalolat beradi.[80] Biroq, ushbu fikr ko‘pchilikni tashkil etmasligi hali barcha yo‘nalishlarda ham media bilan munosabatlar birdek samarali emasligini ko‘rsatadi.

Respondentlarning minimal qismi - 7 foizi esa ”tomonlar o‘rtasida katta uzilish va ishonchsizlik mavjud” degan fikrni bildirgan. Garchi bu ko‘rsatkich past bo‘lsa-da, harbiy ekspertlar orasida media vakillariga, ayniqsa, nazorat qilinmaydigan blogerlar qatlamiga nisbatan ma’lum darajada xavfsirash yoki ularning faoliyatini milliy manfaatlar nuqtai nazaridan xatarli deb bilish kayfiyati saqlanib qolayotganini inkor etib bo‘lmaydi.

Umumiy tahlil shuni ko‘rsatadiki, inqirozli vaziyatlarda milliy-etnik barqarorlikni saqlash uchun davlat organlari va media hamjamiyati o‘rtasidagi munosabatlarni “vaziyatga qarab muloqot”dan “doimiy strategik hamkorlik” bosqichiga o‘tkazish zarur. Harbiy ekspertlarning fikricha, blogerlar va jurnalistlar kuch tuzilmalariga nisbatan “muxolif tomon” emas, balki axborot xurujlariga qarshi kurashda muhim “kommunikativ ittifoqchi” sifatida ko‘rilishi lozim. Bu esa har ikki tomon o‘rtasida o‘zaro ishonchni mustahkamlash va inqiroz paytida harakatlar algoritmini oldindan kelishib olishni taqozo etadi.

Inqirozli vaziyatlarda media hamjamiyati bilan hamkorlikni tizimlashtirish va ishonch ko‘priklarini mustahkamlash zarurati, o‘z-o‘zidan ushbu faoliyatning huquqiy va konseptual asoslarini ishlab chiqish masalasini kun tartibiga qo‘yadi. Davlatning axborot makonidagi xavfsizligini ta’minlash faqatgina vaziyatga qarab chora ko‘rish emas, balki uzoq muddatli va aniq strategiyaga asoslanishi lozim. Shu maqsadda, respondentlarning istiqbolli qarashlarini o‘rganish uchun ularga ”O‘zbekistonning “Kommunikatsiya xavfsizligi strategiyasi»da nima ustuvor bo‘lishi kerak deb o‘ylaysiz?” degan savol berildi.

Olingan natijalar harbiy ekspertlarning milliy xavfsizlikka nisbatan zamonaviy va progressiv yondashuvga ega ekanligini namoyon etdi. Respondentlarning deyarli yarmi, ya’ni 47 foizi strategiyaning eng ustuvor yo‘nalishi sifatida ”aholining mediasavodxonligini oshirish (manipulyatsiyalarni tanishni o‘rgatish)” variantini tanlaganlar. Bu juda muhim ilmiy xulosa bo‘lib, hatto kuch tuzilmalari vakillari ham axborot xurujlariga qarshi kurashda taqiqlash yoki bloklashdan ko‘ra, jamiyatda “axborot immuniteti”ni shakllantirish samaraliroq ekanligini e’tirof etmoqdalar. Ekspertlar nazarda tutayotgan ushbu yondashuv, destruktiv siyosiy

[80] Mirziyoyev, Sh. M. Yangi O‘zbekiston taraqqiyot strategiyasi. – Toshkent: O‘zbekiston. 2022. b-286.

kommunikatsiyalarga qarshi eng kuchli qalqon - fuqarolarning tanqidiy fikrlash qobiliyati ekanligini tasdiqlaydi. (Diagramma №6)




Shu bilan birga, harbiy soha vakillari uchun xavfsizlikning texnik va nazorat jihatlari ham o‘z ahamiyatini yo‘qotmagan. Respondentlarning 26 foizi “Kiberqalqon” (kibershit) yaratish va destruktiv resurslarni bloklash chorasini ustuvor deb hisoblaydi. Bu ko‘rsatkich milliy axborot makonini tashqi g‘arazli aralashuvlardan texnik himoya qilish zaruriyati harbiy ekspertlar ongida hamon dolzarb ekanligini ko‘rsatadi.

Tadqiqotda ishtirok etganlarning 18 foizi strategiyaning asosiy bo‘g‘ini sifatida ”professional siyosiy tahlilchi-kommunikatorlarni tayyorlash” zaruriyatini ko‘rsatib o‘tganlar. Bu esa axborot maydonidagi kurashlarda nafaqat texnologiya, balki intellektual salohiyat va professional kadrlar hal qiluvchi rol o‘ynashini anglatadi. Ekspertlar tushunishidacha, davlat o‘z pozitsiyasini ilmiy va tahliliy asosda xalqqa yetkazib bera oladigan mutaxassislarga muhtoj.

Qiziqarli jihati shundaki, ”proaktiv (oldindan) xabardor qilish tizimini rivojlantirish” varianti respondentlarning atigi 9 foizi tomonidan qo‘llab-quvvatlangan. Bu holat ekspertlarning proaktivlikni alohida strategik yo‘nalish emas, balki mediasavodxonlik yoki kadrlar tayyorlashning uzviy qismi sifatida ko‘rayotgani bilan izohlanishi mumkin.[81]

Umuman olganda, so‘rovnoma natijalari O‘zbekistonning kelajakdagi kommunikatsiya xavfsizligi strategiyasi “taqiqlovchi apparat”dan “ma’rifiy va intellektual himoya tizimi”ga transformatsiya bo‘lishi kerakligini ko‘rsatmoqda. Harbiy ekspertlarning mediasavodxonlikka bergan yuqori bahosi, milliy-etnik ziddiyatlarning oldini olishda davlat va jamiyat o‘rtasidagi muloqotni sifat jihatidan yangi bosqichga ko‘tarish uchun eng muhim poydevor bo‘lib xizmat qiladi.

[81] O‘zbekiston Respublikasining "Axborotlashtirish to‘g‘risida"gi Qonuni.https://lex.uz/mact/-83472

O‘tkazilgan tadqiqot natijalari va harbiy ekspertlarning tahliliy xulosalaridan kelib chiqib, O‘zbekistonda milliy-etnik barqarorlikni ta’minlash va kommunikatsiya xavfsizligini mustahkamlash bo‘yicha quyidagi 6 ta eng muhim taklif va tavsiyani ilgari suramiz:

Hukumat nazorati ostida raqamli makonni 24/7 rejimida kuzatuvchi va milliy-etnik masalalarda feyk xabarlarga 15-30 daqiqa ichida rasmiy munosabat beruvchi yagona tahliliy markaz faoliyatini kuchaytirish lozim. Davlat organlari “himoyalanuvchi” pozitsiyasidan “axborot kun tartibini belgilovchi” proaktiv pozitsiyaga o‘tishi shart.

Respondentlarning 47 foizi aholining mediasavodxonligini eng ustuvor vazifa deb belgilashi, yoshlar (14-25 yosh) va ijtimoiy himoyaga muhtoj qatlamlar uchun milliy-etnik manipulyatsiyalarni tanib olish bo‘yicha maxsus o‘quv modullarini ishlab chiqishni zaruratga aylantirmoqda. Buni nafaqat ta’lim muassasalarida, balki mahalla darajasida “raqamli gigiyena” darslari shaklida yo‘lga qo‘yish, insonlarda etnosentrik millatchilik va radikal g‘oyalarga nisbatan tanqidiy fikrlashni shakllantirish zarur.

Inqirozli vaziyatlarda (etnik ziddiyat alomatlari sezilganda) davlat organlari va yetakchi blogerlar o‘rtasida axborot muvofiqlashtirish algoritmini qonuniy yoki institutsional darajada mustahkamlash. Blogerlarni “muxolif tomon” emas, balki milliy xavfsizlikning “kommunikativ ko‘ngillilari” sifatida tayyorlash va ularga tezkor, ishonchli ma’lumotlarni birinchi qo‘ldan yetkazish tizimini yaratish ham davr talabiga aylanib bormoqda.

Siyosiy tahlilchilar va tarixchi olimlar hamkorligida raqamli makon uchun “kontr-narrativ”lar (raddiyalar) bazasini yaratish. Etnik nizolarni qo‘zg‘atishga qaratilgan tarixiy manipulyatsiyalarga ilmiy asoslangan, ammo xalqchil tilda yozilgan kontentlar (videoroliklar, infografikalar) orqali javob qaytarish tizimini yo‘lga qo‘yish ham tarixiy zaruratga aylanib bormoqda.

Kuch tuzilmalari matbuot xizmatlari va strategik tahlil bo‘limlari xodimlarini maxsus psixologik va kommunikativ treninglardan o‘tkazish. Ular nafaqat harbiy bilimlarga, balki “yumshoq kuch” instrumentlarini qo‘llash, ijtimoiy tarmoqlar psixologiyasini tushunish va xalq bilan emotsional muloqot o‘rnatish ko‘nikmalariga ega bo‘lishi lozim.

Davlatning targ‘ibot-tashviqot ishlari umumiy xarakterdan individual xarakterga o‘tishi kerak. Ijtimoiy himoyaga muhtoj qatlamlar va migrantlar uchun mo‘ljallangan platformalarda (Telegram-guruhlar, ish qidirish saytlari) millatlararo do‘stlik va barqarorlik mavzusini ularning hayotiy muammolari yechimi bilan bog‘lagan holda (masalan, “tinchlik bo‘lsa - barqaror daromad bo‘ladi” formulasi asosida) yetkazish

strategiyasini qo‘llash. Ushbu takliflar majmuasi O‘zbekistonning kelajakdagi ”Kommunikatsiya xavfsizligi strategiyasi” uchun nazariy va amaliy poydevor bo‘lib xizmat qiladi hamda milliy-etnik ziddiyatlarning raqamli muhitda avj olishiga yo‘l qo‘ymaydi, degan fikrdamiz.

**XULOSA**

O‘tkazilgan tadqiqot va respondentlar o‘rtasida o‘tkazilgan so‘rovnoma natijalari shuni ko‘rsatadiki, zamonaviy O‘zbekistonda milliy-etnik barqarorlikni ta’minlash an’anaviy xavfsizlik choralaridan ko‘ra ko‘proq samarali siyosiy kommunikatsiya strategiyalariga bog‘liq bo‘lib qolmoqda. Harbiy mutaxassislar va soha ekspertlarining xulosalari raqamli makondagi destruktiv kuchlar, ayniqsa diniy radikalizm va etnosentrizm g‘oyalari milliy xavfsizlikka eng katta xavf tug‘dirayotganini tasdiqladi. Tadqiqotning eng muhim ilmiy natijalaridan biri shundaki, xavfsizlikni ta’minlashda “kiberqalqon” kabi texnik cheklovlardan ko‘ra, aholining mediasavodxonligini oshirish va jamiyatda axborot immunitetini shakllantirish ustuvor vazifa sifatida e’tirof etildi.

Tahlillar shuni ko‘rsatdiki, davlat organlarining axborot xurujlariga nisbatan munosabati hali ham kutilgan darajada tezkor emas va ko‘pincha rasmiyatchilik xarakteriga ega. Inqirozli vaziyatlarda media hamjamiyati, jurnalistlar va blogerlar bilan hamkorlikning tizimli emasligi axborot vakuumini vujudga keltirishi mumkin. Shunga ko‘ra, milliy-etnik ziddiyatlarning oldini olishda davlatning kommunikativ siyosati “reaktiv” (javob qaytaruvchi) bosqichdan “proaktiv” (oldindan ogohlantiruvchi va boshqaruvchi) bosqichga o‘tishi strategik zaruriyatdir.

Yakuniy xulosa sifatida shuni ta’kidlash lozimki, O‘zbekistonning kommunikatsiya xavfsizligi intellektual salohiyatga ega kadrlar, davlat va jamiyat o‘rtasidagi yuksak ishonch hamda aholining axborotni saralash madaniyatiga tayanmog‘i lozim. Zero, millatlararo barqarorlik - faqat huquqiy taqiqlar bilan emas, balki sog‘lom muloqot, ochiqlik va jamiyatning axborot xurujlariga nisbatan kommunikativ chidamliligi orqali mustahkamlanadi. Ushbu tadqiqot doirasida ishlab chiqilgan takliflar mamlakatning kelgusi kommunikatsiya xavfsizligi strategiyasini shakllantirishda nazariy va amaliy asos bo‘lib xizmat qilishi mumkin.

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# O‘ZBEKISTONDA YOSHLAR SIYOSIY XULQ-ATVORINI RIVOJLANTIRISH MUAMMOLARI

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***Annotatsiya:*** *Maqolada zamonaviy O‘zbekistonda yoshlarning siyosiy xulq-atvorini shakllantirish va rivojlantirishning dolzarb muammolari tahlil qilingan. Mamlakatimizda amalga oshirilayotgan yoshlar siyosati, yosh avlodning ijtimoiy-siyosiy faolligini oshirishga qaratilgan huquqiy-institutsional mexanizmlar o‘rganilgan. Shuningdek, globolashuv jarayonlari, raqamli texnologiyalar va ijtimoiy tarmoqlarning yoshlar siyosiy ongiga ta’siri ochib berilib, ulardagi siyosiy begonalashuv, befarqlik va radikalizm xavflarining oldini olish bo‘yicha ilmiy-amaliy taklif va tavsiyalar ishlab chiqilgan.*

***Kalit so‘zlar:*** *yoshlar siyosati, siyosiy xulq-atvor, siyosiy faollik, raqamli texnologiyalar, siyosiy ong, fuqarolik jamiyati, yoshlar tashkilotlari.*

***Аннотация:*** *В статье анализируются актуальные проблемы формирования и развития политического поведения молодежи в современном Узбекистане. Изучены молодежная политика, реализуемая в стране, а также правовые и институциональные механизмы, направленные на повышение социально-политической активности подрастающего поколения. Также раскрыто влияние процессов глобализации, цифровых технологий и социальных сетей на политическое сознание молодежи, разработаны научно-практические предложения и рекомендации по предотвращению рисков политического отчуждения, индифферентности и радикализма в их среде.*

***Ключевые слова:*** *молодежная политика, политическое поведение, политическая активность, цифровые технологии, политическое сознание, гражданское общество, молодежные организации.*

***Annotation:*** *The article analyzes the pressing problems of the formation and development of youth political behavior in modern Uzbekistan. It examines the youth policy implemented in the country and the legal and institutional mechanisms aimed at enhancing the socio-political activity of the younger generation. Furthermore, the impact of globalization processes, digital technologies, and social networks on the*

*political consciousness of youth is revealed, and scientific-practical proposals and recommendations are developed to prevent risks of political alienation, apathy, and radicalism among them.*

***Keywords:*** *youth policy, political behavior, political activity, digital technologies, political consciousness, civil society, youth organizations.*

**Kirish.**

Ma’lumki, yoshlar mamlakat rivojlanishining asosiy harakatlantiruvchi kuchi va jamiyat rivojining asosiy tayanchi hisoblanadi. Yoshlar iqtisodiyot, huquq yoki ishlab chiqarish sohalari bo‘yicha muayyan bilim va kunikmalarga ega bo‘lishi bilan bir qatorda siyosiy bilim va madaniyatga ega bo‘lishi talab etiladi. Ularning jamiyat ijtimoiy hayotiga chuqur kirib borishi siyosiy xulq-atvoriga chambarchas bog‘liqdir.

O‘zbekistonda so‘nggi yillarda bo‘layotgan ijtimoiy-siyosiy o‘zgarishlar, shiddat bilan rivojlanayotgan dunyoning ta’sir kuchi ularda jamiyat va davlat boshqaruviga tobora qiziqishining ortishiga, yangicha demokratik fikrlash ko‘nikmalarini egallash zaruriyatini yuzaga keltirmoqda. Shuningdek, mamlakatimiz aholisining qadriyatlar tizimidagi muhim o‘zgarishlar fuqarolar ijtimoiy va siyosiy faoliyatiga ijobiy ta’sir ko‘rsatishi uchun yuksak bilim va madaniyat talab etiladi.

O‘zbekiston yoshlaridagi ayrim stereotipik qarashlar – siyosatga daxldorlik xissini yetarli emasligi, ayrim yoshlarning siyosiy jarayonlarga mutlaqo befarqligi, siyosiy bilimlarning yetarli emasligi, ta’lim dasturlarida siyosiy bilimlar uchun yetarli imkoniyat yaratilmaganligi ushbu maqolani yozishga undadi.

Yoshlarning siyosiy ongi dinamik va qarama-qarshidir. Ularning saylovdagi xatti-harakatlari ijtimoiy-demografik guruh sifatidagi xususiyatlari, shuningdek, siyosiy rejim va milliy yoshlar siyosatining o‘ziga xos jihatlari bilan belgilanadi.

Yoshlar ko‘pincha kamsitish va chetlanishga duch keladi, bu holat ayniqsa yosh ayollarda yaqqol seziladi. Shu sababli, yoshlarning siyosatga befarq ekanligi haqidagi stereotip keng tarqalgan bo‘lib, bu ularga qaratilgan rivojlanish dasturlari asosan saylovlarda ovoz berishga undash va saylovoldi zo‘ravonliklarining oldini olishga qaratilishiga olib keldi. Biroq, tadqiqot natijalari yoshlarning tinchlik va xavfsizlikni ta'minlashda muhim rol o‘ynashini ko‘rsatib beradi. Yoshlarning saylov jarayonlaridagi salohiyatini oshirishga yordam berish orqali, maqsad saylov davridagi zo‘ravonliklarni boshqarishga qaratilgan qisqa muddatli, reaktiv yondashuvlardan voz kechib, ularning oldini olishga qaratilgan keng qamrovli va yoshlarni to‘liq qamrab oluvchi strategiyalarga e’tibor qaratishdir. Bu yondashuv tinchlikni saqlashga va saylov jarayonlarida zo‘ravonlik xavfini kamaytirishga xizmat qiladi.

**Mavzuni o‘rganish darajasi.** BMTning jahon yoshlari hisobotlari, Xalqaro IDEA, Birlashgan Millatlar Tashkilotining Iqtisodiy va Ijtimoiy ishlar departamenti (UNDESA) tomonidan tashkil etilgan ACE (saylov bilimlari tarmog‘i) tadqiqotlari mavzuni yoritishda muhim manbalar bo‘lib xizmat qildi.

Yoshlarning siyosiy xulq-atvori va uni rivojlantirish masalasi xorij olimlaridan Tomaž DEJELAN, Rojer Xart, Rut Bekmans, Manuela Matzinger, Golovin Dmitriy Alekseevich, K.G.Ustinkina, Malkevich A., N.I. Snegireva o‘rganilgan. Xususan, Rus olimi N.I. Snegireva ta’kidlaganidek, yoshlarning elektoral madaniyatini shakllantirish uchun mas’uliyat siyosiy partiyalar zimmasiga ham yuklanadi. Biroq, bu institut ko‘pincha yoshlarni faqat saylovlar arafasida eslaydi.[82] Malkeivich zamonaviy Rossiyada yoshlarning saylov faolligini oshirish muammolarini, Rut Bekmans va Manuela Matzingerlar[83] turli yosh guruhlarining saylovlarda ishtirok etish darajasini ilmiy tahlil qiladi. K.G.Ustinkina Rossiyada yoshlarning siyosiy jarayonlarda kam ishtirok etishini tadqiq qiladi. Uning fikricha, o‘zlarini siyosiy hayotdan ixtiyoriy ravishda chetlatadigan ko‘plab yoshlar saylov jarayonidagi ishtirok hokimiyat tuzilmalari qarorlariga ta’sir qilishning bir shakli ekanligini tushunmaydilar, bu esa ba’zi hollarda nafaqat voqealarning borishini to‘g‘rilaydi, balki uni tubdan o‘zgartiradi.[84]

**Metodologiya.** Mavzuni yoritishda qiyosiy tahlil, sotsiologik so‘rovnoma kabi metodlardan foydalanildi.

**Mavzu muhokamasi.**

Demokratik jarayonlarda ishtirok etish – bu shunchaki ovoz berish emas, balki keng qamrovli tushunchadir. Yoshlarning ishtiroki ularga nafaqat yoshlarga oid masalalar, balki barcha muhim qarorlarni qabul qilishda ma’lumotlarga ega bo‘lish va ularga ta’sir o‘tkazish imkoniyatini beradi. Bu jarayon imkoniyatlarni kengaytirish, yangi ko‘nikmalarni o‘rganish va huquqlardan foydalanishni o‘z ichiga oladi.

Siyosiy ishtirok esa, asosan, odamlarning o‘z hayotiga ta’sir ko‘rsatadigan qarorlarni shakllantirish va ularda qatnashish uchun o‘z fikrlarini rivojlantirish va ifodalashga yo‘naltirilgan keng ko‘lamli faoliyatdir. Yoshlar o‘z jamoalarida tinchlik o‘rnatish, siyosiy yetakchilarni iqlim va’dalari uchun javobgarlikka tortish va eng zaif qatlamlarga yordam berish kabi ko‘plab sohalarda faollik ko‘rsatadi.

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[82] Н.И. Снегирева Обособенностях формирования молодежного электорального поведения. ВЕСТНИК ВЫСШЕЙ ШКОЛЫ. № 11 (ноябрь) 2021, DOI 10.20339/AM.11-21.110

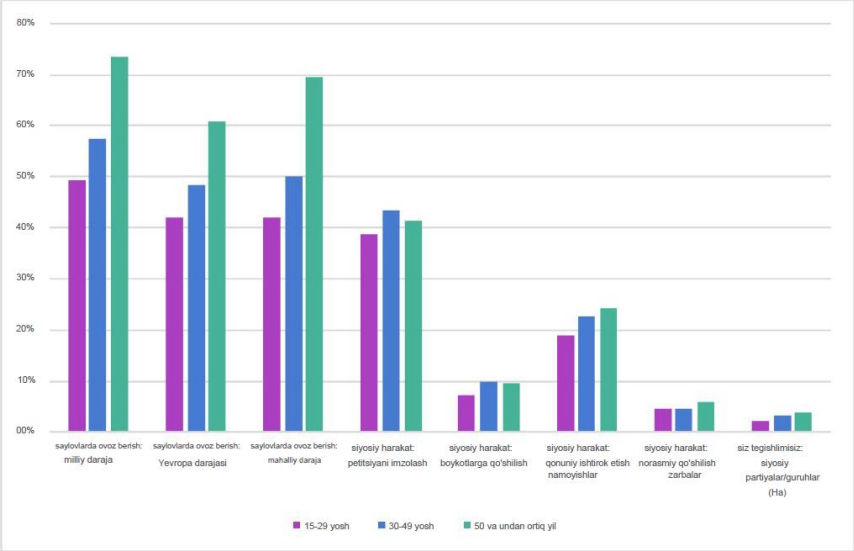
[83] Rut Bekmans, Manuela Matzinger, Yoshlarning saylov jarayonlaridagi ishtiroki. Saylov boshqaruvi organlari uchun qo'llanma. Birlashgan Millatlar Tashkilotining Taraqqiyot Dasturi va Yevropa Komissiyasi. 2017 yil mart

[84] К.Г.Устинкина, Электоральное поведение российской молодежи. Проблемный анализ и государственно-управленческое проектирование. Выпуск 1 2014, ст.139-145

Biroq, ko‘plab jamiyatlarda yoshlarning rasmiy siyosatdagi ishtiroki past darajada bo‘lib qolmoqda. Shu sababli, ular ko‘proq norasmiy jarayonlar va muqobil platformalar, ya’ni siyosiy partiyalar va rasmiy institutlardan tashqarida, o‘z maqsadlariga erishish uchun birlashishni afzal ko‘radilar. Yoshlarning saylovlardagi faolligi va ta’sirini to‘g‘ri tushunish uchun ularning fuqarolik tashabbuslari va ijtimoiy harakatlari kabi norasmiy ishtirok shakllarini, shuningdek, ishtirok etmaslikning sabablarini ham o‘rganish muhim.

Yevropada olib borilgan tadqiqot natijalari yoshlarning saylovlarda ishtirok etish tendensiyasida pasayish kuzatilganligini isbotlaydi.

1-rasm. Yevropada yosh guruhlari bo‘yicha siyosiy ishtirok[85]




Manba: Yevropa qadriyatlarini o'rganish, 7-to'lqin (2020)

Yoshlarning institutsional siyosatdagi ishtirokining kamayishi, shuningdek, Yevropaning barcha demokratik mamlakatlarida kuzatilgan partiyaga a’zolikning pasayishida ham namoyon bo‘ladi[86]. Bir qancha tadqiqotlar yoshlar orasida partiyaga a’zolikning kamayib borayotganini aniq ko‘rsatdi (masalan, Cross and Young 2008; Hooghe et al. 2004; Seyd and Whiteley 2004, Deželan 2015), bu siyosiy partiyalarning yollash va safarbarlik funksiyasiga jiddiy ta’sir qiladi va yoshlarning siyosiy vakilligiga juda salbiy ta’sir qiladi. Buning yana bir ko‘rsatkichi – bugungi kunda yoshlar o‘rtasida unchalik ko‘p uchramaydigan siyosiy partiya va tashkilotlar faoliyatida yoshlarning ishtirok etishidir. 15-29 yoshli yoshlarning atigi besh foizga yaqini siyosiy partiyalar va siyosiy tashkilotlar faoliyatida qatnashadi (qarang Deželan 2015). Xuddi shunday

[85] Tomaž DEJELAN, Yevropa demokratik jarayonlarida yoshlarning ishtiroki. https://www.europarl.europa.eu/RegData/etudes/STUD/2023/745820/IPOL_STU(2023)745820_EN.pdf

[86] Van Biezen va boshq. 2012, 38

pasayish ishtirok etishning boshqa an’anaviy shakllarida ham kuzatilishi mumkin, masalan, saylovoldi tashviqoti tadbirlarida ishtirok etish, davlat amaldorlari bilan aloqa qilish, siyosiy guruhlarda faol ishtirok etish va hokazo (Moyser 2003 179; Deželan 2014; Deželan 2015; Deželan and Moxon 2021).[87]

Bugungi kunda dunyo miqyosida parlament a’zolarining atigi 2,6 foizi 30 yoshgacha bo‘lgan yoshlardir va bu yosh deputatlarning 1 foizdan kamrog‘ini ayollar tashkil etadi. Dunyo miqyosida yoshlarning saylov huquqiga ega bo‘lishi va saylanish huquqi (ya’ni, lavozimga nomzod bo‘lishi) o‘rtasida o‘rtacha to‘rt yildan ortiq farq bor. Bu shuni anglatadiki, yoshlar ma’lum bir yoshda ovoz bera olsalar-da, saylanish uchun ular yana bir necha yil kutishlariga to‘g‘ri keladi. Bundan tashqari, yoshlarning saylanish imkoniyatlariga jins, irq, millat, nogironlik, ijtimoiy-madaniy me’yorlar va moliyaviy resurslar kabi omillar ham sezilarli ta’sir ko‘rsatadi. Bu omillar turli mamlakatlarda yoshlar uchun siyosiy jarayonlarga kirishni yanada murakkablashtirishi mumkin.[88]

Hozirgi vaqtda yoshlarning siyosiy faolligi borasidagi vaziyat murakkab sabablarga ega. Garchi yoshlar an’anaviy siyosiy yo‘nalishlarda kam ishtirok etsa-da, bu an’anaviy faollik turlari yoshlarning bugungi fuqarolik tushunchasiga mos keladimi, degan savol tug‘iladi. Aslida, 19-20-asrlarda shakllangan siyosiy institutlar va jarayonlar bugungi yosh avlodning siyosiy qarashlariga mos kelmasligini yaxshi bilamiz (Norris 2002; Loader va boshq. 2014; Pickard 2019; Dalton 2009).

O‘zbekiston yoshlarining siyosiy jarayonlarga qiziqishini oshirishdagi asosiy muammolar quyidagilarni o‘z ichiga oladi:

- Saylovlarda ishtirok etishning afzalliklari va ovoz berishning ahamiyati haqida tushuntirish ishlarining yetarli darajada olib borilmayotgani.
- Yoshlarni siyosiy jarayonlarga jalb qilish uchun maxsus seminarlar, treninglar va saylovoldi tadbirlarining cheklanganligi.
- Ijtimoiy tarmoqlar orqali siyosiy ma’lumotlarni tarqatish usullarining zamonaviy talablarga to‘liq javob bermasligi.

Muammolarni bartaraf etish uchun xalqaro tajriba va amaliy strategiyalarni o‘rganish maqsadga muvofiqdir. Bu borada saylov jarayonlariga to‘siq bo‘luvchi omillarni kamaytirish, fuqarolik ta’limini kuchaytirish va innovatsion mexanizmlarni joriy etishga alohida e’tibor qaratish lozim.

[87] Tomaž DEJELAN, Yevropa demokratik jarayonlarida yoshlarning ishtiroki. https://www.europarl.europa.eu/RegData/etudes/STUD/2023/745820/IPOL_STU(2023)745820_EN.pdf

[88] Yoshlarning siyosiy faolligini tushunish. Birlashgan Millatlar Tashkiloti, https://www.youthforum.org/files/UPDATED_UN_REPORT_TBS_Accessible_Version_090622.pdf

Demokratik jamiyatlarda yoshlarning saylov jarayonlaridagi ishtiroki masalasining chuqur tahlili bir qator muhim jihatlarni ochib berdi. Global miqyosdagi kuzatuvlar shuni ko‘rsatadiki, yoshlar orasida saylovlarda faol ishtirok etish darajasi nisbatan past bo‘lsa-da, bu ularning siyosiy jarayonlarga nisbatan befarq ekanligini anglatmaydi. Aksincha, ushbu holatning asosiy sabablari institutsional va madaniy to‘siqlar, shuningdek, rasmiy siyosiy tuzilmalarda yoshlarning munosib vakillik qila olmasligi bilan chambarchas bog‘liqdir.

Ayniqsa, O‘zbekiston kontekstida, yoshlar siyosati uchun mustahkam huquqiy baza yaratilganiga qaramay, bu sohada hali ham o‘z yechimini kutayotgan vazifalar mavjud. Mavjud qonunchilik asosida yoshlarning siyosiy savodxonligini oshirish va ularni rasmiy jarayonlarga faol jalb etish bo‘yicha yanada aniq va maqsadli amaliy mexanizmlarni joriy etish zarur. Ushbu choralar yoshlarning jamiyat va davlat hayotidagi o‘rnini yanada mustahkamlashga, ularning siyosiy salohiyatini to‘liq ro‘yobga chiqarishga xizmat qiladi.

Yoshlarning siyosiy xulq-atvori va madaniyatini rivojlantirish uchun tizimli yondashuv talab etiladi. Quyida ushbu yo‘nalishdagi asosiy tavsiyalar keltirilgan:

**Huquqiy va institutsional islohotlar.** Yoshlarning rasmiy siyosiy hayotdagi ishtirokini rag‘batlantirish maqsadida, siyosiy lavozimlarga saylanish uchun yosh chegaralarini xalqaro standartlarga muvofiq qayta ko‘rib chiqish va ro‘yxatdan o‘tish tartibini soddalashtirish muhimdir. Bu yoshlarga siyosatda faol o‘rin egallash imkoniyatini kengaytiradi.

**Ta’lim sohasidagi choralar.** Maktablar va oliy ta’lim muassasalarida amaliy fuqarolik ta’limini joriy etish zarur. Shuningdek, yoshlar uchun siyosiy savodxonlikni oshirishga qaratilgan doimiy treninglar va seminarlar o‘tkazish ularning siyosiy bilim va ko‘nikmalarini shakllantirishga xizmat qiladi. Elektoral afzallikning mohiyati ongli tanlovdir. Shuning uchun jamiyatning vazifasi yoshlarning rivojlanishi va o‘z-o‘zini rivojlantirishi, ularning umumiy ta’lim va elektoral madaniyat darajasini oshirish, saylov faoliyatini amalga oshirish uchun zarur va yetarli bo‘lgan maxsus bilimlarni shakllantirish uchun sharoit yaratishdir. Ochiq-oydinki: ta’lim darajasi qanchalik yuqori bo‘lsa, elektoral faoliyatni amalga oshirishga tayyorgarlik darajasi ham shunchalik yuqori bo‘ladi.[89]

**Texnologik yechimlardan foydalanish.** Yoshlarning onlayn faolligini institutsional jarayonlarga integratsiya qilish, masalan, onlayn muhokamalar va so‘rovlar o‘tkazish orqali siyosiy jarayonlarga jalb etish lozim. Ijtimoiy tarmoqlar

[89] К.Г.Устинкина, Электоральное поведение российской молодежи. Проблемный анализ и государственно-управленческое проектирование. Выпуск 1 2014, ст.139-145

orqali maqsadli va shaffof ma’lumotlar tarqatish esa yoshlarning norasmiy siyosiy faolligini rasmiy jarayonlar bilan bog‘lashga yordam beradi.

**Kommunikatsiya va ishonchni mustahkamlash.** Hukumat organlari va siyosiy partiyalarning yoshlar bilan ochiq va shaffof muloqotini yo‘lga qo‘yish, ularning fikr-mulohazalarini tinglash va takliflarini inobatga olish mexanizmlarini yaratish siyosiy jarayonlarga bo‘lgan ishonchni oshiradi.

**Nodavlat tashkilotlarni qo‘llab-quvvatlash.** Yoshlar tashkilotlari va fuqarolik jamiyati institutlarining siyosiy ta’lim va ishtirokni kuchaytirishdagi rolini oshirish, ularning faoliyatini moliyaviy va huquqiy jihatdan qo‘llab-quvvatlash yoshlar faolligining institutsional asosini mustahkamlaydi.

**Xulosa.**

Har qanday strategiya O‘zbekistondagi yoshlarning hozirgi holatini chuqur tahlil qilishga asoslanishi kerak. Ularning qadriyatlari, ehtiyojlari va siyosatga bo‘lgan munosabatini aniqlash, samarali dasturlarni ishlab chiqishda asosiy omil hisoblanadi. Bu tahlil yoshlarni siyosatdan uzoqlashtirgan sabablarni (masalan, ishonchsizlik, siyosiy ongsizlik, va hokazo) aniqlash va ularni bartaraf etish uchun muhimdir.

Yuqoridagi tahlillar shuni ko‘rsatadiki, O‘zbekistonda yoshlarning siyosiy faolligini oshirish, keng qamrovli va tizimli islohotlarni talab qiladi. Bu faqatgina saylov oldidan o‘tkaziladigan tadbirlar bilan cheklanib qolmasdan, yoshlarning ishonchini qozonishga va ularga o‘z kelajagini qurishda to‘laqonli ishtirok etish imkoniyatini berishga qaratilgan uzoq muddatli jarayon bo‘lishi kerak. Ushbu tamoyillarga asoslangan holda ishlab chiqilgan strategiya O‘zbekistonda yoshlarning nafaqat son jihatdan, balki sifat jihatdan ham faol ishtirokini ta’minlashga xizmat qiladi.

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# ГАРМОНИЯ ПРАВ ЧЕЛОВЕКА И ОБЩЕЧЕЛОВЕЧЕСКИХ ЦЕННОСТЕЙ В СОВРЕМЕННОМ ГРАЖДАНСКОМ ОБЩЕСТВЕ

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***Аннотация.*** *В данной статье представлен научно-теоретический анализ вопросов обеспечения человеческого достоинства и личных, политических, экономических и культурных прав в современном гражданском обществе, раскрывается роль принципа "за человеческое достоинство" в развитии гражданского общества, его соответствие гуманистическим идеям, унаследованным от нашего времени. предков и его значение как приоритетного направления государственной политики. Кроме того, рассматриваются комплексные национальные программы, направленные на сокращение бедности, а также механизмы их реализации в политическом, экономическом, правовом и социальном измерениях. Кроме того, раскрываются признание прав человека высшей ценностью, ответственность государства за защиту граждан, а также демократические реформы, проводимые в Новом Узбекистане на основе принципа "Государство существует для народа", и их суть.*

***Ключевые слова****: гражданское общество, демократия, культура, ценности, справедливость, прогресс, мир, свобода, стабильность.*

***Аннотация.*** *Ушбу мақолада замонавий фуқаролик жамиятида инсон қадр-қиммати ва шахсий, сиёсий, иқтисодий ва маданий ҳуқуқларини таъминлаш масалаларининг илмий-назарий таҳлили келтирилган, "инсон қадр-қиммати учун" тамойилининг фуқаролик жамиятини ривожлантиришдаги ўрни, унинг бизнинг давримиздан мерос бўлиб қолган гуманистик ғояларга мослиги очиб берилган. Аждодлар ва унинг давлат сиёсатининг устувор йўналиши сифатидаги аҳамияти. Бундан ташқари, қашшоқликни камайтиришга қаратилган кенг қамровли миллий дастурлар, шунингдек уларни сиёсий, иқтисодий, ҳуқуқий ва ижтимоий йўналишларда амалга ошириш механизмлари кўриб чиқилмоқда. Бундан ташқари, инсон ҳуқуқларининг энг олий қадрият сифатида эътироф этилиши, давлатнинг фуқароларни ҳимоя қилишдаги*

*масъулияти, шунингдек, янги Ўзбекистонда "давлат халқ учун мавжуд" тамойили асосида амалга оширилаётган демократик ислоҳотлар ва уларнинг моҳияти очиб берилган.*

***Калит сўзлар:*** *фуқаролик жамияти, демократия, маданият, қадриятлар, адолат, тараққиёт, тинчлик, еркинлик, барқарорлик***.**

***Abstract.*** *This article provides a scholarly and theoretical analysis of the issues of ensuring human dignity and personal, political, economic, and cultural rights in modern civil society, elucidating the role of the principle of "for human dignity" in the development of civil society, its harmony with the humanistic ideas inherited from our ancestors, and its significance as a priority area of state policy. Furthermore, comprehensive national programs aimed at reducing poverty, as well as the mechanisms of their implementation across political, economic, legal, and social dimensions, are examined. In addition, the recognition of human rights as the supreme value, the responsibility of the state in protecting citizens, and the democratic reforms being carried out in New Uzbekistan on the basis of the principle of "The state exists for the people" and their essence are revealed.*

***Keywords****: civil society, democracy, culture, values, justice, progress, peace, freedom, stability*

В современном гражданском обществе обеспечение человеческого достоинства и личных, политических, экономических и культурных прав человека имеет первостепенное значение. Принцип "за человеческое достоинство" стал основным критерием всех реформ, предусматривающим создание равных возможностей для полной реализации своего потенциала каждым человеком. Такой подход, гармонирующий с гуманистическими идеями, унаследованными от наших предков, рассматривается как одно из основных направлений сегодняшней стратегии развития. В результате была разработана и последовательно реализуется уникальная национальная программа, направленная на сокращение бедности за короткий промежуток времени. Эта программа реализуется на основе комплексного комплекса мер, охватывающих политические, социальные, экономические, правовые и экологические аспекты, и решает проблему на основе системного подхода. Это практическое выражение обеспечения интересов человека в рамках гражданского общества. В гражданском обществе права человека признаются высшей ценностью, а государство выступает в качестве субъекта, ответственного за обеспечение правовой и социальной защиты граждан. В то же время, в Новом Узбекистане

построение свободного, процветающего общества было определено в качестве приоритетной задачи при строгом соблюдении международных норм и принципов в области демократии, прав и свобод человека. На пути к построению ориентированного на людей и справедливого государства осуществляются последовательные реформы, основанные на идеях “Государство существует для людей” и “Сначала люди, затем общество и государство” [1]. Общечеловеческие ценности — это концепция, выражающая систему ценностей универсального значения, которые считаются общим стандартом ценности для всех людей, наций и государств по всему миру. Общечеловеческие ценности представляют собой исключительно широкое и многогранное понятие [2]. Общечеловеческие ценности не сводятся исключительно к понятиям, имеющим обще социальное содержание, таким как свобода, раскрепощенность, мир и счастье. Интерпретировать их исключительно в рамках достижений культуры также недостаточно, поскольку такой подход не позволяет в полной мере раскрыть их многогранную сущность. В то же время конкретные национальные, этнические и другие специфические системы ценностей не могут заменить общечеловеческие ценности. Анализируя систему общечеловеческих ценностей и форм их проявления, по сути, означает изучение сложной социальной системы, существующей в диалектической взаимозависимости, а также отношений между ее составными частями. Эти ценности образуют целостную систему, общую для всех людей, живущих на определенном этапе общественного развития, и проявляются в неразрывной и необходимой взаимосвязи с другими социальными принципами. Формы выражения общечеловеческих ценностей носят относительный характер, и эта относительность не всегда очевидна. В ходе исторического развития, под влиянием общественных нужд и запросами общества, на первый план выходят определенные формы ценностей: например, свобода и независимость в условиях оккупации, патриотизм, когда независимость находится под угрозой, интерес к историческому и культурному наследию в периоды национального пробуждения и потребность в мир и стабильность во время войны. Таким образом, в ходе социальных процессов определенные формы ценностей становятся более актуальными, в то время как другие относительно отходят на второй план, но все они сохраняют свое значение в рамках единой системы [3]. Сегодня существует ряд причин, по которым общечеловеческие ценности остаются общим стандартом для всех: во-первых, растущее осознание того, что наша планета является самым распространенным, но бесконечно малым пространством в безграничной Вселенной для всех людей

на земле, независимо от их расы, национальности, вероисповедания и других природных условий. -исторические и социальные особенности; во-вторых, растущая потребность в наиболее распространенных духовных стандартах в условиях социального разнообразия, политического и идеологического плюрализма, а также различных потребностей, интересов, целей, устремлений, поведения и деятельности, которые соответствуют требованиям прогресса; в-третьих, тот факт, что в результате столкновения с такими угрозами, как оружие массового уничтожения, ядерная война, экологический кризис и моральная деградация, будущее человечества и судьба общего генофонда населения нашей планеты оказались под угрозой, а также сохранение цивилизаций, к которым они относятся. вопрос о том, к какому поколению принадлежит человечество, приобрел первостепенное значение; в-четвертых, это объясняется растущим признанием того, что независимо от того, в каких социальных системах и государствах живут люди, главной целью везде является человек - его жизнь, интересы, права и свободы, а также универсальностью глобально значимых технологий, научных достижений и возможностей их применения во всех начинаниях обеспечить осмысленную, изобильную и процветающую жизнь людей, а также необходимость глобального сотрудничества для реализации этих возможностей. Люди сравнивают, размышляют, делают выводы и оценивают свою собственную практическую деятельность и деятельность окружающих их людей, а также свое поведение в той или иной области с точки зрения общечеловеческих ценностей [4]. В заключение хотелось бы отметить, что в современном гражданском обществе человеческое достоинство и обеспечение личных, политических, экономических и культурных прав признаются одной из важнейших приоритетных областей. Принцип “во имя человеческого достоинства” стал основным критерием всех реформ, направленных на создание равных возможностей для полной реализации своего потенциала каждым человеком. Этот подход, гармонично сочетающийся с гуманистическими идеями, унаследованными от наших предков, стал неотъемлемой частью сегодняшней стратегии развития. В результате были разработаны и последовательно реализуются комплексные национальные программы, направленные на сокращение бедности, по всем политическим, экономическим, правовым и социальным направлениям. В то же время признание прав человека высшей ценностью в гражданском обществе возлагает на государство ответственность за обеспечение надежной правовой и социальной защиты граждан. В Новом Узбекистане последовательно углубляются демократические реформы на основе

принципа “Государство существует для людей”. В этом процессе общечеловеческие ценности, являясь важным стандартом общественного прогресса, играют решающую роль в обеспечении единства человечества, мира, свободы и устойчивого развития.

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# JINOYAT PROTSESSIDA SUD MUHOKAMASI BOSQICHIDA JABRLANUVCHI VA FUQAROVIY DA'VOGARLARNING HUQUQLARINI HIMOYA QILISH UCHUN MALAKALI YURIDIK YORDAM KO'RSATISH KAFOLATLARI

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***Annotatsiya:*** *Sud muhokamasi bosqichida jabrlanuvchi va fuqaroviy da'vogar manfaatlarini himoya qilish amaliyotda ko'pincha protsessual tengsizlik, vakilga kech murojaat qilish va materiallar bilan to'liq tanishish imkonining cheklanishi sababli zaiflashadi. Mazkur tadqiqotning maqsadi jinoyat protsessida malakali yuridik yordam ko'rsatish kafolatlarining mazmunini aniqlash, sud muhokamasida ularning ishlash mexanizmini ochib berish va huquqlarni himoya qilishdagi bo'shliqlarni ko'rsatishdan iborat. Metodologik asos sifatida normativ-huquqiy tahlil, qiyosiy huquqshunoslik, sud amaliyoti sharhi va tizimli yondashuv qo'llandi. Jinoyat-protsessual normalar, jabrlanuvchi hamda fuqaroviy da'vogar ishtirokini tartibga soluvchi qoidalar va vakilning huquqiy maqomi mazmunan taqqoslandi. Tahlil sud majlisida himoya huquqi ko'pincha faqat rasmiy xabardor qilish bilan cheklanib qolishini, advokatning faol pozitsiyasi esa nizoli masalalarni aniqlash, dalillarni baholash va fuqaroviy da'vo manfaatlarini asoslashda hal qiluvchi ahamiyatga ega ekanini ko'rsatdi. Shuningdek, protsessual kafolatlar bir xil darajada ishlamasligi, ayniqsa bayonnomaga e'tiroz bildirish, iltimosnoma kiritish va sud harakatlariga munosabat bildirishda tafovutlar borligi aniqlandi. Ilmiy hissa sifatida sud muhokamasi bosqichida jabrlanuvchi hamda fuqaroviy da'vogar uchun "erta axborot berish — vakilga kirish — faol sud nazorati" zanjiri konseptual model sifatida asoslab berildi. Xulosa shuki, malakali yuridik yordamni faqat advokat ishtiroki emas, balki protsessual imkoniyatlarning real kafolati sifatida mustahkamlash zarur.*

***Kalit so'zlar:*** *bepul malakali yuridik yordam, jabrlanuvchining himoya huquqi, advokat ishtiroki, jabrlangan shaxs, sud muhokamasida tenglik va tortishuvchanlik prinsipi, adolatli sud muhokamasiga bo'lgan huquq, protsessual muvozanat, qiyosiy-huquqiy tahlil.*

***Аннотация:*** *На практике защита интересов потерпевшего и гражданского истца на стадии судебного разбирательства часто ослабляется из-за процессуального неравенства, позднего обращения к представителю и ограниченного доступа к полным материалам. Цель данного исследования – определить содержание гарантий квалифицированной юридической помощи в уголовном процессе, выявить механизм их действия в судебном разбирательстве и указать на пробелы в защите прав. В качестве методологической основы использованы нормативно-правовой анализ, сравнительная юриспруденция, обзор судебной практики и системный подход. По содержанию проведено сравнение уголовно-процессуальных норм, правил, регулирующих участие потерпевшего и гражданского истца, а также правового статуса представителя. Анализ показал, что право на защиту в суде часто ограничивается формальным уведомлением, а активная позиция адвоката имеет решающее значение в выявлении спорных вопросов, оценке доказательств и обосновании интересов гражданского иска. Также было установлено, что процессуальные гарантии не работают в равной степени, особенно в областях обжалования протокола, подачи ходатайства и ответа на действия суда. В качестве научного вклада была обоснована концептуальная модель цепочки «раннее информирование – доступ к представителю – активный судебный контроль» для потерпевшего и гражданского истца на этапе судебного разбирательства. Вывод состоит в том, что квалифицированную юридическую помощь следует укреплять не только как участие адвоката, но и как реальную гарантию процессуальных возможностей.*

***Ключевые слова:*** *бесплатная квалифицированная юридическая помощь, право потерпевшего на защиту, участие адвоката, пострадавшее лицо, принцип равенства и состязательный характер судебного разбирательства, право на справедливое судебное разбирательство, процессуальный баланс, сравнительно-правовой анализ.*

***Abstract:*** *In practice, the protection of the interests of the victim and civil plaintiff at the stage of the trial is often weakened due to procedural inequality, late appeal to a representative, and limited access to full access to materials. The purpose of this study is to determine the content of guarantees of qualified legal assistance in criminal proceedings, to reveal the mechanism of their operation in court proceedings, and to indicate gaps in the protection of rights. As a methodological basis, normative and legal analysis, comparative jurisprudence, review of judicial practice, and a systematic approach were used. Criminal procedural norms, rules regulating the*

*participation of the victim and civil plaintiff, and the legal status of the representative were compared in content. The analysis showed that the right to protection in court is often limited to formal notification, and the active position of the lawyer is crucial in identifying disputed issues, evaluating evidence, and substantiating the interests of the civil claim. It was also found that procedural guarantees do not work to the same extent, especially in the areas of objection to the protocol, filing a petition and responding to court actions. As a scientific contribution, the chain of "early information - access to a representative - active judicial control" for the victim and civil plaintiff at the stage of the trial was substantiated as a conceptual model. The conclusion is that qualified legal aid should be strengthened not only as the participation of a lawyer, but also as a real guarantee of procedural opportunities.*

***Keywords:*** *free qualified legal aid, the victim's right to defense, the participation of a lawyer, the injured person, the principle of equality and adversarial nature in court proceedings, the right to a fair trial, procedural balance, comparative legal analysis.*

So‘nggi yillarda amalga oshirilgan sud-huquq islohotlari sud hokimiyati mustaqilligini hamda sudlar faoliyatida ochiqlik va shaffoflikni ta’minlash bilan bir qatorda fuqaro va tadbirkorlarning huquq hamda qonuniy manfaatlarini himoya qilish kafolatlarini kuchaytirish imkonini berdi.

Shu bilan birga “Yangi O‘zbekiston — yangi sud” tamoyili doirasida aholining odil sudlovga erishish imkoniyatlarini yanada kengaytirish sud-huquq tizimini isloh qilishni jadallashtirishni, sohaga ilg‘or xalqaro standartlarni joriy etishni talab etmoqda.

Mazkur islohotlar nafaqat aybdor shaxsning huquq va erkinliklarini sud orqali himoyalashni, balki jinoyat natijasida jabrlangan shaxslarning ham huquq va manfaatlarini himoya qilishni nazarda tutishi bilan o’ziga xos hisoblanadi.

MDH davlatlarining aksariyatida jumladan, O’zbekistonda ham jinoyat ishlari asosan jabrlanuvchilarga zarar yetkazgan holda jinoyat sodir etishda gumon qilinuvchilar va ayblanuvchilarning huquqlari va manfaatlarini himoya qilishga qaratilganligi qonunlarimizda mustahkamlangan normalardan ham ko’rishimiz mumkin. Bizning fikrimizcha, bu yerda V.Osipkinning "Rossiya Federatsiyasida amalga oshirilayotgan huquqiy islohotlar sharoitida, xalqaro tashkilotlar va hamjamiyatlarning kuchli bosimiga duchor bo'lgan holda, afsuski, jabrlanuvchilarga zarar yetkazgan holda, gumon qilinuvchilar va ayblanuvchilarning manfaatlarini

ustuvorlashtirishga tobora ko'proq e'tibor qaratmoqda[90]" degan fikriga qo'shilish mumkin.

Shunday qilib, yuqorida aytib o'tilgan xalqaro huquqiy hujjatlarda sodir etilgan jinoyatlar uchun jinoiy javobgarlikka tortilgan shaxslarning huquqlari va majburiyatlari yetarlicha batafsil bayon etilgan, shu bilan birga jinoiy ta'sirga uchragan shaxslarning huquqlari va majburiyatlarini ta'minlovchi zamonaviy qoidalar hali yetarli emas nazarimizda.

O’zbekiston Respublikasining amaldagi jinoyat-protsessual qonunchiligini tahlil qilib, shuni ta'kidlash mumkinki, ayblanuvchilar va gumon qilinuvchilarning huquqlarini himoya qilish institutlari qonun chiqaruvchilar va turli olimlarning diqqat-e'tibori tufayli umuman olganda yetuklikka erishgan, jabrlanuvchilarning huquqlarini himoya qilish qoidalari esa zamonaviy talablarga javob bermaydi. Ushbu tadqiqotda jabrlanuvchilar masalasini, ularning jinoyat protsessining asosiy bosqichlarida o'z huquqlari va qonuniy manfaatlarini himoya qilish vakolatlarini to'liq o'rganishga va ularning huquqiy maqomini yaxshilash bo'yicha takliflarni ilgari surishga harakat qiladi.

Sud muhokamasi bosqichida jabrlanuvchi va fuqaroviy da’vogarning himoya huquqi amaliyotda torayib borayotgani JPKning 55, 56, 57 va 62-moddalarini izchil qo‘llash zaruratini kuchaytirdi[91]. Oliy sud Plenumi qarorida taraflarning tortishuvi va teng huquqliligi prinsipini majburiy mezon sifatida belgilagan bo‘lsa-da, sud majlisida jabrlanuvchilarga malakali yuridik yordam ko’rsatish har doim ham to‘liq kafolatlanmayapti[92]. Shu sababli mazkur tadqiqotda sud muhokamasi bosqichidagi protsessual kafolatlar, jabrlanuvchi huquqlari va fuqaroviy da’vogar maqomining o‘zaro bog‘liqligi yoritiladi.

Sh.J.Qodirov jabrlanuvchi va fuqaroviy da’vogarning teng protsessual subyekt sifatidagi talqini, yuqorida ko‘rsatilgan natijalar bilan uyg‘un holda, himoya huquqini faqat da’vo bildirish bilan cheklamaslikni asoslagan hamda jabrlanuvchini mustaqil manfaat egasi ekanligi haqida so’z yuritgan, shuningdek, jabrlanuvchi manfaatlarini protsessual muvozanat bilan bog‘lagan bo‘lsa, bu tahlil o‘sha bog‘liqlikning xalqaro darajadagi tasdig‘ini ko‘rsatadi, uning fikriga ko’ra, jabrlanuvchi manfaatlarini ta’minlashda huquqiy bo‘shliq aynan vakillik va xabardor qilish mexanizmlarida

[90] V.L.Grigoryan. Himoya va himoya faoliyati jinoyat protsessining tuzilishini va uning maqsadlariga erishishni belgilovchi omillar sifatida. 2006-yil. Dissercat.uz

[91] O‘zbekiston Respublikasi Jinoyat-protsessual kodeksi. Lex.uz.

[92] O‘zbekiston Respublikasi Oliy sudi Plenumining "Jinoyat ishlari bo‘yicha sud muhokamasida taraflarning tortishuvi va teng huquqliligi prinsiplarini qo‘llash amaliyoti to‘g‘risida"gi qarori.2022.

saqlanib qolinadi[93]. Yuqoridagi ilmiy tadqiqotlardan kelib chiqib aytish mumkinki, muammo sud muhokamasi bosqichida malakali yuridik yordam kafolatlarini tizimli aniqlashtirishda jamlandi.

Mazkur tadqiqotda sud muhokamasi bosqichidagi jabrlanuvchi va fuqaroviy da'vogarlarning protsessual maqomi hamda malakali yuridik yordam kafolatlari o'rganildi. Shu sababli tadqiqotning maqsadi ikki yo'nalishda belgilanadi: himoya huquqini kuchaytiruvchi normativ mexanizmlarni aniqlash va sud amaliyotidagi cheklovlarni bartaraf etish yo'llarini asoslash. Shuning uchun JPK normalarini tahlil qilib, sud amaliyotida uchrashi mumkin bo'lgan muammolarga takliflar ishlab chiqishda xorijiy davlatlarning ham qonunchiligini o'rganish maqsadga muvofiq.

A.A.Holiqovning fikriga ko'ra jabrlanuvchiga malakali yuridik yordam ko'rsatish kafolatlarini faqat advokat ishtiroki emas, balki protsessual axborot va vaqtida murojaat qilish imkoniyati bilan bog'lagan. Uning fikriga ko'ra, sud muhokamasi bosqichida himoya huquqi vakilning borligi bilan emas, uning mazmuni bilan o'lchanishini, ya'ni sud muhokamasida malakali yuridik yordam kafolatlari faqat vakil tayinlash emas, balki vaqtida xabardor qilish va uchrashuv imkoniyati bilan to'ldirilganda ishlashini ta'kidlagan. Uning tadqiqotida malakali yuridik yordam mazmuni xabardor qilish, ishtirok va e'tiroz bildirish kafolatlari tahlil qilingan[94]. Demak, yuqoridagi fikrga qo'shilgan holda milliy norma himoya vakolatini beradi, ammo uning amaliy samarasi tashkiliy kafolatlarga bog'liqligicha qolmoqda.

Shu asosda tadqiqotning ilmiy yangiligi adolatli sud muhokamasiga bo'lgan huquqni ta'minlashda ishtirokchilarning malakali yuridik yordamdan foydalanishi zarur hollarda belgilangan tartibda davlat tomonidan faqat sudlanuvchiga emas balki protsessning boshqa ishtirokchilariga ham bepul malakali yuridik yordam ko'rsatilishini jinoyat protsessual qonunchiligi normalari bilan kafolatlashga oid takliflarni ilgari surish maqsad qilingan.

D.Mirzayevning fikriga ko'ra, jabrlanuvchi hamda fuqaroviy da'vogarning teng protsessual subyekt sifatidagi mavqeini asoslab, ularning himoya huquqi vakolatli vakillik bilan mustahkamlanishini hamda jabrlanuvchi va fuqaroviy da'vogarning manfaatida advokat ishtiroki dalil taqdim etish va savol berish taktikasini

[93] Sh.J.Qodirov. Jinoyat protsessida jabrlanuvchining huquq va qonuniy manfaatlarini ta'minlash masalalari // Yuridik fanlar axborotnomasi. — 2021. — №3. — B. 45-52.

[94] A.A.Xoliqov. Sud muhokamasida jabrlanuvchiga malakali yuridik yordam ko'rsatishning protsessual kafolatlari // Yurisprudensiya. — 2023. — №4. — B. 31-39.

kuchaytirishini ko‘rsatgan. Advokat ishtiroki bo‘lmagan holatda iltimosnoma va e’tirozlar ko‘pincha protsessual jihatdan sust ifodalanishini ko‘rsatgan[95].

Bu holat JPKning jabrlanuvchi va fuqaroviy da’vogar huquqlarini amalga oshirishga doir imperativ normalari bilan mos tushadi. Xuddi shu fikrni amaliyotdan quyidagilarni misol keltirish orqali qo’llab quvvatlash mumkin.

Masalan, jinoyat protsessida Jinoyat kodeksining 165-moddasi ya’ni tovlamachilikka oid jinoyat ishi sud muhokamasi bosqichida sud tergovi jarayonida sudlanuvchi bir nafar lekin jabrlanuvchilar ko’pchilik (taxminiy 20 nafar) sudlanuvchi manfaatini to’rt nafar malakali advokatlar himoya qilmoqda. Sudlanuvchiga dastlabki tergov tomonidan jabrlanuvchilarga yetkazilgan moddiy zarar 5 milliard so’m. Xuddi shu jarayonda himoyachilarning maqsadi ayblanuvchiga nisbatan ayblovni asossizligini isbotlash, zararni kamaytirishga erishish, ayblanuvchining xatti-harakatlarida tovlamachilik emas balki firibgarlik jinoyati borligini yoki umuman bu holatda jinoyat tarkibi yo’qligini isbotlashga erishish hisoblanadi. Lekin himoyachiga ega bo’lmagan jabrlanuvchining huquqiy ongi sud tergovida himoyachilar tomonidan unga berilayotgan savollar maqsadi va oqibati qaysi nuqtaga ketayotganligini anglab yetmaydi. Agarda davlat ayblovchisi har bir jabrlanuvchiga berilgan savollar yuzasidan tushuntirish bermoqchi bo’lsa, jabrlanuvchining himoyachining savollariga berilayotgan javoblari natijasida sudlanuvchining harakatlari tovlamachilik emas balki firibgarlikka yoki umuman jinoyat tarkibini bermasdan fuqarolik huquqiy munosabatga aylanib ketishi ehtimolini ochiqlasa, himoyachilarning haqli e’tiroziga sabab bo’ladi. Yoki ushbu holatda ba’zi jabrlanuvchilarning unga yetkazilgan zararni qoplaganligi sababli sudlanuvchiga xayrixoh bo’lgan javoblarni berishi (misol uchun sudlanuvchi tomonidan unga nisbatan qo’rqitish yoki mulkiy manfaatdor bo’lish holati bo’lmaganligini aksincha aldov natijasida mulkini talon taroj qilganligini yoxud o’zaro kelishgan holda pul mablag’larini sudlanuvchi ixtiyoriga o’tkazganligi haqida sudlanuvchi himoyachisi savollariga javob berishi) ish natijasiga ta’sir qiladi. Mazkur holatda davlat ayblovchisi ayblovni quvvatlash maqsadida himoyachi savolini takrorlamagan holda savol mazmunini o’zgartirgan holda jabrlanuvchi javobini ayblovga moslashga harakat qiladi, biroq ushbu holatda ham himoyachilar davlat ayblovchisining savollarini mazmuni bir xilligini kutilayotgan javob avvalgisiga monand ekanligini yoki yo’naltiruvchi savol sifatida savolni yo’qqa chiqarmoqchi bo’lib o’z e’tirozlarini raislik etuvchiga bildiradi. Afsuski, bu jarayon qanday kechayotganligini raislik etuvchi, sudlanuvchining himoyachilar va davlat

[95] D.D.Mirzayev. Jinoyat protsessida jabrlanuvchi va fuqaroviy da’vogar huquqlarini himoya qilishda advokat ishtirokining ahamiyati // Yuridik fanlar axborotnomasi. — 2024. — №1. — B. 57-64.

ayblovchisining huquqiy ongi va madaniyati yetsada, biroq jabrlanuvchi ish mazmuni kimning foydasiga hal etilayotganligini tushunib yetmasdan qoladi. Unga na suddan oldin, na suddan keyin, na sud jarayonida tushuntirib bo'ladi. Shu sababli ham malakali yuridik yordam bilan ta'minlash jabrlanuvchining ham adolatli sud muhokamasiga bo'lgan huquqini ta'minlaydi.

Bu muammolarning ahamiyati dastlabki tergovda bilinmasligi mumkin. Chunki jabrlanuvchi tergovda individual shaklda so'roq beradi. Tergovchining maqsadi haqiqatni aniqlash bo'ladi, shu nuqtayi nazardan savollar beradi. Biroq, sudlanuvchining himoyachilari esa sud tergovida jabrlanuvchining huquqiy ongi yetishmasligidan foydalanib qolishga harakat qiladi. Ularning maqsadi ayrim hollarda haqiqatni aniqlash emas balki himoyasi ostidagi shaxsga qo'yilgan ayblovni sindirish bo'ladi.

Jabrlanuvchi xotirjam sudda qatnashadi sababi tergovda bergan so'roqlari yetarli deb o'ylaydi. Biroq Jinoyat protsessual qonunchiligiga ko'ra sud faqat sud tergovida isbotlangan dalillarga tayanadi. Shu sababdan jabrlanuvchining sud tergovida bergan ko'rsatuvlari juda ham muhim. Buning oqibatida aybdor shaxs jazodan qutulib qolishi, adolat tarozisi pallasi jinoyatning asl jabrlanuvchisi foydasiga hal bo'lmasligiga natijada, adolatli sudlovga bo'lgan ishonch pasayishiga olib keladi. Oqibatda jinoyatning aybsiz guvohi aybdorga, haqiqiy aybdor yoki asl jabrlanuvchi fuqarolik munosabati ishtirokchilariga aylanib qolishi mumkin.

Nazariy jihatdan olingan xulosalar jinoyat protsessida protsessual kafolatlar tizimini jabrlanuvchi va fuqaroviy da'vogar manfaatlari kesimida aniqlashtiradi. Amaliyotchilar ushbu yondashuvdan sud majlisida iltimosnoma, dalil taqdim etish va vakillik masalalarini rasmiylashtirishda foydalanishlari mumkin. Doktrinal tahlil va sud amaliyoti sharhi normativ asoslarni aniqroq ochishga xizmat qiladi.

B.Normatov fuqaroviy da'vogar maqomini sud muhokamasi bosqichida alohida protsessual qatlamga ajratgan[96]. Bu ikki yondashuv birlashganda, malakali yuridik yordam vakillik emas, balki protsessual muvozanatning tarkibiy kafolatiga aylanadi. Shuning uchun doktrinal markazda huquqiy norma, huquqiy munosabat va huquqiy subyekt bir-biridan ajralmagan holda talqin qilish to'g'ri deb hisoblanadi.

Qiyosiy huquqshunoslik usuli orqali mazkur muammoli holatni yanada aniqroq ochish mumkin. Xususan, P.Baranov bepul yordamning qamrovi MDHdagi kabi umumiy emas, ammo vakilning taktika tanlovi va dalil taqdim etishdagi roli kuchliroq

[96] B.B.Normatov. Jinoyat ishlarini sud muhokamasi bosqichida fuqaroviy da'vogarning protsessual maqomi // Falsafa va huquq. — 2022. — №2. — B. 88-94.

ko‘rinadi. Uning fikriga ko’ra, Rossiya modelida jabrlanuvchining malakali yordamga bo’lgan huquqi bevosita protsessual kafolat hisoblanadi[97].

Yuqoridagilardan kelib chiqib, O‘zbekiston jinoyat protsessual qonunchiligida vakillikni, xabardor qilishni va dalil taqdim etishni bir butun kafolatlar tizimi sifatida mustahkamlashi lozim. Milliy qonunchilik normasida xalqaro standartlar bilan to‘liq uyg‘unlashmagan nuqta aynan sud nazorati va vakillikning sudda qatnashish shartlarida ko’rinadi.

Biroq, mavjud adabiyotlar sud muhokamasi bosqichida fuqaroviy da’vogar manfaatining zarar qoplash logikasi bilan cheklanishini to‘liq bartaraf etmaydi. Nazariya va sud amaliyoti orasidagi tafovut, ayniqsa, iltimosnoma berish va e’tiroz bildirishda seziladi.

Konstitutsiyaviy kafolatlar sud muhokamasi bosqichida jabrlanuvchi va fuqaroviy da’vogar manfaatlarini protsessual subyekt darajasida himoyalashga tayanch bo‘ladi[98]. O‘zbekiston Respublikasi Konstitutsiyasining 44-moddasi sud himoyasiga murojaat qilishni, 55-moddasi esa huquq va erkinliklarning sud orqali himoyasini mustahkamlaydi. Shu asos JPKdagi ishtirok etish, iltimosnoma berish va dalil taqdim etish huquqlarini faqat deklarativ emas, balki majburiy protsessual mexanizm sifatida talqin qilishni talab etadi. Bunday yondashuv malakali yuridik yordamni oddiy maslahat emas, balki himoya huquqining tarkibiy elementi sifatida ko‘rsatadi.

JPKning jabrlanuvchi va fuqaroviy da’vogarga doir normalari ushbu konstitutsiyaviy asosni protsessual shaklga keltiradi.

Shuningdek, JPK 42-, 56- va 57-moddalar jabrlanuvchi hamda fuqaroviy da’vogarning sud muhokamasida qatnashishi, iltimosnoma kiritishi va dalillarni taqdim etishini belgilaydi.

I.Qosimov dalil taqdim etish huquqi vakillik bilan qo‘shilgandagina tortishuv prinsipi real mazmun olishini asoslagan[99].

Shu yerda huquqiy bo‘shliq ko‘rinadi: JPK vakilning ishtirokini tan olsa-da, sud muhokamasida malakali yuridik yordamni ko’rsatishni boshlashning minimal standartlarini batafsil tushuntirilmagan.

Advokatura to‘g‘risidagi qonunchilik ushbu bo‘shliqni to‘ldirish uchun institutsional asos beradi. Qonunning 6 va 7-moddalarida advokatning mustaqilligi, sir

[97] Баранов П.П. Право потерпевшего на квалифицированную юридическую помощь в уголовном судопроизводстве // Журнал российского права. — 2021. — №7. — С. 112-121

[98] O‘zbekiston Respublikasi Konstitutsiyasi. — Toshkent: O‘zbekiston, 2023. Lex.uz.

[99] I.I.Qosimov. Sud muhokamasi bosqichida jabrlanuvchi va fuqaroviy da’vogarning dalillar taqdim etish huquqi // Yuridik fanlar axborotnomasi. — 2021. — №4. — B. 22-29.

saqlashi va vakolatlari belgilangan bo‘lib, ular jabrlanuvchi hamda fuqaroviy da’vogar vakilligining sifat mezonini shakllantiradi.

Shuningdek, xalqaro huquq standartlari milliy qonun normalariga qo‘shimcha mezon qo‘yadi. M.Abdurahmonov jabrlanuvchi manfaatlarini himoya qilishda xalqaro standartlar sudga kirish, tenglik va samarali vosita talabini birlashtirishini asoslarini ilmiy asoslashga harakat qilgan[100].

Plenum qarori tortishuv va teng huquqlilik prinsiplarini amaliyotda qo’llash tartibini belgilaydi. U jabrlanuvchi hamda fuqaroviy da’vogarning sud majlisida faol pozitsiyasini qo‘llab-quvvatlashni talab qiladi, biroq malakali yuridik yordamning kechiktirilgan taqdimini alohida protsessual buzilish sifatida nomlamaydi.

Normativ-huquqiy tahlilda ochilgan kafolatlar shuni ko’rsatadaki, qiyosiy tekshiruvda uch xil institutlashuv darajasi mavjud. Smirnov va Kalinovskiy esa sud himoyasi faqat protsessual huquqni e’lon qilish emas, balki uni amalga oshirish ketma-ketligini kafolatlash orqali yuzaga chiqishini ko‘rsatgan va ularnig tahliliga ko’ra, MDH modelida jabrlanuvchi va fuqaroviy da’vogar ko‘proq protsessning yordamchi qatnashchisi sifatida tasavvur qilinadi, shu sababli malakali yuridik yordamning sud muhokamasida qatnashish bosqichi torayadi[101].

V.Lazareva sud muhokamasida huquqlarni ta’minlash sudning tashkiliy intizomi bilan chambarchas bog‘liqligini qayd etgan, uning fikriga ko’ra, Yevropa yondashuvida sud muhokamasi bosqichi ichida vakil ishtiroki, xabardor qilish va sudda qatnashish bir-birini to‘ldiruvchi huquqiy norma sifatida qurilgan[102].

J.Roberts va M.Hof qiyosiy-huquqiy tahlilda aniqlangan vakilga sud muhokamasiga qatnashishdagi tafovutlar sud muhokamasi bosqichida malakali yuridik yordamni faqat deklarativ kafolat darajasida qoldirayotganini ko‘rsatadi. Qiyosiy nuqtai nazardan jabrlanuvchi huquqlari kuchli bo‘lgan tizimlarda bepul yuridik yordam va sud muhokamasiga qatnashish kafolati bir paketda ishlashini ko‘rsatgan hamda vakillik darajasi oshgan tizimlarda jabrlanuvchining sudga kirish imkoniyati kengroq bo‘lishini ko‘rsatgan. Jabrlanuvchi teng protsessual subyekt deb tan olinganda, himoya huquqi faqat da’vo vositasi emas, balki tortishuvni ta’minlovchi majburiy va

[100] M.M.Abdurahmonov. Jinoyat ishlarida jabrlanuvchi manfaatlarini himoya qilishning milliy va xalqaro standartlari // Jurnal pravovыx issledovaniy. — 2022. — №2. — S. 73-81.

[101] Смирнов А.В., Калиновский К.Б. Уголовный процесс: учебник. — М.: Норма, 2023. — 784 с

[102] Лазарева В.А. Обеспечение прав потерпевшего в судебном разбирательстве по уголовному делу // Государство и право. — 2022. — №5. — С. 95-104

dispozitsiyali mexanizmga aylanadi. Natijada jabrlanuvchi huquqlari kengaygan tizimlarda sudga chaqirilish kafolati alohida standartga aylanishini ta’kidlagan[103].

Yuqoridagilardan kelib chiqib, jinoyat protsessual qonunchilikka malakali yuridik yordam ko’rsatish institutini alohida bob sifatida kiritish, malakali yuridik yordam ko’rsatish tartibi, kimlar ushbu huquqdan foydalanishi, sudning xabardor qilish maburiyati borligi, sudda qatnashish shartlari, dalil taqdim etish huquqi, vakilning dalil taqdim qila olishi vakolati, vakilning protsessual maqomi va jabrlanuvchining himoyachisining protsessual maqomi, qanday hollarda bepul yuridik yordam ko’rsatish tartibi, jabrlanuvchining himoyachidan voz kechish tartibini belgilash hamda sudlanuvchi va jabrlanuvchi teng protsessual huquqlarga ega ekanligi kabi normalarni belgilash taklifi ilgari suriladi.

Jinoyat protsessual kodeksining 410-moddasi 2-qismida, sudlanuvchi sud majlisiga kelmasa, ishni muhokama qilish keyinga qoldirilishi lozimligi belgilangan.

Biroq, JPKning 411-moddasi 1-qismida, jabrlanuvchi sud majlisiga kelmasa, sud jabrlanuvchining ishtirokisiz ishdagi barcha holatlarni to’la aniqlash hamda uning huquqlari va manfaatlarini himoya qilish mumkin yoki mumkin emasligiga qarab, jinoyat ishini muhokama qilish yoki keyinga qoldirish masalasini hal etishi ko’rsatilgan.

Yuqoridagi holatlardan kelib chiqib, sudlanuvchi va jabrlanuvchining adolatli sud muhokamasiga bo’lgan huquqi mutanosibligi o’rtasidagi farqni ko’rishimiz mumkin.

Shu sababli jinoyat sodir etgan shaxsning jinoyatidan jabr ko’rgan shaxs ya’ni jabrlanuvchi (vafot etganda qonuniy vakil) sudga kelmaganda ishni muhokama qilish keyinga qoldirilishi haqida imperativ normani belgilash lozim.

Xuddi shuningdek, jabrlanuvchi vakilidan himoyachi maqomiga o’zgartirish yoki jabrlanuvchi advokati ta’rifiga o’zgartirish, sud muhokamasidagi ishtirokini majburiy qilib belgilash ham maqsadga muvofiq. Sud tomonidan xabardor qilish shartini belgilash masalalarini ko’rib chiqish lozim bo’ladi.

Ashvorts va Redmayn sud muhokamasida protsessual muvozanat vakilning faol ishtiroki bilan emas, balki sudning uni ta’minlash majburiyati bilan mustahkamlanishini nazariy jihatdan yoritgan, uning fikriga ko’ra anglo-sakson yondashuvida jabrlanuvchi ishtiroki ko‘proq protsessual eshitilish bilan cheklanadi.

[103] J.V.Roberts, Hough M. Understanding Victims' Rights in Criminal Justice: A Comparative Perspective // International Review of Victimology. — 2024. — Vol.30. — №2. — P. 145-162

Anglo-sakson tizimida malakali yuridik yordam ko‘proq sud amaliyoti va advokatlik standartlari orqali ishlaydi[104].

Yuqoridagi olimlar va tadqiqotchilarning tahliliga ko’ra, O‘zbekiston amaliyoti uchun eng maqbul yechim — vakil ishtirokini iltimosnomaga emas, xabardor qilish majburiyatiga bog‘lash hisoblanadi. Bunda JPKning tegishli normalari, advokatura to‘g‘risidagi qonunchilik va Oliy sud plenumining tortishuvlilik haqidagi qarori bir zanjirga ulanadi. Shu asosda ushbu tahlilda huquqiy bo‘shliq va uni yopish yo‘llari aniqroq ko‘rsatiladi.

Birinchi bo‘shliq vaqtida xabardor qilishga taalluqlidir: JPKning jabrlanuvchi va fuqaroviy da’vogarga doir normalari protsessual chaqiruv mazmunini belgilasa-da, yuridik yordam zarurligi haqida alohida eslatma bermaydi. Ikkinchi bo‘shliq vakilga kirish bilan bog‘liq, chunki advokat ishtirokini boshlash vaqti sud muhokamasida kechikib qolishi mumkin. Bu holat protsessual tenglikni susaytiradi, chunki taraflar tortishuvi amalda teng qurolga aylanmaydi. Mazkur nuqsonlar yuqorida ko‘rsatilgan natijalar bilan mos keladi, biroq ular normativ kodifikatsiya emas, balki dispozitsiya aniqligini talab qiladi.

Institutsional mexanizm sifatida sudlar huzurida navbatchi advokatlar ro‘yxatini elektron xabardor qilish tizimi bilan bog‘lash taklif etiladi; bu yechim vakillik uzluksizligini ta’minlaydi.

Sud muhokamasi bosqichida advokat qatnashuvi, xabardor qilish va protsessual muvozanat bir-birini to‘ldiruvchi kafolatlar sifatida namoyon bo‘ldi.

JPKning 55, 56, 57 va 61-moddalari jabrlanuvchi hamda fuqaroviy da’vogarga malakali yuridik yordamni real protsessual vositaga aylantiradi, biroq amaliyotda bu zanjir uzilishi mumkin. Shu sababli himoya huquqi faqat deklarativ norma emas, balki sud majlisida faol vakillik, iltimosnoma berish va dalil taqdim etish orqali ishlaydigan huquqiy norma sifatida mustahkamlanishi lozim.

Ilmiy taklif shundan iboratki, jabrlanuvchi va fuqaroviy da’vogar birgalikda teng protsessual subyektlar sifatida talqin qilinishi, shuningdek, sudlanuvchi va jabrlanuvchi huquqlari tengligi amaliy va nazariy jihatdan tahlil qilindi. Mazkur yondashuv huquqiy doktrina, advokatura to‘g‘risidagi qonunchilik va Oliy sud Plenumi qarori o‘rtasidagi bog‘liqlikni bir tizimga keltiradi. Natijada sud muhokamasida himoya huquqi, vakolatli vakillik va sud muhokamasida qatnashish kafolatlari alohida emas, yagona protsessual mexanizm ekanligi asoslandi.

[104] A.Ashworth, Redmayne M. The Criminal Process. — Oxford: Oxford University Press, 2021. — 512 p

Shu asosda JPKga jabrlanuvchi va fuqaroviy da’vogarga sud majlisi sanasi bilan birga advokat jalb etish tartibi yozma ravishda bildirilishini aniq kiritish taklif etiladi. Ikkinchi taklif sifatida, sud majlisida vakil ishtirokisiz berilgan muhim bayonotlar bo‘yicha sudning tekshiruv majburiyati imperativ norma bilan belgilanishi lozim. Sud amaliyotida esa bayonnomaga xabardor qilish, vakillik va iltimosnoma bo‘yicha alohida qayd kiritish standartlashtirilsa, protsessual bo‘shliq qisqaradi.

Navbatdagi bosqichda sud muhokamasida malakali yuridik yordamning rad etilish holatlari bo‘yicha yurisprudensiya tahlili va huquqiy munosabatlar dinamikasi alohida o‘rganilishi maqsadga muvofiq. Ayniqsa, fuqaroviy da’vogar manfaatlari bilan jabrlanuvchi huquqlarining kesishgan nuqtalarida sud nazoratining qaysi modeli samaraliroq ekani aniqlanishi kerak.

Qisqa qilib xulosani jamlaganda, jinoyat protsessual qonunchilikka malakali yuridik yordam ko’rsatish institutini alohida bob sifatida kiritish, unda malakali yuridik yordam ko’rsatish tartibi va mexanizmi, kimlar ushbu huquqdan foydalanishi doirasi, sudning xabardor qilish maburiyati borligi, sudda qatnashish shartlari, dalil taqdim etishning tashkiliy masalalari, jabrlanuvchi vakilining protsessual maqomi, sud majlisida ishtirok etishi va qanday hollarda bepul yuridik yordam ko’rsatish tartibi, jabrlanuvchining himoyachidan voz kechish tartibini belgilash, shuningdek sudlanuvchi va jabrlanuvchi teng protsessual huquqlarga ega ekanligi masalalari yakdil qonun normasida aks etishi jabrlanuvchi, fuqaroviy da’vogar va uning vakilining adolatli sud muhokamasiga bo’lgan huquqini ta’minlaydi.

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# IJTIMOIY ADOLAT VA NOGIRONLAR: YANGI YONDASHUV, YANGI IMKONIYATLAR

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***Annotatsiya.*** *Ushbu maqolada ijtimoiy adolat va nogironlar huquqlari masalalari alohida e'tiborga olingan. O'zbekiston Respublikasi Prezidenti tomonidan amalga oshirilayotgan tashabbuslar, nogironlar uchun yaratilayotgan yangi imkoniyatlar va ijtimoiy himoya tizimining takomillashuvi haqida so'z yuritilgan. Maqolada davlat siyosatining nogironlarga nisbatan yondashuvi, ularning ijtimoiy hayotda faol ishtirok etishlari uchun yaratilayotgan shart-sharoitlar, shuningdek, sog'liqni saqlash sohalaridagi yangiliklar haqida ma'lumot berilgan.*

***Аннотация.*** *В данной статье особое внимание уделено вопросам социальной справедливости и прав инвалидов. Речь об инициативах, реализуемых Президентом Республики Узбекистан, новых возможностях, создаваемых для инвалидов, и совершенствовании системы социальной защиты. В статье представлена информация о подходе государственной политики к инвалидам, условиях, создаваемых для их активного участия в общественной жизни, а также нововведениях в сфере здравоохранения.*

***Annotation.*** *This article pays special attention to issues of social justice and the rights of persons with disabilities. The event focused on the initiatives implemented by the President of the Republic of Uzbekistan, new opportunities created for persons with disabilities, and the improvement of the social protection system. The article provides information on the approach of state policy toward persons with disabilities, the conditions being created for their active participation in public life, and innovations in the healthcare sector.*

***Kalit so'zlar:*** *nogironlik, ijtimoiy adolat, ijtimoiy himoya, tizimli yondashuv, yangi imkoniyatlar, ijtimoiy hayotda faollik.*

***Ключевые слова:*** *инвалидность, социальная справедливость, социальная защита, системный подход, новые возможности, активность в общественной жизни.*

***Keywords:*** *disability, social justice, social protection, systemic approach, new opportunities, social activity.*

**Kirish**

Bugungi globallashuv va inson huquqlarini ta’minlashga yo‘naltirilgan zamonaviy jamiyatda har bir shaxsning, jumladan, nogironligi bo‘lgan shaxslarning teng huquqli ishtiroki ham ta’minlanmoqda. Ijtimoiy adolat – bu har bir insonning teng huquqlarga ega bo‘lishini ta’minlaydigan muhim tamoyil hisoblanadi. Nogironlar esa jamiyatning ajralmas qismi bo‘lib, ularning huquqlarini himoya qilish va ularga teng imkoniyatlar yaratish dolzarb masalalardan biridir. O‘zbekiston Respublikasi Prezidenti tomonidan ilgari surilgan tashabbuslar bu borada muhim ahamiyatga ega.

Yangi O‘zbekiston sharoitida, ayniqsa, 2021-yilda BMT Konvensiyasi ratifikatsiya qilinganidan so‘ng, davlat siyosatini amalga oshirishning aniq ma’muriy-huquqiy mexanizmlari, “Inson” agentligi faoliyati samaradorligi va raqamli texnologiyalarni ushbu sohaga tatbiq etish yo‘lga qo‘yildi. O‘zbekistonning yangi tahrirdagi Konstitutsiyasi va “Nogironlar huquqlari to‘g‘risidagi konvensiya” ratifikatsiya qilinganidan so‘ng milliy qonunchilikda nogironlikning “tibbiy modeli”dan “ijtimoiy va inson huquqlari modeli”ga o‘tishining huquqiy mexanizmlari tizimli tarzda ishlab chiqildi.

**Muhokama va tahlil**

Nogironligi bo‘lgan shaxslar huquqlari inson huquqlari doirasida muhim o‘rin tutadi. Ular jamiyatning boshqa a’zolari kabi teng huquqlar va imkoniyatga ega bo‘lishlari kerak. “Nogironlar huquqlari” tushunchasining va mazmunining retrospektiv tahlili jamiyat taraqqiyotining inson huquqlari rivojida hamda demokratik qadriyatlar shakllanishida muhim o‘rin tutati.

Nogironlik, invalidlik (lot. “invalidus” – “kuchli emas”) – kasallik shikastlanish, mayib -majruhlik, tug‘ma yoki baxtsiz hodisalar tufayli butunlay yoki ma’lum muddat cheklanganlikni anglatuvchi tushuncha.

Nogironlar huquqlari – bu inson huquqlarining maxsus sohasi emas, balki uning aynan o‘zidir. Nogironlar huquqlari – nogironligi bo‘lgan shaxslarga boshqalar bilan bir xil huquqlardan foydalanish imkoniyatining hech qanday istisnosiz yoki kamsitishlarsiz berilishidir. Asosiy qonunimiz bo‘lgan Konstitutsiyaning 57-moddasida nogironligi bo‘lgan shaxslar huquqlari kafolatlab qo‘yilgan. Ushbu moddada “…nogironligi bo‘lgan shaxslar huquqlari davlat himoyasidadir... Davlat nogironligi bo‘lgan shaxslarning ijtimoiy, iqtisodiy va madaniy sohalar obyektlari va xizmatlaridan to‘laqonli foydalanishi uchun shart-sharoit yaratadi, ularning ishga

joylashishiga, ta’lim olishiga ko‘maklashadi, ularga zarur bo‘lgan axborotni to‘sqinliksiz olish imkoniyatini ta’minlaydi” deb belgilangan.

Hozirda nogironligi bo‘lgan shaxslar va ularning teng huquqli ishtirokini qo‘llab-quvvatlovchilarning sa’y-harakatlari bilan “ijtimoiy model”ga asoslangan qarashlar dunyoning turli rivojlangan davlatlarida ham targ‘ib qilinmoqda.

Ijtimoiy modelning asosiy mavzusi va yo‘nalishi “nogironlik”dir. Bu model nogironlik jaroyonini tavsiflash va nogironlikni ijtimoiy zulmning bir shakli sifatida belgilash orqali nogironlik ontologiyasini taqdim etadi.

Ijtimoiy model – nogironligi bo‘lgan shaxslar harakatiga asoslangan. Ushbu model “nogironlik”ni siyosiy jihatdan qayta ko‘rib chiqish g‘oyasini o‘z ichiga oladi. Bu tushuncha “nuqsonlari” bo‘lgan insonlar uchraydigan ijtimoiy noqulayliklar va chetlatishlarni ifodalash uchun ishlatiladi. Ushbu konsepsiyaga ko‘ra, nogironligi bo‘lgan shaxslar orasida doimiy jismoniy, aqliy, intellektual nuqsonli shaxslarning turli to‘siqlarga duch kelganda, jamiyatda ularning teng asosda to‘liq va samarali ishtirokiga xalaqit beradigan to‘siqlarni bartaraf etish mexanizmlarini ishlab chiqishdan iborat.

Ijtimoiy modelga ko‘ra, bu holat ijtimoiy jihatdan yuzaga kelgan adolatsizlik deb qaraladi, unga qarshi kurashish va radikal ijtimoiy o‘zgarishlar orqali bartaraf etish mumkinligi ta’kidlanadi. “Ijtimoiy model” konsepsiyasi 1980-yillarning boshlarida M.Oliver tomonidan fanga kiritilgan.

Nogironlikning ijtimoiy modeli huquqlarga asoslangan yondashuv bilan birgalikda, nogironlarni jamiyatning har qanday a’zosi bilan bir xil darajada o‘z hayot yo‘nalishini belgilay oladigan va belgilashi kerak bo‘lgan huquq egalari sifatida tan oladi. Shuningdek, ijtimoiy va jismoniy muhit tomonidan qo‘yilgan cheklovlarni odamlar huquqlarining buzilishi sifatida belgilaydi.

Inson huquqlari modelining mohiyati shundaki, u insonning tug‘ma qadr-qimmatiga va keyinchalik, faqat zarur bo‘lganda, shaxsning tibbiy xususiyatlariga e’tibor qaratadi. Bu model shaxsni unga ta’sir qiluvchi barcha narsaning markaziga qo‘yadi va, eng muhimi, “muammo”ni shaxsdan tashqarida va jamiyatda ko‘radi.

O‘zbekiston Respublikasida ham nogironligi bo‘lgan shaxslarning huquqlarini himoya qilish muammosi oxirgi yillarda davlat siyosatining ustuvor yo‘nalishlaridan biri bo‘lib bormoqda. O‘zbekistondagi ijtimoiy davlat sifatidagi nogironligi bo‘lgan shaxslarni himoya qilishning asosiy omillari quyidagilardan iborat:

– huquqiy kafolatlar va teng imkoniyatlarni ta’minlash;

– ijtimoiy-iqtisodiy qo‘llab-quvvatlash;

– bandlik va to‘siqlarsiz muhit yaratish;

– inklyuziv ta’lim va axborot olish olish imkoniyatini qulaylashtirish;

– nogironligi bo‘lgan shaxslarni qo‘llab- quvvatlovchi jamoat birlashmalarini rolini oshirish.

Demak, O‘zbekistonda bugungi kunda nogironligi bo‘lgan shaxslarning himoyasida qator huquqiy omillar yaratilgan.

**Xulosa**

Xulosa qilib aytganda, nogironligi bo‘lgan shaxslar huquqlarini himoya qilish sohasida aniqlangan muammolarni bartaraf etish kompleks huquqiy chora-tadbirlarni talab etadi. Normativ-huquqiy bazani xalqaro standartlarga moslashtirish, huquqni qo‘llash amaliyotini kuchaytirish hamda huquqiy ongni oshirish nogironligi bo‘lgan shaxslarning huquq va erkinliklarini faktik ta’minlashga xizmat qiladi.

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# REASSESSING LIBERAL POLITICAL ECONOMY: DIVERGENT POLITICAL AND ECONOMIC LIBERALISATION IN KYRGYZSTAN AND UZBEKISTAN

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***Abstract.*** *This article critically examines the role of the state in the economy and society from the perspective of liberal political economy. While liberal theory is commonly associated with the idea of a minimal state and self-regulating markets, the essay argues that the state remains central to the functioning of liberal economic systems. Rather than withdrawing from economic and social affairs, the liberal state performs a market-enabling role by protecting property rights, enforcing contracts, maintaining the rule of law, regulating competition, and providing limited public goods and social welfare. At the same time, liberal political economy places normative constraints on state intervention, particularly regarding redistribution and the correction of market-generated inequalities. The essay further evaluates the liberal assumption that economic and political liberalisation are mutually reinforcing processes by examining the contrasting experiences of Kyrgyzstan and Uzbekistan following the collapse of the Soviet Union. Using a comparative case study approach, it demonstrates that these countries have followed divergent trajectories despite their shared historical and institutional legacies. Kyrgyzstan has experienced greater political pluralism without sustained economic transformation, whereas Uzbekistan has pursued extensive market reforms while maintaining authoritarian governance. These cases challenge the convergence thesis of liberal political economy and suggest that the relationship between economic and political liberalisation is contingent upon state capacity, institutional legacies, and elite strategies. The essay concludes that*

*liberal political economy provides valuable insights into market governance but offers a limited explanation of post-socialist development when applied beyond its traditional Western context.*

***Keywords:*** *economic liberalism, political liberalism, Uzbekistan, Kyrgyzstan*

**Introduction**

The relation between the state, the market, and society holds a central place in International Political Economy, but in liberal political economy, this relation is often put out as natural and quite technical. The concept of a liberal theory views the state as a neutral guarantor of market processes rather than as a politically embedded actor whose initial task is to create the institutional space where markets are allowed to do their job, and individuals can follow their interests without any interference (Smith, 1776; Friedman, 1962). This approach views markets as rather self-organising processes and social outcomes as aggregate by-products of individual action under a rational motivation. Nonetheless, in this description, the extent to which markets are politically constituted and maintained is hidden, and liberalism would suggest the normative evaluations created and embedded in institutions are only technical, including law, property rights, and monetary regulation (Polanyi, 1944; Chang, 2002).

This article argues that liberal political economy does not eliminate the presence of the state in the economic and social life, and instead it turns the state into a market-enabling authority that has both indispensable and politically limited power. On the economic side, the liberal state builds and defends the legal framework of exchange, supports property rights, and regulates monetary systems; on the social side, it provides individual freedom and restricts redistribution to residual forms of welfare that are aimed at not eliminating market participation but instead maintaining it (Friedman, 1962; Hayek, 1944). However, another assumption in liberal theory is quite related to the first premise of economic and political liberalisation to occur in a mutually reinforcing process-market reform would automatically develop democratic governance and political freedom (Hayek, 1944; Friedman, 1962). Although this assumption is theoretically consistent, it is not empirically universal, and it cannot explain the difference in structural and historical contexts (Rodrik, 2011; Evans, 1995).

This article uses the comparative case study approach in order to question this tension and uses Central Asia as a testing ground. Kyrgyzstan and Uzbekistan are discussed as analytically parallel nations with a similar institutional legacy of the Soviet past, geographic location, post-independence course of development, but with very different cases of political-economic development (Cummings, 2013). In Kyrgyzstan,

we can see the example of political liberalisation without a profound economic liberalism, whereas Uzbekistan shows selective market reform without strong political pluralisation (Lottholz et al., 2020). This most-similar system design enables institutional difference to be separated as an explanatory variable, and therefore serves to be a qualitative control mechanism and enhance theoretical evaluation of liberal assumptions (Evans, 1995; North et al., 2009). Instead of seeing such instances as exceptions to theory, the analysis sees them as analytically unveiling contexts that bring to light the weaknesses of liberalism when no longer placed in its institutional Western context.

**Liberal Political Economy: Core Assumptions**

The liberal political economy is based on a unique conception of social order, economic coordination and political authority, placing the individual as the key unit of analysis and the market as the more desirable form of organisation. In its most basic form, liberalism does not just describe a theory in economics but also a moral philosophy that specifies the way in which society should be organised and the way in which freedom is to be conceptualised (Smith, 1776; Friedman, 1962). This two-sided character influences the conceptualisation of the state as a redistributor or planner, but as an institutional architect who facilitates the market interaction and safeguards the liberty of the individual.

One of the main assumptions of liberal political economy is methodological individualism, which describes societal outcomes not as a structural determinism or collective design, but as outcomes of individual activity and choice. The social order in the writings of Adam Smith (1776) is not a deliberate scheme but an accidental by-product of pursuing personal interest in the market relations, the best known as the ‘invisible hand’. Markets are thus theorised as not only instruments of efficiency but institutions of converting individual calculation into the collective good of price indicators and free market trade. Similarly, Friedman (1962) extends this view by considering markets as freedom guarantors. Economic freedom can never be independent of political freedom since market societies decentralise power and ensure individuals are not coerced by the state. This argument was furthered by Hayek (1944), markets were epistemic systems: with information spread throughout the society, decentralised exchange could effectively coordinate economic activity. The concept of central planning, in contrast to it, is not only inefficient but also epistemologically impossible.

However, as liberalism suggests, the independence of the actors in the market also minimises the structural parameters in the context of which choice is made. As Polanyi

(1944) pointed out, liberal markets are not spontaneous by-products of human desire to engage in exchange; they are created by an institutionally-driven process of political engineering. Laws are needed to enforce property rights, monetary systems, and labour contracts, and the market cannot exist outside political influence, but it is made up of it. The naturalisation and self-regulation of markets in liberalism obscures how economic coercion may emerge as a consequence of inequality, exclusion and dependency even in the absence of any state intervention (Gaus, 2010).

Another core assumption in LPE is a conceptual distinction between political liberalism and economic liberalism. Political liberalism focuses on individual rights and representative institutions as well as legal limits on state power, whereas economic liberalism focuses on free markets, property rights and minimal regulation (Heywood, 2017). The usual assumption of the liberal theory is that both these dimensions are reinforcing: economic freedom is supposed to bring about democratic rule, as political liberty is supposed to bring market efficiency. This assumption is indicative of the 'convergence thesis', indicating the natural outcome of capitalist development as political liberation (Billingham, 2016). This statement gained a certain ideological strength in the context of the Cold War and post-socialist reality. Market reform was both encouraged as an economic transition and as a way to democracy (Fidrmuc, 2003). The fall of state socialism was therefore presented as economic failure and moral victory of liberalism.

Nonetheless, Rodrik (2011) has found that there is a political trilemma whereby democracy, national sovereignty, and hyper-globalisation cannot all exist together. Liberalisation of the economy can thus inhibit the democratic choice instead of strengthening it. Equally, Evans (1995) portrays that in most cases, developmental success has necessitated a lot of state intervention as opposed to institutional restraint. In this sense, the convergence expectation of the liberal theory seems rather ideological than empirical.

These assumptions are further enhanced by the normative basis of the LPE. The liberal theory attributes moral worth to competition, autonomy and choice, and considers inequality as something inevitable or necessary to efficiency (Preston,2018). Redistribution is opposed not just for economic reasons, but because it questions whether the market is truly fair. In contrast, Chang (2002) questions this moral argument, stating that liberalism naturalises inequality by depoliticising it. Liberal theory evades the focus on the institutional processes of organising the advantaged and the disadvantaged by framing market outcomes as the detached outcomes of competition. Similarly, Polanyi (1944) claims that the commoditization of labour, land

and money makes the society subordinate to the market logic. It is not a failure of markets that leads to the resulting instability, economic insecurity, social fragmentation and periodic crisis, but rather a side effect of an unregulated growth of markets.

**The Economic role of the state in Liberal political economy**

The state is not in charge of driving the economy but rather building and sustaining the institutional environment in which markets are free to grow in LPE. Liberal theory opposes central planning and large-scale intervention in the economy, but does not support a stateless economy. As an alternative, the state is seen as a fundamental institutional architect, creating the legal and regulatory conditions of market exchange. Markets are constituted through the law rather than merely regulated by it to enforce property rights, stability in contracts and systems of law (North, 1990; Smith, 1776). In the absence of these institutional guarantees, economic exchange cannot be done predictably, and investment will become unpredictable. Liberalism thus does not see law as a kind of intervention but as an infrastructural system which facilitates economic actors to engage in voluntary exchange in a state of certainty.

Besides its role in the law, the liberal state has the role of regulating the markets to maintain competition and avoid systemic instability. Even though liberalism has made free exchange its priority, it admits negative consequences of the free market, leading to monopolies, speculative overdrive, and information asymmetry in a lack of efficiency. Monopolistic behaviour and collusion were also cautioned by Adam Smith (1776) himself as a danger to consumer welfare and the economy. The modern liberal theorists also advocate restricted state action to sustain competition and control finance, though they are cautious of intervention to guide investment or to redistribute income (Friedman, 1962). Regulation is therefore justified by transforming the economic performance without interference with the performance of markets, but this difference is more ideological than analytical. The regulatory structures are not put in a neutral environment; they represent the interests of prominent economic actors and institutionalise specific patterns of power distributions (Wade, 2003). Practically, liberalism can mean ‘market protection’, and in this case, market hierarchies might be established instead of being destroyed.

Furthermore, the liberal state is also instrumental in providing the public goods which the market is structurally inefficient to provide because of the issue of non-exclusivity and collective goods (Samuelson, 1954). Infrastructure, education, public health and scientific research are thus considered to be valid spheres of state intervention. These types of state investment are not considered to be the contradiction to liberalism but the functional requirements to increase productivity and enable the

enterprises to participate in the market. Smith (1776) recognised the necessity of government spending on roads and education, whereas Friedman (1962) admitted a secondary role in welfare, provided it did not interfere with labour power and social order. The most important thing is that expenditure is reasonable when it reinforces the existence of markets, and not when it is aimed at the restructuring of inequality (Gough, 2020).

Additionally, Liberal economic governance is characterised by openness to trade and globalisation. Liberalism is the application of competition logic across borders, based on the concept of comparative advantage, stating international specialisation enhances the overall welfare, by efficiency (Ricardo, 1817). In this view, the role of a state is to break down the protectionist barriers, encourage the capital flows and participate in the unification of the domestic economy with the global markets. However, trade liberalisation is no technical exercise, but political process with major distributional implications. Rodrik (2011) shows that global integration denies states the right to freedom of policy-making and shifts powers of national institutions into global regimes. The liberal states are therefore in a dilemma, between economic openness and the democratic accountability. In addition, history does not support the liberal beliefs about development: most of the developed economies industrialised under shields of protection, and only later defended free markets (Chang, 2002). Liberalism thus makes universal policies that represent the interest of already developed states and restricts the policy space of the late developers.

The liberal state has a high level of intervention in building markets but it does not want to be held accountable to market outcomes. Its power is in the law, regulation and worldwide negotiation and its normative undertakings and obligations do not allow it to directly deal with inequality. Instead of being minimal, the liberal state is selective in its activity: it is powerful when the capital must be defended, it is held back when social equality is being discussed. This creates a type of government where markets are made politically but depoliticised through rhetoric.

**The Social role of the liberal state**

Liberal political economy assigns the state a sub-dominant but indispensable role in social life that directly offsets its role as an economic facilitator in the market. Liberalism does not refuse the necessity of social policy; nevertheless, it restricts the motive and validity of the state's intervention in social life (Starr, 2019). The liberal state is not viewed as a guarantee of equality, social justice or collective welfare; instead, it is characterised as a guardian of persons' rights, as well as an enforcer of formal equality under the law. In this context, social policy is present not to reform

social relations but to stabilise labour markets, maintain productivity and guarantee further involvement in the economic life.

At the centre of liberal social theory is a devotion to individual liberty, which is interpreted in negative terms as non-interference with a person, rather than it is an enablement of the realisation of life opportunities (Berlin, 1969; Hayek, 1944). The state is therefore not considered as an empowering actor, but a protector of coercion, and the political power is acceptable on a limited scale. Civil, political rights, including freedom of expression, equal rights under the law, and security against arbitrary authority, are considered the institutional basis of political legitimacy as well as the market functioning (Friedman, 1962). This reasoning suggests that social status is less important than legal status, and as such, the protection of rights is a kind of substitute for the quest of equality.

However, critical political economy questions such privilege given to formal liberty by laying stress on the social circumstances. Lack of direct political influence does not mean that people will choose without having access to education, health, or a safe job. Polanyi (1944) believed that market exposure unaccompanied by social security creates a sense of insecurity and social dislocation that does not liberate but, on the contrary, impairs freedom. The conceptual divide of rights and material conditions in liberalism conceals the social factors of liberty, which depict vulnerability as an individual failure and not a structural limitation.

Despite classical liberalism was profoundly sceptical of welfare provision, modern liberal political economy is not very sceptical of limited social protection as a requisite to economic stability. Social policy is not accepted as a right of citizenship rather as a means to rectify market failure (Friedman, 1962). Instead, welfare is aimed at maintaining human capital, reducing dependency, and facilitating their role back into the labour markets than equalising life outcomes (OECD, 2019). The economic efficiency as opposed to moral obligation justifies the public investment in health, education and unemployment insurance. This instrumental perception of welfare can be attributed to a larger ideological disposition where inequality is naturalised as opposed to being politicised. According to Chang (2002), liberalism considers poverty as a technical issue and inequality as an inevitable but unfortunate result of freedom. The social policy is minimised to an administrative role that deals with efficiency and not with justice. In opposition, social democratic traditions perceive inequality as a structural state created through market-settlement and hence as an acceptable object of state intervention (Esping-Andersen, 1990).

Another characteristic of liberal social governance is that it does not focus on equality of outcome but on equality of opportunity. The liberalism will tolerate unequal outcomes as the morally acceptable ones provided that people are formally free to compete (Friedman, 1962). The education systems, mobility programmes and anti-discrimination laws are not supported because of their equalising effects but rather because of their help in eliminating the competitive obstacles. On the contrary, Piketty (2014) advocates against this logic by showing that market competition is no longer fair with the existence of wealth and opportunity inheritance. Material inequality is therefore concealed in the form of formal equality. Instead of addressing the inequalities in structures, liberalism redefines the problem of inequality as individual failure by shifting the burden of systemic disadvantage onto personal charges (Naito, 2007).

The sum of these assumptions creates a governance that is socially active but normatively reserved. The liberal state guards rights and provides some welfare, though it is unwilling to make redistributive promises that may upset market outcomes. This brings a structural paradox: liberalism promotes maximising freedom, but it condones inequality in ways that render effective autonomy of large groups in society impossible (Streeck, 2014). Liberalisation in the economy without social insurance, therefore, undermines the institutional trust and increases political dissatisfaction. According to Rodrik (2011), liberal capitalism is not only legitimate when it grows but also when it includes people.

Overall, the liberal political economy is a vision of a social order where rights are strongly safeguarded, and substantive equality is less important. The outcome is a pattern of governance that stabilises market society without altering it. As the case studies which follow reveal, this model yields uneven and conflictual results when applied to the post-Soviet context, where market reform can be applied in the absence of well-established welfare institutions and where inequality remains unchecked, casting its legitimacy into doubt.

Liberal political economy in Central Asia: Kyrgyzstan and Uzbekistan

The liberal theory presumes that political and economic liberalisation are reinforcing mechanisms: economic freedom is supposed to foster political pluralism, whereas political freedom is presupposed to increase market efficiency (Friedman, 1962; Hayek, 1944). The case of Central Asia offers an empirical context since states in the region shared very similar institutional frameworks as post-Soviet countries, but took different reform agendas upon gaining independence. So Kyrgyzstan and Uzbekistan reveal the constraints of liberal convergence because they show the possibility of the political and economic liberalisation to develop independently, but

not as a unified set. These instances are no exception but point to the structural flaws in the liberal political economy used out of context and background in the West.

Kyrgyzstan is commonly considered the most politically pluralistic country in Central Asia. It has had competitive elections, changes of leadership, and mass mobilisation since independence, with changes of regime in 2005, 2010, and 2020. In comparison with other parts of the region, civil society, opposition politics, and media freedom have been more visible, and Kyrgyzstan has the look of political liberalism (McGlinchey, 2011). In terms of the liberal political economy, Kyrgyzstan seems to validate the aspect of having democratic governance in a post-authoritarian situation. Its economic path is, however, not liberal. Nevertheless, even though early privatisation, price liberalisation, and openness to trade were adopted in the 1990s, the country could not develop a stable market institution and sustainable growth (Pomfret, 2019). The economy is still very reliant on remittances, informal activity and external aid. There is a low level of market infrastructure, a lack of reliability in contract enforcement and prevalence of corruption (World Bank, 2022).

Radnitz (2010) illustrates that the politics of Kyrgyzstan have been characterised by political rivalry and competition mainly by elite groups and not programmatic democracy. The reform of leadership failed to lead to institutional reform; instead, it only reformed informal coalitions of power. Political power changed a lot, but economic power was weak and disjointed. The democratic anticipation that brings about economic order has not been proved right. Rather, it is the lack of institutional depth as emphasised in the case of Kyrgyzstan. A market economy is not created through political competition that lacks administrative capability, fiscal power and proper regulation; however, markets need to be enforced, predictable and regulated, not just voted (Stigler, 2021). Political liberalism was thus inadequate to bring forth economic liberalism. On liberal standards, Kyrgyzstan has shown that political liberalisation in the absence of institutional power leads to instability and not success (Makhmadshoev et al. 2015). Political freedom has been accompanied by a lack of regulation and financial uncertainty, instead of strengthening the liberal economic order.

On the other hand, the opposite trend is observed in Uzbekistan. After independence in 1991, it continued to have a large state monopoly in the trade, finance, and industry. Nevertheless, the country has been on a large-scale market liberalisation since 2016 under the current president, Mirziyoyev, with currency liberalisation, deregulation, taxation reforms, and liberalisation of foreign investments (Khudaykulov, 2025). These reforms capture the main economic liberalism principles: opening the

market, increasing capital flows, and realigning institutions to focus on globalisation. It has also boosted growth, trade volumes, and business environments (IMF, 2022). Liberal economics-wise, Uzbekistan has been seen to be visible in terms of market alignment. But there is still a lack of political liberalism. There is strict control over elections, political parties have no freedom, and the political power is still highly centralised (Yilamu, 2017). This liberalism is economic, but politically undemocratic.

Instead of a political opening brought by market reform, Uzbekistan shows authoritarian accommodation through liberalisation, centralised economic reforms. Liberalisation is an elite, but not a liberation strategy. This goes against the main argument about liberal political economy, as market freedom creates democratic pressure. The literature on authoritarian rule shows to the contrary that even under the conditions of liberalisation of the economy, political dominance may persist (Levitsky and Way, 2010). Political pluralism does not necessarily emerge in markets. Instead, they can empower regimes by means of growth, legitimacy and international integration. Uzbekistan demonstrates that liberalisation is not quite democratic, but depends on politics.

In combination, the case of Kyrgyzstan and Uzbekistan reveals the weakness of the convergence thesis. Political liberalism without economic liberalism creates insecurity and instability, whereas economic liberalism lacking political change supports authoritarian adjustment (Einaudi et al. 2006). The state is reorganised in the process of liberalisation, instead of being withdrawn, thus liberalism restructures political power. These examples demonstrate that liberal political economy is not a universal form of development, but a historically defined model developed by the Western experience of institutions. Reform is not technical, it is political. Institutions are transferable schemes and formed in conflict and power (North et al., 2009). The case of Central Asia reveals that the process of political and economic liberalisation does not go hand in hand, but is a conditional phenomenon dependent on state capacity and elite strategy. The state is still the key agent of change, as opposed to being a neutral facilitator.

**Conclusion**

In conclusion, this article has critically discussed the role of the state in liberal political economy to evaluate whether liberal theory can provide a sufficient explanation of how economic governance and social order are structured by looking beyond the Western contexts in which liberalism had traditional roots. Even though the concept of liberal political economy is typically linked to the concept of a minimal state, the discussion has shown that liberalism does not diminish the importance of state

power, but it restructures based on the construction of market institutions. This does not imply that the liberal state does not exist in the economic and social life; rather, it is an agent of market order and at the same time limits its own roles in social redistribution and equality.

The liberal state establishes the pre-conditions of market exchange, such as enforcing legal rights, competition regulation, providing public goods and financial stability. Although broad powers are given to the state to design markets, interfering with the results of the markets, especially if it includes the redistribution of wealth or correction of structural inequality, is normatively discouraged. This has led to liberalism giving rise to a unique kind of governance whereby the state is both strong and weak at the same time: it is strong in creating markets and weak in dealing with the social effects of their existence. On the other hand, the liberal state is more concerned about the safeguarding of individual rights and formal equality before the law and sees the provision of welfare as a means of maintaining labour participation as opposed to being a means of justice. This understanding of social policy demonstrates a more fundamental ideological incursion in liberalism in favor of opportunity instead of outcome. Then liberal political economy turns social policy into a political venture, which has equity issues, into a managerial instrument of stabilising market society.

The case studies on the Central Asian region support liberal political economy does not propose a universal model of development. Kyrgyzstan and Uzbekistan show that not only political but also economic liberalisation does not go hand in hand as the liberal theory presupposes. Political pluralism in Kyrgyzstan has failed to bring about economic consolidation and market reform in the Uzbekistan has failed to bring political openness and instead strengthened authoritarian rule. These results demonstrate that liberal convergence is not a natural process, but it is highly historically predetermined, institutionalised, and elite-strategic. The overall analysis indicates that liberal political economy cannot be interpreted as an apolitical account of capitalist government but as a politically implicated structure that redefines, as opposed to eliminates the state authority. Liberalism does not eliminate the state; rather, it is reconstituted as a market-serving institution, the power of which is both exercised and denied at the same time.

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# TRANSFORMATIONS IN THE LOCAL JUDICIAL SYSTEM OF TURKESTAN IN THE LATE 19TH AND EARLY 20TH CENTURIES

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***Abstract.*** *Background: Following the Russian conquest of Central Asia, the Tsarist administration introduced colonial administrative and legal reforms aimed at subordinating the region to imperial authority while retaining elements of traditional governance.*

Objective: This study analyzes the structural and legal transformations of the local judicial system (qadi and biy courts) in Turkestan under Russian colonial rule, examining the dualistic court mechanisms, corruption in election procedures, and Jadidist reform proposals.

Methodology: The research utilizes a comparative-historical approach, legal analysis, and archival heuristic methods. The source base includes primary archival collections from the National Archives of Uzbekistan (NAUz, funds I-1, I-17, and I-18), imperial legislative acts (Complete Collection of Laws of the Russian Empire), and contemporary press materials, particularly Mahmudkhuja Behbudi's publications in Oyina.

Results: Findings indicate that imperial judicial regulations (1865, 1867, and 1886) gradually restricted the jurisdiction of traditional Islamic courts, stripping them of criminal and major civil cases and confining their role primarily to personal and family law affairs (around 55% of cases). The introduction of three-year elective terms for local judges, combined with administrative oversight by colonial officers, shifted the selection criteria from proficiency in Islamic jurisprudence (fiqh) to political loyalty and financial clout, fostering systemic corruption. In response, Jadid intellectuals led by Behbudi criticized colonial abuses and formulated comprehensive conceptual proposals to modernize Islamic courts and improve judges' legal education.

Conclusion: The forced transformation of Turkestan's judicial system degraded traditional legal authority and converted local courts into instruments of colonial management, offering valuable historical insights for contemporary legal state-building and judicial independence in Uzbekistan.

Keywords: Turkestan Governor-Generalship, qadi courts, colonial law, Islamic jurisprudence, Jadidism, judicial reform, legal dualism.

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# O‘ZBEKISTON SSRDA TOVAR TANQISLIGI (DEFITSID) VA AHOLIDA KUZATILGAN IQTISODIY YETISHMOVCHILIKLAR (1980-yillar)

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***Annotatsiya:*** *Maqolada 1980 – 1990-yillarda O‘zbekistonda kechgan iqtisodiy jarayonlar, narx-navo va maoshlar mutanosibligi, aholi daromadlari va xarajatlari, aholi iste’mol tovarlari yetishmovchiligi, kambag‘allashuvga olib kelgan omillar tahlilga tortib o‘rganilgan.*

***Kalit so‘zlar:*** *iqtisodiy jarayonlar, O‘zbekiston SSR, tovar tanqisligi, defitsid, chayqovchilik, KPSS, oylik maoshlar, daromad va xarajatlar.*

***Аннотация:*** *В статье анализируются экономические процессы, происходившие в Узбекистане в 1980-х и 1990-х годах, соотношение цен и заработной платы, доходов и расходов населения, дефицит потребительских товаров населения и факторы, приведшие к обнищанию.*

***Ключевые слова:*** *экономические процессы, Узбекская ССР, дефицит товаров, дефицит бюджета, спекуляция, КПСС, месячная заработная плата, доходы и расходы.*

***Abstract:*** *The article analyzes the economic processes that took place in Uzbekistan in the 1980s and 1990s, the ratio of prices and wages, incomes and expenditures of the population, the shortage of consumer goods of the population, and the factors that led to impoverishment.*

***Keywords:*** *economic processes, Uzbek SSR, commodity shortage, deficit, speculation, CPSU, monthly salaries, incomes and expenditures.*

**Kirish.** 1960 – 1980-yillar sovet davlatida tovar tanqisligi (defitsit) doimiy ravishda kechganligi o‘z tasdig‘ini topgan. 1980-yillardan boshlab tovar tanqisligi o‘zining yuqori cho‘qqisiga yetdi. Eng zarur mahsulotlar do‘konlar peshtaxtasidan yo‘qoldi. Sovet fuqarolari ijtimoiy hayotida chayqovchilik va qora bozor bilan

shug‘ullanuvchi sohalarning o‘rni bu davrda oshib bordi. Kuponlar asosida tovarlar meyori joriy qilindi.

**Asosiy qism.** 1985-yilga kelib barcha sohalarni qamrab olgan qayta qurish siyosati islohotlari xalq daromadi va iste’moli masalasini ham qayta ko‘rib chiqish zaruratini yuzaga keltirdi. Bu sotsialistik iqtisodiyot defitsit qaramligiga tushib qolganini ko‘rsatar edi va bozor munosabatlarini tartibga solish, sotsialistik qarashlarni qayta ko‘rib chiqish lozimligini talab qilardi. Aholining eng ko‘p shikoyatlari pul bor, ammo sotib olish zarur bo‘lgan sifatli tovar yo‘q. Ayrim tovarlarni sotib olishda byurokratik (guvohnoma, talon va b.) cheklovlar qo‘yilgan. Sotsializmning iqtisodiy kasalligi bu – defitsit ya’ni tovar va xomashyo yetishmovchiligi ekanligi ma’lum qilindi [1].

80-yillar oxiriga kelib butun sovet davlati bo‘yicha har 100 ta oilaning 8 tasi o‘zining muzlatkichiga, 30 tasi kir yuvish mashinasiga, 58 tasi chang yutgichga, 35 tasi tikuv mashinasiga ega bo‘lmagan [2]. Mebel sotib olishda ham iste’molchilarga tanlov huquqi berilmas va uzoq muddatli navbat kutishlar yuzaga kelardi. Kir yuvish mashinasiga o‘xshash maishiy texnika vositalari faqat shahar markazlaridagina sotilgan va unga ega chiqish uchun 3-5 yil kutishga to‘g‘ri kelgan. Do‘konlardan bir dona kitob sotib olish uchun 20 kg makulatura topshirish lozim bo‘lar edi. Makulatura uchun berilgan talonga mos mahsulot xarid qilish tizimi joriy qilindi.

Taqchil mahsulotlar uchun do‘konlardagi uzun-qator navbatlar kundalik hayotning odatiy ko‘rinishiga aylandi. Sovet davlatida 1980 yillarning 1-yarmida ishlaydigan ishchi erkaklar ish vaqtidan tashqari vaqtining 27,5% ni, ishlaydigan ayollar 23,5 %, yoshi katta kishilar 40% vaqtini navbatlarda kutishga sarflagan. Odamlar oddiy non, pishloq, konserva, xojatxona qog‘ozlari uchun ham navbat kutib turishga majbur bo‘lishardi. Mahsulotlarni aholiga talon bo‘yicha tarqatish tizimi sovet davri tarixida 30- va 40- yillardagilardan keyin 3-marta 80-yillarga kelib yana joriy qilinadi [3]. Kundalik ro‘zg‘or uchun eng zarur bo‘lgan oziq-ovqat va xo‘jalik (un, shakar,yog‘, sovun va b.) mahsulotlari talon orqali aholiga taqsimlab berilgan.

Eng taqchil tovarlardan biri sovet davrida 1984 yildan ishlab chiqarila boshlangan kasetali magnitafon bo‘lib, uning narxi 1200 rublni tashkil qilgan. Bu davrda o‘rtacha oylik maosh sovet davlati bo‘yicha 170-180 rubl bo‘lgan bo‘lsa, bunday maoshga ishlaydigan ishchi kamida yarim yil shu mahsulot ichida pul jamg‘arishi lozim bo‘lar edi. O‘zbekiston SSR bo‘yicha o‘rtacha ish haqlari bundanda past edi: 1985-yilda xalq xo‘jaligida ishchilar va xizmatchilarning o‘rtacha oylik ish haqi 163 so‘m, kolxozchilar mehnatiga to‘lanadigan o‘rtacha oylik 134 so‘mni tashkil qilgan. Bu davrda aholi milliy daromadining ¾ qismi iste’mol uchun foydalanilgan [4].

Kolxoz bozorlarida kundalik extiyoj uchun sotib olinadigan mahsulotlar davlat va koperativ do‘konlariga nisbatan yuqori narxlarni qayd etganligi yaqqol namoyon bo‘ladi. Jumladan, 1989-yil kolxoz bozorlarida 1 kg mol go‘shti narxi 4,57-5,57 rubldan, 1 kg kartoshka 0,61 rubl, mevalar 1,4-1,6 rubl sotilgan bo‘lsa, Davlat va kooperativ savdosida iste’mol mahsulotlarining o‘rtacha xarid narxi 1 kg go‘sht uchun 3,88-5,05 rubl, 1 kg kartoshka 0,36-0,44 rubl, 1 kg meva 1,21-1,33 rubldan iborat bo‘lgan. Bundan holat keyingi o‘nyilliklarda ham saqlanib, 1990-yil kolxoz bozorlarida 1 kg mol go‘shti narxi 1 kg uchun 5,716,18 rubldan, 1 kg kartoshka 0,50-0,57 rubl, mevalar 1,69-1,83 rubl [5] bo‘lsa, Davlat va kooperativ savdosida sotib olinadigan iste’mol mahsulotlarinng o‘rtacha xarid narxi 1 kg go‘sht uchun 4,91-6,12 rubl, 1 kg kartoshka 0,43-0,45 rubl, 1 kg meva 1,35-1,53 rubldan sotilgan [6].

Umuman olganda sovet davlatida ishchi xodim unga berilayotgan oylik maoshidan manfaatdorlik hissiga ega emasdi. Bu muammoga KPSSning 17-s’ezdida SSSR Oliy Soveti Prezidiumi raisi K.U.Chernenko to‘xtalib o‘tadi [7]· Uning fikriga ko‘ra, xodimning o‘z mehnatidan shaxsiy manfaatdoriligin oshirish to‘g‘risidagi masala, ish haqining mehnat natijalariga, uning unumdorligi va sharoitlariga qat’iy bog‘liqligini ta’minlash vazifasi birinchi o‘rinda hal etilishi lozim. Aks holda, xodimlarning ishdan ko‘ngli sovishi, mehnat g‘ayrati va tashabbuskorligini yo‘qotishi olib kelinishi, xalq farovonligi va iqtisodiyotga zarar keltirilishi mumkinligi aytiladi.

O‘zbekiston SSRda sovet hokimiyatining so‘nggi o‘n yilligida xalq xo‘jaligi sohalaridagi ishchi va xizmatchilarning o‘rtacha oylik maoshlarida biroz o‘zgarish kuzatilib, ular 155, 5 rubldan(1980 yilda), 205,7 rublga (1990 yil) oshgan. 80-yillar boshida eng kam oylik maosh oladigan soha madaniyat va san’at sohasi vakillarining o‘rtacha oyligi 105-116 rubl, xalq ta’limida ishlovchilar 132 rubl, sog‘liqni saqlash sohasi ishchilari ham kam maosh oluvchilardan bo‘lib oyiga o‘rtacha 120,5 rubl maosh olgan, eng ko‘p oladigan ishchilar esa qurilish sohasi ishchilari hisoblangan va ular oyiga o‘rtacha 218 rubl maosh olgan. 1990-yilda eng kam oylik maosh oladigan ishchilar ham madaniyat va san’at soha ishchilari bo‘lgan 120-140 rubl, xalq ta’limi ishchilari 171 rubl, sog‘liqni saqlashda ishlovchilar 157 rubl olgan, eng yuqori maosh oladiganlar yana qurilish sohasi ishchi va xizmatchilari bo‘lib o‘rtacha oylik ish haqi 344 rublga teng bo‘lgan [8]. Kolxozchilarning oylik maoshi 1980 yilda 130 rubl, 1987 yilda 132 rubl, 1990-yilda 182 rublga yetgan [9]. Kam oylik maosh oladigan san’at, madniyat, ta’lim sohasi vakillarining mehnat unumdorligi ham past darjalarni qayd etgan. Tub aholi vakillari farzandlarini kasb hunarga yo‘naltirishda ko‘proq bu sohalarni tanlamaslikka harakat qilinar edi. Ota-onalar farzandlarini ko‘proq muhandis, texnik kabi yuqori maoshli kasb egasi bo‘lishini ma’qullashgan.

O‘zbekiston SSR aholisining 1985-yildagi daromadlari 16,7 milliard rubl bo‘lsa, umumiy harajatlari 15,8 milliard rublni tashkil qilgan. 1990-yilga kelib respublika aholisining daromadlari 26,3 mlrd rubl bo‘lsa, harajatlari 22 mlrd rublga teng ekanligi ko‘rsatilgan [10]. Demak, 1980-yil boshidan 1990-yilga qadar O‘zbekiston SSRda aholining daromadlariga parallel ravishda xarajatlar miqyosi ham ko‘tarilib borgan.

**Xulosa.** Xulosa qilib aytganda, sovet hokimiyatining narx-navo va maoshlar ustidan qat’iy nazorat o‘rnatishga uringanligi, xususiy tadbirkorlik va savdoning cheklaganligi, ishlab chiqarishning qo‘llab-quvvatlanmaganligi, paxta yakka hokimligining o‘rnatilishi va boshqa sabablar O‘zbekiston SSR aholisining ijtimoiy hayotida o‘z salbiy oqibatlarini namayon qildi. Tovar tanqisligi (defitsit), mahsulotlarni talon bo‘yicha tarqatish, yuqori narx-navo, ishsizlik, jinoyatchilik, ichkilik va chekuvchilik illatlari sovet hokimiyati yuritgan siyosat keltirib chiqargan muammolar edi.

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# ИСТОРИЧЕСКИЕ И СОЦИАЛЬНО-ПОЛИТИЧЕСКИЕ УСЛОВИЯ ОБРАЗОВАНИЯ ТАДЖИКСКОЙ АССР В СОСТАВЕ УЗБЕКСКОЙ ССР

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История государственности таджикского и узбекского народов является крайне сложным, многофакторным процессом и его изучение в современной историографии распадается на два относительно самостоятельных, но не взаимоисключающих направления. Первое, представленное прежде всего трудами таджикского историка Р.М. Масова, ограничивается драматическим освещением хода национально -территориального размежевания 1924–1929 гг. и его последствий в судьбе таджикского народа. Второе, к которому относятся работы А.А. Аскарова, Б.Г. Гафурова, Р.Абулхаева, И.Усмонова, Х. Пирумшоева, коллектива авторов Института археологии АН УзССР, целого ряда современных узбекских этнологов, историков и востоковедов, исходит из тезиса об историческом территориальном и культурном единстве таджиков и узбеков, сложившемся задолго до советского периода и не сводимом к политическим границам, которые появились лишь в начале XX века. Настоящий параграф фрагментарно, но последовательно реконструирует источники этого единства — от эпохи бронзы до новейшего времени, — уделяя специальное внимание работам узбекских исследователей, поскольку именно узбекская историческая школа накопила значительный массив архивных, этнографических и полевых материалов по данной проблеме.

С хронологической точки зрения наиболее ранний пласт свидетельств — археологический. Как прямо констатируется в коллективном исследовании Института археологии АН УзССР: «Этнические и культурные границы между этническими образованиями этого региона, в особенности между узбекским и таджикским, были подвижными и имели двухсторонне-проницаемый характер»[105], а в процессе многовекового совместного проживания «установился определённый этноантропологический субстрат, на основе которого

[105] Материалы к этнической истории населения Средней Азии / отв. ред. В.П. Алексеев; АН УзССР, Институт археологии. – Ташкент: «Фан», 1986. – С. 3

формировались узбекская и таджикская народности»[106]. Академик А.А. Аскаров детализирует механизм этого процесса применительно к эпохе бронзы: «На территории современного Узбекистана и его окрестностях... проживали оседлые земледельцы и скотоводческие племена саков, которые говорили на восточных диалектах древних иранских языков... представители этих двух этнических слоёв проживают на одной территории с эпохи бронзы, происходит развитие экономических и этнокультурных отношений и между ними начинается взаимное этническое сближение... Оно нашло отражение в текстах Авесты, в наскальных надписях Ахеменидов, в отрывках древних письменных источников на согдийском, хорезмийском, бактрийском и сакском языках, в этнотопонимах, этнографических терминах»[107]. Показательно, что А. Аскаров специально различает два типа свидетельств — археологические и антропологические, и не смешивает их. Признаки культурного взаимодействия и смешения таджиков и узбеков он видит достаточно ясно, но тут же оговаривается: убедительных антропологических данных, которые подтвердили бы именно биологическое смешение, на этом этапе пока нет. Такая осторожность не является научной перестраховкой, а методологически честным ходом. Потому что культурное сближение и физико-антропологические изменения населения — процессы разного порядка, и автоматически их отождествлять А.Аскаров не спешит.[108]

Материалы раннего Средневековья показывают, что культурное и этническое взаимодействие в регионе не прерывалось и после падения Кушанского государства. Согдиана, Бактрия, Чач и Хорезм при эфталитах, а потом в составе Западнотюркского каганата оставались зоной плотных политических, хозяйственных и демографических контактов между оседлым ираноязычным населением и тюркскими кочевыми и полукочевыми группами. Согласно археологическим данным, согдийским, бактрийским и китайским письменным источникам, а также нумизматическим артефактам, одна традиция вовсе не вытесняла другую — они сосуществовали десятилетиями и постепенно взаимообогащались, перенимали черты друг друга. Именно тогда сложились устойчивые модели двуязычия и смешанного хозяйства, которые потом стали одной из визитных карточек Мавераннахра.

Важно отметить, что особую роль здесь сыграли согдийцы. Торговые караваны согдийцев, разбросанные по огромной территории Евразии, постоянно

[106] См. Там же.С.91
[107] Аскаров А. История происхождения узбекского народа. – Ташкент: «Узбекистан», 2018. – С. 252.
[108] См. Там же.С.339

взаимодействовали с тюрками. Это особенно заметно и в языке дипломатии, и в административной практике той эпохи. Тюркская знать, в свою очередь, постепенно врастала в городскую оседлую среду, активно осваивая земледельческую и ремесленную культуру у согдийцев. В работах А. Аскарова не раз указывается, что именно в раннем Средневековье взаимная ассимиляция обрела устойчивый характер и охватила почти все сферы жизни. При этом, локальное своеобразие отдельных областей сохранялось.

Развитое Средневековье эти процессы только усилило. Государства Караханидов, Сельджуков, Хорезмшахов объединяли разнородные по происхождению этнические группы.Важно отметтить, что данный процесс этнокультурной консолидации происходил в границах одного политического и хозяйственного пространства. Персидско-таджикский язык оставался языком науки, литературы и высокой культуры, а тюркские литературные традиции всё глубже и шире входили в государственное управление и художественную жизнь. Это двуязычие было не столкновением, а формой взаимодополнения — крупнейшие учёные и литераторы региона воспринимались современниками как часть общего культурного пространства Центральной Азии, независимо от того, на каком языке они писали.

Завоевание Средней Азии в XIII веке монголами, культурная и литературная стагнация как последствие не разорвала эту преемственность, а лишь изменило её формы. Монгольские и тюркские компоненты культуры, быта, языка постепенно исламизировались, оседали на землю и срослись с местным ираноязычным населением. Археология, антропология и письменные источники доказывают, что основой городской и хозяйственной жизни оставалось смешанное население, связанное общими экономическими интересами и культурными традициями.

К Новому времени, особенно после образования узбекских ханств XVI–XVIII вв., совместное проживание тюрко- и таджикоязычного населения стало едва ли не нормой общественного устройства региона. Самарканд, Бухара, Ташкент, Насаф, Кеш, Ходжент, Ура-Тюбе, Фергана и десятки других городов сохраняли смешанный этнический состав: таджики традиционно занимали заметное место в ремесле, торговле, земледелии и духовной жизни городов, узбекские группы были представлены и в городах, и в сельской округе. Административные документы, вакфные акты, судебные записи и путевые заметки иностранных путешественников и историков не раз фиксируют внимание на одном и том же факте — отсутствие чётких этнических границ в

повседневности, совместное проживание и широко распространённое двуязычие[109].

Если материалы эпохи бронзы говорят лишь о зарождении культурных контактов между разными этническими компонентами, то эпоха раннего и развитого Средневековье, а затем и Новое время показывают, как эти контакты постепенно превратились в устойчивую систему мирного политического, хозяйственного и культурного сосуществования. Вот откуда взялась та картина смешанного расселения узбеков и таджиков в городах и сёлах Центральной Азии, которую этнографы фиксировали уже на рубеже XIX–XX веков.

Для гораздо более позднего времени — начала XX века — устойчивость модели совместного проживания подтверждается еще одним независимым этнографическим источником, не связанным ни с советской, ни с постсоветской историографией. Таджиковед – лингвист И.И. Зарубин в статистико-этнографическом своде «Список народностей Туркестанского края» (1925), составленном по заказу Российской академии наук на основе материалов сельскохозяйственной переписи 1917 г., писал: «Основная масса оседлого иранского населения Средней Азии известна под именем таджиков. С точки зрения культурной они ничем не отличаются от турецкой оседлой части населения края... ныне составляющей основное ядро узбецкой народности»[110]. Он же фиксирует и лингвистическую сторону этой общности: «лингвистически так называемые сарты живут с узбеками общей жизнью: можно говорить о различных говорах Самарканда, Ташкента, Ферганы, но не существует специально «сартских» говоров в отличие от узбекских»[111]. Приводимые Зарубиным статистические данные подтверждают глубину территориального переплетения: по материалам переписи 1920 г., таджикское население составляло значительную или преобладающую долю именно в тех городах, которые впоследствии оказались объектом административного спора между двумя республиками, — в частности, в Самарканде (44 758 чел., то есть 54,4 процента от общего населения города), Ходженте (34 846 чел.) и Уратюбе (15 197 чел.), — то есть будущая политическая граница 1924–1929 гг. должна была пройти не

[109] Бартольд В. В. *Туркестан в эпоху монгольского нашествия* // Сочинения : в 9 т. Т. 1. М. : Изд-во восточной литературы, 1963.763 с. Сухарева О. А. *Бухара XIX – начала XX века (Позднефеодальный город и его население)*. М. : Наука, 1966. 329 с. Sartori P. *Visions of Justice:* Sharia *and Cultural Change in Russian Central Asia. Leiden* ; Boston : Brill, 2016. 408 p.

[110] Зарубин И.И. Список народностей Туркестанского края. – Л.: Изд-во АН СССР, 1925. – С. 6–7.

[111] Там же. См. С. 15.

между заранее обособленными этническими массивами, а через территорию их плотного демографического смешения.

Картина подобного культурно-языкового сближения и смешения был описан ещё раньше — русским востоковедом В.П. Наливкиным в «Краткой истории Кокандского ханства» на примере данных об этническом составе населения Ферганской долины. Наливкин пишет, что оседавший на землю узбек, «воспринимая от таджика его земледельческий и ремесленный культ... воспринял вместе с тем от таджика же массу персидских слов, вследствие чего изменился не только его образ жизни, но даже и самый язык»[112]. По его наблюдению, распространение персидской лексики «на все вообще оседлое туземное население» привело к тому, что этноним «сарт» стал служить для названия «всего вообще народа туземного узбекского и таджикского оседлого населения... не в одной только Фергане, а вообще во всей Средней Азии»[113].

Институциональная преемственность прослеживается и в языковой политике более поздних государственных образований Мавераннахра. А. Аскаров, описывая этническую ситуацию накануне национально-территориального размежевания, отмечает: «Среди населения Туркестана было распространено двуязычие... Эти народы... по своему территориальному расположению были до такой степени смешаны друг с другом, что в начале национально-территориального размежевания процесс разделения их на две части представлял большие трудности», а по антропологическому типу «оседлые узбеки и оазисные таджики представляли один тип... сформировавшийся в античное время «тип среднеазиатского междуречья»[114]. Показательна в этом отношении и история термина «сарт», объединявшего, по существу, торгово-ремесленное сословие обоих народов. А. Аскаров оспаривает вслед за В.В. Бартольдом распространённое в советской историографии отождествление «сарта» только с термином «таджик». При этом, ссылается на средневековый источник — «Девону луготит турк» Махмуда Кашгари, где слово «сарт» толкуется в его древнетюркском обобщающим значении «торговец». Он утверждает, что «в действительности, название «сарт» относится к оседлым таджикам и узбекам, которые занимались торговлей и ремесленным производством»[115].

[112] Наливкин В.П. Краткая история Кокандского ханства. – Казань, 1886. – С. 31
[113] Наливкин В.П. Указ. соч. – С. 29.
[114] Аскаров А. История происхождения узбекского народа. - Ташкент: ИПТД «Узбекистан», 2018. – С.510-511
[115] Аскаров А. История происхождения узбекского народа. - Ташкент: ИПТД «Узбекистан», 2018. – С.465

Административная преемственность региона также имеет узбекское историографическое подтверждение применительно к более раннему периоду. А. Ахророва анализируя государственное управление эпохи Саманидов в IX–X вв. на основе анализа нумизматического материала приходит к выводу: «Несмотря на то что государство Саманидов в историографии характеризуется как первое централизованное феодальное государство Средней Азии с персоязычной административной традицией, его этническую основу составляло тюрко-иранское население, являвшееся предками современных узбекского и таджикского народов. В Мавераннахре и Хорезме основным языком повседневного общения населения были тюркские диалекты, тогда как официальное делопроизводство, государственная документация и деятельность административного аппарата осуществлялись на персидском языке».[116] Данное заключение о разрыве между разговорным - тюркским и официальным – персидскими языками правительственной системы, обслуживавшей единое, этнически смешанное население, — структурно повторяет схему, которую двумя веками позже, на материале Кокандского ханства, независимо зафиксировал В.П. Наливкин. С.А. Рахматуллоев анализируя материалы по литературным традициям Мавероуннахра XIX века прямо указывает, что «в Хиве литература развивалась на узбекском языке, а в Бухаре и Коканде — на двух языках: таджикском и узбекском»[117]— то есть практически двуязычие оставалось нормой придворной и литературной, книжной культуры в двух крупнейших культурных центров региона на протяжении почти тысячи лет, начиная от эпохи Саманидов до позднего Средневековья.

Символической иллюстрацией культурной связи таджикского и узбекского народов традиционно служит творческий тандем Абдурахмана Джами и Алишера Навои, который описан в целом ряде источников. Так, по оценке таджикского историка С.А. Рахматуллоева, «дружба Джами и Навои — яркий пример дружбы двух братских и соседних народов Средней Азии, таджиков и узбеков»[118]. Научная традиция Мавераннахра демонстрирует ту же модель преемственности народов. С.А. Рахматуллоев указывает, что автором завиясанджа (секстанта радиусом 40 метров), использовавшегося в

[116] Ахророва А. Сомонийлар даври маъмурий бошқарувининг тарихшунослиги масаласи // Sharqshunoslik / Востоковедение / Oriental Studies. – 2017. – №3. – С. 34.

[117] Раҳматуллоев А.З., Сатторов Х.С., Тоҷов Н.Т. Таърихи халқи тоҷик. - Душанбе, «ЭР-граф», 2011.- С. 233–234.

[118] Раҳматуллоев А.З., Сатторов Х.С., Тоҷов Н.Т. Таърихи халқи тоҷик. - Душанбе, «ЭР-граф», 2011.- С. 171–172.

самаркандской обсерватории великого государсвтенного деятеля и ученого Улугбека, был астроном Абулмухаммад Худжанди — уроженец Ходжента, чьё имя (нисба «Худжанди») прямо указывает на его родину[119]. Обсерватория и научная школа Улугбека в целом формировались в результате коллективного труда учёных из разных областей Мавераннахра и Хорасана вне зависимости от их этнического происхождения. Данная модель, структурно продолжающая практику Саманидов, впоследствии успешно существовала и при Шайбанидах, затем при узбекских ханствах вплоть до основания национальных республик. К.Шониязов, обобщая академическую концепцию А. Аскарова, формулирует итоговый тезис: «смешанное проживание двуязычных народов Средней Азии, процессы их взаимного сближения и интеграции, общая культура, наука и духовность, а также политическая власть, созданные разными этническими пластами, в конечном итоге привели к практически одновременному формированию двух братских народов — узбекского и таджикского»[120]. При этом К. Шониязов прямо признаёт, что «На протяжении многих столетий на этих территориях бок о бок проживали и взаимодействовали народы, принадлежавшие к двум языковым семьям — иранской (персидской) и тюркской. Совместными усилиями они основывали города, сооружали ирригационные каналы, развивали земледелие и создали богатое культурное наследие, передав его последующим поколениям. Следует отметить, что длительное совместное проживание представителей этих языковых общностей сопровождалось сложными этнокультурными и языковыми процессами. Часть ираноязычного населения постепенно переходила на тюркские языки, тогда как отдельные группы тюркоязычного населения усваивали иранские языки и ассимилировались с согдийцами, хорезмийцами и другими местными этническими общностями. Таким образом, процессы этнокультурного сближения, взаимной ассимиляции и смешения населения затрагивали представителей обеих языковых традиций, оказывая существенное влияние на формирование этнической и культурной картины региона».[121]

Приведённые узбекские источники согласуются и с таджикской историографической традицией — причём не только по общему содержанию, но

[119] См.Там же.С.131

[120] Шониёзов К. Ўзбек халқининг шаклланиш жараёни /Таҳрир ҳайъати: Д. А. Алимова, Э. Х. Арифханова, У. С. Абдуллаев ва бошқ. — Т.: «Шарқ», 2001. — 317- б.

[121] Шониёзов К. Ўзбек халқининг шаклланиш жараёни /Таҳрир ҳайъати: Д. А. Алимова, Э. Х. Арифханова, У. С. Абдуллаев ва бошқ. — Т.: «Шарқ», 2001. — 13- б.

и по конкретной формулировке ключевых понятий. Таджикский академик Б.Г. Гафуров в своем фундаментальном труде «Таджики» писал: «Узбеки, наряду с таджиками и другими народами Средней Азии, — наследники всей древней истории и культуры Средней Азии... Узбекский народ является равноправным участником не только последних четырёх столетий среднеазиатской истории, но и... более длительного периода времени».[122] Более детально развивая данный тезис, Б. Гафуров утверждает: «хотя таджикский и узбекский народы оформились в разное время, причем языки этих народов принадлежат к различным лингвистическим группам, основной этно-антропологиче ский субстрат обоих народов — общий. Исторические судьбы этих народов и их культур оказались теснейшим образом переплетены».[123] Это утверждение почти дословно совпадает с ранее приведенными выводами коллектива Института археологии АН УзССР о едином «этноантропологическом субстрате», что представляет собой независимое единство и близость таджикской и узбекской академических традиций к одной и той же терминологии. Комментируя эту позицию Гафурова Х. Пирумшоев выделяет, что «он упорно подчёркивает равную степень причастности обоих ародов к политическому, социально-экономическому и культурному прогрессу Средней Азии»[124].

Административное размежевание 1924–1929 гг. создало политические границы между узбеками и таджиками, однако не привело к полному разрыву сложившихся этнокультурных связей. Демографический анализ К.Д. Саиповой показывает, что даже формальное распределение населения по новым республикам было неполным и компромиссным: «82% всех узбеков... были включены в состав Узбекистана, а 75,2% всех таджиков — в состав Таджикистана»[125], при этом статус ряда территорий, включая Ходжентский округ, менялся уже после первоначального размежевания.

В период образования национальных республик традиционный геополитический ландшафт Бухарского эмирата, Кокандского и Хивинского ханств, который мало изменился за время их пребывания под протекторатом Российской империи, претерпел кардинальные изменения. Но советскому руководству при осуществлении территориального размежевания не удалось

[122] Гафуров Б.Г. Таджики. К. 2. – Душанбе: «Ирфон», 1989. – С. 288
[123] Гафуров Б.Г. Таджики. К. 2. – Душанбе: «Ирфон», 1989. – С. 294
[124] Пирумшоев Х. Концептуальные вопросы истории и историографии таджикского народа.Ч.1 - Душанбе, «Ирфон».2014. С.29
[125] Саипова К.Д. Национально-государственное строительство и его воз действие на формирование национального состава Узбекской ССР. Историческая этнология. 2025. Т. 10. № 1. С. 56–66.

последовательно руководствоваться этнолингвистическим принципом в мультиэтнокультурной среде Центральной Азии. Поэтому во вновь созданных среднеазиатских республиках остались этнические анклавы и эксклавы. Впрочем, особого внимания на эту ситуацию союзный центр не обращал исходя из концепции формирования единого советского народа.[126] СССР хотя и конституционно декларировал федеративный союз национальных республик, не был ни федерацией, ни, разумеется, моноэтническим государством. Отличительной чертой союза была поддержка системы внешних форм существования наций - территории, культуры, языка и элит. Однако, данные меры нельзя было назвать оригинальными: в большинстве новообразованных моноэтнических республик они всегда принимались в первую очередь, отводя к числу главнейших внутриполитических задач.

Осуществленное большевиками в 20-х годах национально-территориальное размежевание Средней Азии в долгосрочной перспективе оказало определяющее влияние на этно-социальные процессы в регионе[127]. Этот процесс в конечном счете направил их в русло этнической самоидентификации и формирования национальной государственности. национальное размежевание Средней Азии привело к тому, что его разработчики достигли одной из своих целей — усиления национального самосознания[128]. «Основные национальности, провозглашенные во время национального размежевания Средней Азии в 1924 г., были признаны населением с удивительным энтузиазмом»[129].

Однако данный процесс национального обособления в Средней Азии, начатый большевиками, на практике сразу же столкнулся с унаследованной от прошлого и экономически необходимой интеграцией. Как подчеркивает Т. Мартин в концепции «империи положительной деятельности» (Affirmative Action Empire)[130], большевики поддерживали строительство наций. При этом путем создания сложной системы сдержек и противовесов жестко ограничивали всякие проявления национализма, борясь с «пережитками» (включая панисламизм и пантюркизм). Более того, само администрирование новых

[126] Haugen A. The Establishment of National Republics in Soviet Central Asia. London, 2003. P.78

[127] Хамидов М.Б., Курныкин О.Ю. Национально-территориальное разграничение в Средней Азии в 1920-х гг.: зарождение пограничных споров // Известия АлтГУ. 2023. №2 (130). С.56

[128] Мартин Т. Империя «положительной деятельности». Нации и национализм в СССР, 1923-1939 / [пер. с англ. О. Р. Щёлоковой]. — М.: Российская политическая энциклопедия (РОССПЭН) Фонд «Президентский центр Б. Н. Ельцина», 2011. С.147

[129] См.Там же.

[130] Мартин Т. Империя «положительной деятельности». Нации и национализм в СССР, 1923-1939 / [пер. с англ. О. Р. Щёлоковой]. — М.: Российская политическая энциклопедия (РОССПЭН) Фонд «Президентский центр Б. Н. Ельцина», 2011. С.98-104

национальных единиц требовало использования старых, дореволюционных центров компетенций и инфраструктуры, что закономерно порождало гибридные формы взаимодействия.

Взаимодействие институтов власти, экономики, культуры двух республик в 1920-е годы носило системный характер: как показывает Р.А. Абулхаев, например подготовка первых педагогических кадров для таджикских школ на территории обеих республик велась через Таджикский институт просвещения в Ташкенте[131], а созданная в первые годы советской власти сеть школ внутри самой Таджикской автономии была изначально многонациональной по составу: по приводимым Р. Абулхаевым данным, в республике работало «165 таджикских, 59 узбекских, 3 русских и по 2 туркменских и казахских школы», при этом среди выпускников педагогических учебных заведений конца 1920-х годов «абсолютное большинство... составляли таджики и узбеки»[132].

В политической сфере тесное взаимодействие выражалось в переплетении руководящих органов: многие руководящие работники Таджикской автономии начинали свою карьеру в государственных и политических структурах Узбекистана, а ключевые кадровые назначения в Душанбе осуществлялись после согласования с Ташкентом. Более того, вплоть до 1929 года, выделения Таджикистана в отдельную союзную республику, её партийная организация функционировала в рамках компартии Узбекистана. Таким образом, граница между республиканскими элитами также во многом была условной.

Необходимо, однако, учитывать и альтернативную историографическую позицию, наиболее последовательно представленную в работах таджикского историка Р.М. Масова, который рассматривает размежевание 1924–1929 гг. как «топорное разделение» таджикского народа и связывает его не с объективной этнокультурной картиной региона, а с конъюктурными политическими решениями советского руководства того периода. Пятый том академического издания «История таджикского народа» (под ред. Р.М. Масова, Душанбе, 2001) обстоятельно документирует эту критическую линию. При этом даже в рамках более критической историографической традиции признаётся глубина культурной общности: Х. Пирумшоев, обсуждая современные таджикско-узбекские отношения, пишет, что «реально осознавая общие духовные и культурные традиции и даже близкие родственные связи, сложившиеся веками,

[131] Абулхаев Р.А. Вопросы новейшей истории таджикского народа: сборник избранных статей. Ч. 7. – Душанбе: Ганҷи хирад, 2022. – С. 105.

[132] Абулхаев Р.А. Указ. соч. – С. 128–129.

с узбекским народом, таджики... не считают своих соседей... чуждыми»133. Далее он подчеркивает - таджики ясно осознают, что во всех достижениях республики причастны и представители других народов, которые делили с ними все трудности государственного возрождения и успехи социально-экономических и культурных достижений в республике. С другой стороны, историк С.Абашин характеризует выводы Р. Масова как таджикский национализм, внутри которого в 1920-е гг. было заложено стремление вырваться за рамки «Восточной Бухары» и создать «Большой Таджикистан». Данный процесс по-прежнему остаётся языковым и культурным национализмом, для которого то небольшое государство, которое сегодня называется «Таджикистаном», не является главной ценностью.[134] Данная оценка отражает позицию лишь одной из сторон полемики и должна восприниматься как таковая, а не как нейтральный научный консенсус. Примечательно, что узбекская историография в отличие от таджикской, как правило, не выделяет сюжет национального размежевания в самостоятельную полемическую сферу, а рассматривает его как один из рядовых эпизодов общего процесса экономического районирования Средней Азии 1920-х годов — асимметрия внимания к событию отражает асимметрию его переживания двумя национальными традициями.

Таким образом, совокупность археологических, этнографических, лингвистических, литературных, обрядово-религиозных и институциональных данных — от памятников бронзового века Северной Бактрии до образовательного сотрудничества 1920-х годов — позволяет говорить о территориальном и культурном единстве узбекского и таджикского народов как об устойчивой исторической закономерности, а не о позднейшей идеологической конструкции. Существенно, что этот вывод в значительной степени подтверждается независимо как таджикскими (Б.Г. Гафуров, Х. Пирумшоев, С.А. Рахматуллоев), так и узбекскими исследователями (А.А. Аскаров, А.А. Саримсоков, Ш. Ёвкочев, А. Ахророва, коллектив Института археологии АН УзССР) — то есть не является продуктом историографии одной из сторон. Показательно и совпадение центральной терминологии независимо друг от друга выработанной обеими национальными школами: и коллектив Института

[133] Пирумшоев Х. Концептуальные вопросы истории и историографии таджикского народа. Ч. 1. – Душанбе: Ирфон, 2014. – С. 457.

[134] Абашин С. Национализмы в Средней Азии : в поисках идентичности /Сергей Абашин. — СПб. : Алетейя, 2007.С.204

археологии АН УзССР (1986), и Б.Г. Гафуров, цитируемый Х. Пирумшоевым (2014), приходят к формуле об общем «этноантропологическом субстрате» двух народов — притом что нет оснований предполагать прямое заимствование одной формулировки у другой, поскольку это издания разных десятилетий и разных национальных академических традиций.

Административное размежевание XX века наложилось на глубоко интегрированную социокультурную систему, сложившуюся за предшествующие тысячелетия, и признание этого факта не противоречит признанию политической драматичности самого размежевания: эти два уровня анализа — этнокультурный и политико-административный — описывают разные, хотя и взаимосвязанные, стороны одного исторического процесса. Попытка свести оценку размежевания только к одному из этих уровней — будь то представление о нём как о чисто техническом административном акте, не имевшем культурных последствий, или, напротив, как об акте, разрушившем изначально монолитную общность, — одинаково огрубляет историческую картину.

# УГЛУБЛЕНИЕ ЦЕНТРАЛЬНОАЗИАТСКОЙ РЕГИОНАЛИЗАЦИИ: ОЦЕНКА РОЛИ УЗБЕКИСТАНА И КАЗАХСТАНА.

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***Аннотация.*** *Цель данной статьи – оценить роль Узбекистана и Казахстана – двух государств с наибольшим экономическим и политическим потенциалом в Центральной Азии — в интеграционных процессах региона. Рассматриваются их потенциал и возможности в содействии региональной интеграции, которая особенно активизировалась с 2017 года. Также анализируются их сравнительные преимущества по отношению к другим центральноазиатским государствам — Кыргызстану, Таджикистану и Туркменистану.*

*В исследовании также представлен краткий обзор истории интеграционных процессов в регионе. Статья предназначена помочь дальнейшей разработке рекомендаций по эффективному использованию потенциала Узбекистана и Казахстана для дальнейшего углубления регионального сотрудничества.*

***Ключевые слова:***

*Центральная Азия, регионализм, региональная интеграция, Узбекистан, Казахстан, геополитика, пограничные вопросы, государственные лидеры, Россия, Китай.*

***Annotatsiya.*** *Ushbu maqolaning maqsadi Markaziy Osiyoda eng katta iqtisodiy va siyosiy salohiyatga ega bo'lgan ikki davlat - O'zbekiston va Qozog'istonning mintaqadagi integratsiya jarayonlaridagi rolini baholashdir. Unda ayniqsa 2017-yildan beri kuchayib borayotgan mintaqaviy integratsiyani rivojlantirishda ularning salohiyati va imkoniyatlari o'rganiladi. Shuningdek, ushbu ikki davlatning Markaziy Osiyoning boshqa davlatlari - Qirg'iziston, Tojikiston va Turkmanistonga nisbatan qiyosiy afzalliklari tahlil qilinadi.*

*Tadqiqot shuningdek, mintaqadagi integratsiya jarayonlarining tarixiga qisqacha sharh beradi. Maqola mintaqaviy hamkorlikni yanada chuqurlashtirish uchun O'zbekiston va Qozog'istonning salohiyatidan samarali foydalanish bo'yicha ehtimoliy tavsiyalarni ishlab chiqishga yordam berishga mo'ljallangan.*

***Kalit so‘zlar:*** *Markaziy Osiyo, regionalizm, mintaqaviy integratsiya, O‘zbekiston, Qozog‘iston, geosiyosat, chegara muammolari, davlat rahbarlari, Rossiya, Xitoy.*

***Abstract.*** *The purpose of this article is to assess the role of Uzbekistan and Kazakhstan—the two states with the greatest economic and political potential in Central Asia—in integration processes in the region. It examines their potential and capabilities in promoting regional integration, which has become particularly active since 2017. It also examines their comparative advantages in relation to other Central Asian states—Kyrgyzstan, Tajikistan, and Turkmenistan.*

*This research also provides a brief overview of the history of integration processes in the region. The article is intended to facilitate the further development of recommendations for effectively leveraging the potential of Uzbekistan and Kazakhstan to further deepen regional cooperation.*

***Keywords:*** *Central Asia, regionalism, regional integration, Uzbekistan, Kazakhstan, geopolitics, border issues, state leaders, Russia, China.*

## I. Введение.

Приверженность развитию регионального сотрудничества в Центральной Азии стало важной частью официальной внешнеполитической риторики правительств всех пяти государств региона – Казахстана, Кыргызстана, Таджикистана, Туркменистана и Узбекистана. Явным подтверждением этой позиции государств рассматривается их регулярное участие в действующих механизмах регионального диалога. Консультативная встреча глав государств Центральной Азии, которая, согласно официальным заявлениям, должна восьмой раз пройти 8 октября 2026 года в Туркменистане,[135] стала главной площадкой принятия решений по реализации выдвигаемых инициатив с целью ускорению процесса регионализации.

Прошедшая 31 июля с. г. в г. Чолпан-Ате (Кыргызская Республика) неформальная встреча глав государств ЦА и Азербайджана указывает на

[135]Архитектура единого пространства: что показала неформальная встреча лидеров Центральной Азии и Азербайджана в Чолпон-Ате - https://www.newscentralasia.net/2026/08/01/arkhitektura-yedinogo-prostranstva-chto-pokazala-neformalnaya-vstrecha-liderov-tsentralnoy-azii-i-azerbaydzhana-v-cholpon-ate/

«мобильность» регионального диалога, возможность не ожидать очередной формальной Консультативной встречи глав государств Центральной Азии.

При анализе текущего состояния регионального сотрудничества в регионе особо выделяется место двух государств – Узбекистана и Казахстана. Отличающиеся своим большим политическим весом и по ряду показателей являющиеся экономически самыми богатыми, эти два государства сильно влияют на скорость углубления регионального взаимодействия.

Известный американский политолог З.Бжезински в своей книге «Великая шахматная доска», опубликованной в 1997 году, охарактеризовал эти два государства как самые важные среди новых независимых государств в Средней Азии. Если Казахстану он дал такую оценку благодаря его огромной территории и большим природным ресурсам, то Узбекистан описывается как страна с большим демографическим потенциалом и историко-культурный центр региона. Приводя аналог на основе данной книги, Узбекистан и Казахстан можно было бы видеть в роли Франции и Германии в Европейском союзе. З.Бжезински предельно ясно описывал роль этих двух европейских государств в европейской интеграции: «… дело не в том, чтобы выбрать между Францией и Германией. Европа невозможна как без Франции, так и без Германии».[136]

Исходя из вышеупомянутого, в качестве цели данной статьи было определено выявление значения участия Узбекистана и Казахстана в региональном интеграционном процессе в Центральной Азии.

В данной статье под регионализмом мы понимаем «процесс, в первую очередь инициированный государством, по созданию и поддержанию формальных региональных институтов и организаций, охватывающий как минимум три государства».[137]

## II. Основная часть.

Различные школы теории международных отношений делают акцент на разных структурных факторах, объясняющих успех регионализма. Реалисты утверждают, что для этого необходим региональный гегемон или лидер, обеспечивающий поддержание регионального порядка в интересах всех остальных стран региона. Конструктивисты подчеркивают важность региональной идентичности, считая ее необходимым условием региональной

[136] Бжезински З. Великая шахматная доска. Господство Америки и его геостратегические императивы. 1997 г., с. 128

[137] Tanja A. Börzel &Thomas Risse. Grand theories of integration and the challenges of comparative regionalism. Journal of European Public Policy. Volume 26, 2019 - Issue 8: Special Issue: Re-engaging Grand Theory: European integration in the twenty-first Century Pages 1231-1252 | Published online: 28 May 2019

интеграции. Наконец, либералы объясняют успех или неудачу регионального сотрудничества, исходя из внутренних интересов государств региона. [138]

Положения теории реализма перестают работать для Центральной Азии, поскольку Казахстан и Узбекистан позиционируют себя как долгосрочных союзников, нежели как соперников за региональное лидерство[139]. Хотя Казахстан экономически значительно сильнее Узбекистана, последний превосходит его по численности населения и военной мощи.

В отношении теоретического осмысления регионализации в Центральной Азии наиболее применимыми выступают подходы конструктивизма и либерализма. Будучи согласным с конструктивистским подходом, главы государств региона запустили практические шаги в сторону развития общей региональной идентичности, благодаря которой перспективы регионализма могут оцениваться как высокие.[140] Придерживаясь либералистических идей, государства региона принимают меры по либерализации своих политических систем: политические элиты – и прежде всего президенты – всё больше прибегают к региональному формату взаимодействия, «открывая» свои страны к совместной работе с остальными четырьмя странами данного региона.

**Политическо-дипломатический аспект.** Казахстан и Узбекистан выступают в роли институционального «ядра» центральноазиатского регионализма. Переход отношений двух стран от дуалистического соперничества 1990–2000-х гг. к Договору о союзнических отношениях (декабрь 2022 года) позволил институционализировать Консультативные встречи глав государств Центральной Азии (включая принятие Концепции «Центральная Азия – 2040» в Астане в 2024 г.). Сближение Астаны и Ташкента переломило многолетние дезинтеграционные тенденции в регионе. Подписание Договора о союзнических отношениях и проведение регулярно обновляемых Консультативных встреч глав государств ЦА превращают союз РК и РУ в устойчивую институциональную основу для консолидации всей Центральной Азии[141].

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[138] Sebastian Krapohl & Alexandra Vasileva-Dienes. The region that isn't: China, Russia and the failure of regional integration in Central Asia. Asia Europe Journal, (2020) 18:347–366. Published online: 28 May 2019

[139] "Казахстан и Узбекистан - не соперники, а союзники": Токаев отреагировал на домыслы "экспертов" - https://www.nur.kz/politics/universe/2309280-kazahstan-i-uzbekistan-ne-soperniki-a-soyuzniki-tokaev-otreagiroval-na-domysly-ekspertov/ (дата обращения: 11.08.2026)

[140] «От межгосударственного доверия – к общественной солидарности: в Бишкеке обсудили региональную идентичность Центральной Азии» - https://uza.uz/ru/posts/ot-mezhgosudarstvennogo-doveriya-k-obschestvennoy-solidarnosti-v-bishkeke-obsudili-regionalnuyu-identichnost-centralnoy-azii_886120

[141] Кузьмина Е. Проблемы экономического единства Центрально-Азиатского региона. Проблемы национальной стратегии № 4 (49) 2018, с. 118 - https://riss.ru/analitica/problemy-ekonomicheskogo-yedinstva-tsentralno-aziatskogo-regiona/?sphrase_id=567856 (дата обращения: 11.08.2026)

Казахстан и Узбекистан способствуют трансформации Центральной Азии из объекта соперничества внешних «больших держав», в первую очередь между Россией и Китаем, в самостоятельного субъектного игрока международных отношений через форматы «ЦА + 1» (Россия, США, КНР, ЕС, Япония и др.).[142]

Казахстан обладает высокой дипломатической капитализацией (статус «средней державы» - middle power), продвигает нормотворчество и региональные интеграционные платформы, выполняя роль дипломатического посредника и глобального медиатора между Западом, Китаем и РФ.

С 2016 года Узбекистан (где проживает около половина населения ЦА) сменил изоляционизм на внешнеполитическую активность[143]. Ташкент превратился в драйвер «внутрирегиональной разрядки», инициировав решение пограничных, водно-энергетических и визовых споров с соседями.

**Экономический потенциал и интеграция**. Казахстан лидирует по объему ВВП на душу населения, привлечению ПИИ и финансовой инфраструктуре. Узбекистан предоставляет емкий внутренний рынок (более 38 млн чел.), масштабный человеческий капитал и динамично растущий промышленный сектор. Это создает взаимодополняющий дуэт: «казахстанский капитал вместе с узбекистанской трудоемкой экономикой». Казахстан (высокий ВВП на душу населения, капитал, МФЦА) и Узбекистан (крупнейший рынок, мощный демографический и трудовой потенциал, производственная база) создают взаимно усиливающий эффект. Кооперация двух стран является фундаментом для устойчивого внутрирегионального рынка.[144]

**Транспортно-логистический союз.** Транспортный союз Астаны и Ташкента переформатирует логистическую карту континента, трансформируя Центральную Азию из изолированного сухопутного региона (*land-locked*) в динамично развивающийся перекресток глобальных торговых путей (*land-linked*). Казахстан обеспечивает выходы к рынку Китая, Российской Федерации и портам Каспийского моря через ТМТМ, гарантируя оперативный транзит европейско-азиатских грузов. Узбекистан, в свою очередь, выступает мостом к южным логистическим артериям, активно продвигая реализацию магистрали

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[142] Еримпашева А.Т., Таракбаева Р.Е., Мырзахметова А.М., Шабаль П.М. Императив интеграции Центральной Азии: путь к устойчивому развитию. *Вестник университета «Туран»*. 2025;(1):102-114. https://doi.org/10.46914/1562-2959-2025-1-1-102-114 (дата обращения: 10.08.2026)

[143] Партнёрство Узбекистана и Казахстана – фактор устойчивого развития всей Центральной Азии - https://iica.uz/ru/page/partnyorstvo-uzbekistana-i-kazakhstana-faktor-ustoychivogo-razvitiya-vsey-tsentralnoy-azii

[144] Еримпашева А.Т., Таракбаева Р.Е., Мырзахметова А.М., Шабаль П.М. Императив интеграции Центральной Азии: путь к устойчивому развитию. *Вестник университета «Туран»*. 2025;(1):102-114. https://doi.org/10.46914/1562-2959-2025-1-1-102-114 (дата обращения: 10.08.2026)

«Китай – Кыргызстан – Узбекистан» и формирование Трансафганского коридора с выходом к перспективным рынкам Южной Азии и портам Индийского океана (Чабахар и Карачи).

Синергия инфраструктурных систем двух государств устраняет прежнюю узконаправленную зависимость от северных маршрутов и создает гибкую, диверсифицированную сеть мультимодальных коридоров.[145] Координируя тарифную политику, модернизируя погранично-пропускную инфраструктуру и синхронизируя цифровые сервисы, Казахстан и Узбекистан закладывают основу единой евразийской логистической экосистемы. Это не просто наращивает транзитный потенциал, но и формирует мощный мультипликативный эффект для национальных экономик за счет создания попутных индустриально-логистических парков, сухих портов и сервисных кластеров.

Касательно военного потенциала, стоит отметить, что вооруженные силы Узбекистана и Казахстана представляют собой две наиболее боеспособные армии в регионе. Их совместный потенциал обеспечивает стабильность в вопросах противодействия экстремизму, наркотрафику и рискам, исходящим с территории Афганистана, снижая критическую зависимость от внешних военных гарантистов.

Приведенный выше анализ потенциала двух государств в политическом, экономическом и военном аспектах показывал бы примерно аналогичный результат относительно других трёх государств региона в любом отрезке времени начиная с года независимости. Это показывает на традиционно большую роль Узбекистана и Казахстана в регионе.

## III. Заключение.

Важность Узбекистана и Казахстана в региональных интеграционных процессах в Центральной Азии высока по сравнению даже с остальными тремя государствами вместе взятых. Эти два государства демонстрируют сравнительно больше усилий и имеют больше возможностей чтобы создать благоприятные условия для региональной интеграции.

При этом, регионализация в данном регионе становится всё более необратимым процессом, выступая как ответный шаг пяти государств из общего культурно-цивилизационного пространства вызовам глобализации и геополитическим изменениям в мире. Имея исторически ценный опыт

[145] Казахстан и Узбекистан: союзники и партнеры в укреплении Центральной Азии. URL: https://kisi.kz/ru/kazahstan-i-uzbekistan-sojuzniki-i-partnery-v-ukreplenii-chentralnoj-azii/ (дата обращения: 11.08.2026)

несбывшейся региональной интеграции из 1994–2005 годов, страны региона подходят к текущей «второй попытке» довольно деликатно и всё более синхронно при традиционно важной роли двух крупных государств – Узбекистана и Казахстана.

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# NODAVLAT SUD-EKSPERTIZA FAOLIYATINI TAKOMILLASHTIRISHNING DOLZARB MASALALARI

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So‘nggi yillarda O‘zbekiston Respublikasida sud-huquq tizimini modernizatsiya qilish, odil sudlov sifatini oshirish hamda sud ekspertizasi institutini xalqaro standartlar asosida rivojlantirish davlat siyosatining ustuvor yo‘nalishlaridan biriga aylandi. Ushbu yo‘nalishda amalga oshirilayotgan islohotlarning asosiy maqsadi sud ekspertizasi faoliyatining mustaqilligi, xolisligi va samaradorligini ta’minlash, ekspertiza xizmatlari bozorida sog‘lom raqobat muhitini shakllantirish, fuqarolar hamda tadbirkorlik subyektlarining sifatli ekspertiza xizmatlaridan foydalanish imkoniyatlarini kengaytirishdan iboratdir. Mazkur maqsadlarni ro‘yobga chiqarish yuzasidan O‘zbekiston Respublikasi Prezidentining 2025-yil 8-sentabrdagi PQ–270-son qarori bilan sud-ekspertlik faoliyatini raqamlashtirish, elektron axborot tizimlarini joriy etish, ekspertiza jarayonlarini avtomatlashtirish hamda nodavlat sud-ekspertiza institutini rivojlantirishning ustuvor yo‘nalishlari belgilab berildi.[146] Ushbu qaror ijrosini ta’minlash maqsadida O‘zbekiston Respublikasi Vazirlar Mahkamasining 2026-yil 20-fevraldagi 73-son qarori qabul qilinib, nodavlat sud-ekspertiza faoliyatining tashkiliy-huquqiy asoslarini belgilovchi bir qator normativ-huquqiy hujjatlar tasdiqlandi.[147] Mazkur qaror bilan nodavlat sud-ekspertiza institutining huquqiy maqomi yangi bosqichga olib chiqildi. Xususan, nodavlat sud-ekspertiza tashkilotlarining notijorat tashkilot sifatida faoliyat yuritishi, davlat sud-ekspertiza muassasalari bilan teng huquq va majburiyatlarga ega bo‘lishi hamda sud ekspertizalarini qonunchilikda belgilangan tartibda mustaqil ravishda amalga oshirish imkoniyati mustahkamlandi. Shu bilan

[146] https://lex.uz/uz/docs/-7717938
[147] https://lex.uz/uz/docs/-8059475

birga, sud ekspertlariga yakka tartibdagi sud-ekspertlik byurosi shaklida faoliyat yuritish huquqining berilishi ekspertlik faoliyatini diversifikatsiya qilish, yuqori malakali mutaxassislarning mustaqil faoliyatini qo‘llab-quvvatlash va ekspertiza xizmatlari bozorida raqobat muhitini rivojlantirishga xizmat qiladi.

Mazkur yondashuv fuqarolar va yuridik shaxslarning malakali ekspertiza xizmatlaridan foydalanish imkoniyatlarini kengaytirish bilan bir qatorda ekspertiza xizmatlari sifati va tezkorligini oshirishga ham zamin yaratadi. Qaror bilan nodavlat sud-ekspertiza tashkilotlarini tashkil etish va ularning faoliyatini amalga oshirish uchun zarur bo‘lgan tashkiliy, texnik va moddiy talablar ham aniq belgilab berildi. Jumladan, bunday tashkilotlar zamonaviy laboratoriya uskunalari, ekspertiza tadqiqotlarini xavfsiz va sifatli o‘tkazish imkonini beruvchi moddiy-texnik baza hamda tasdiqlangan ilmiy-metodik ta’minotga ega bo‘lishi shartligi nazarda tutildi. Shuningdek, nodavlat sud-ekspertiza tashkiloti rahbari faqat sud eksperti bo‘lishi, ekspertlar esa belgilangan tartibda kasbiy layoqatni tasdiqlovchi sertifikatga ega bo‘lishi majburiy etib belgilandi.

Ushbu talablar ekspertiza faoliyatining professional darajasini oshirish, ekspert xulosalarining ilmiy asoslanganligi, ishonchliligi va protsessual ahamiyatini ta’minlashga xizmat qiladi. Sud ekspertizasi tizimining zamonaviy rivojlanishida raqamlashtirish jarayonlari alohida o‘rin egallaydi. Shu nuqtai nazardan, Vazirlar Mahkamasining mazkur qarori bilan barcha nodavlat sud-ekspertiza tashkilotlarida E-ekspertiza elektron axborot tizimidan foydalanish majburiy tartibda joriy etildi. Mazkur tizim ekspertiza tayinlovchi organlar bilan elektron hujjatlar almashinuvini amalga oshirish, ekspertiza materiallarini elektron shaklda qabul qilish va yuborish, ekspertiza xulosalarini rasmiylashtirish hamda ekspertiza jarayonini real vaqt rejimida monitoring qilish imkoniyatini yaratadi. Natijada ekspertiza faoliyatida qog‘oz hujjatlar aylanishi qisqaradi, inson omili ta’siri kamayadi, hujjatlar xavfsizligi va saqlanishi ta’minlanadi hamda ekspertiza jarayonining shaffofligi va nazorat qilinishi sezilarli darajada oshadi. Shu jihatdan E-ekspertiza tizimi sud ekspertizasi sohasini raqamli transformatsiya qilishning muhim elementi sifatida namoyon bo‘lmoqda.

Sud ekspertlarini tayyorlash va ularning kasbiy kompetensiyalarini rivojlantirish masalalari ham mazkur islohotlarning muhim tarkibiy qismi hisoblanadi. Tasdiqlangan Nizomga muvofiq, nodavlat sud eksperti bo‘lish istagini bildirgan shaxslar maxsus qayta tayyorlash kurslarini muvaffaqiyatli tamomlashi lozim. Ushbu o‘quv kurslari sud ekspertizasining nazariy asoslarini o‘rgatish bilan bir qatorda zamonaviy ekspertiza metodikalarini qo‘llash, ilmiy tadqiqot olib borish, ekspertiza xulosalarini rasmiylashtirish hamda axborot-kommunikatsiya texnologiyalaridan foydalanish bo‘yicha amaliy ko‘nikmalarni shakllantirishga qaratilgan. E’tiborli jihati shundaki,

o‘quv dasturining **60 foizi** amaliy mashg‘ulotlarga ajratilgani sud ekspertlarini tayyorlash jarayonining amaliyotga yo‘naltirilganligini ko‘rsatadi. Shuningdek, mashg‘ulotlar laboratoriya ishlari, keys-stadi, treninglar, seminarlar va boshqa interfaol metodlar asosida tashkil etilishi nazarda tutilgan.[148]

Nizomda sud ekspertlarining kasbiy malakasini uzluksiz rivojlantirish mexanizmlari ham batafsil belgilangan. Unga ko‘ra, nodavlat sud ekspertlari har ikki yilda malaka va huquqiy bilimlarini oshirish kurslarida ishtirok etishlari majburiy hisoblanadi. Mazkur kurslar davomida ekspertlar sud ekspertizasi sohasidagi qonunchilikdagi yangiliklar, zamonaviy ekspertiza metodikalari, raqamli texnologiyalar, xalqaro tajriba va ilg‘or ilmiy ishlanmalar bilan tanishtiriladi. Malaka oshirish yakunida test yoki yozma nazorat o‘tkazilishi hamda muvaffaqiyatli tamomlagan mutaxassislarga tegishli sertifikat berilishi ekspertlarning kasbiy tayyorgarligini muntazam baholab borish va ularning malakasini doimiy ravishda yangilash imkonini yaratadi.

Shuningdek, Nizomda sud ekspertlariga qo‘yiladigan kasbiy kompetensiyalar zamonaviy talablar asosida shakllantirilgan. Jumladan, sud eksperti nafaqat amaldagi qonunchilikni chuqur bilishi, balki sud ekspertizasi metodikalarini mustaqil qo‘llay olishi, ilmiy-tadqiqot faoliyati bilan shug‘ullanishi, yangi ekspertiza usullarini ishlab chiqish va amaliyotga joriy etishda faol ishtirok etishi, zamonaviy axborot-kommunikatsiya texnologiyalaridan samarali foydalanish ko‘nikmalariga ega bo‘lishi lozim. Shu bilan birga, murakkab protsessual vaziyatlarda xolis qaror qabul qilish, professional etikaga rioya etish va ruhiy barqarorlikni saqlash kabi fazilatlar ham sud eksperti faoliyatining ajralmas qismi sifatida e’tirof etilgan.

Amalga oshirilayotgan normativ-huquqiy islohotlar tahlili shuni ko‘rsatadiki, O‘zbekistonda nodavlat sud-ekspertiza institutini rivojlantirish bo‘yicha yaratilayotgan huquqiy mexanizmlar xalqaro standartlar va ilg‘or xorijiy tajribaga mos ravishda takomillashtirilmoqda. Ayniqsa, ekspertlarni sertifikatlash tizimining joriy etilishi, ularning yagona reyestrini shakllantirish, davlat xizmatlarini elektron shaklda ko‘rsatish, masofaviy ta’lim imkoniyatlarini kengaytirish hamda **E-ekspertiza** tizimining amaliyotga tatbiq etilishi sud ekspertizasi faoliyatining ochiqligi, shaffofligi va samaradorligini ta’minlashda muhim ahamiyat kasb etadi.[149]

Kelgusida ushbu islohotlarning samaradorligini yanada oshirish maqsadida E-ekspertiza axborot tizimini sudlarning elektron platformalari bilan to‘liq integratsiya qilish, ekspertiza jarayonlariga sun’iy intellekt texnologiyalarini bosqichma-bosqich

[148] https://lex.uz/uz/docs/-8058586?ONDATE=23.02.2026%2000
[149] https://sudex.uz/?page_id=6784

joriy etish, nodavlat sud-ekspertiza laboratoriyalarini **xalqaro ISO standartlari** asosida akkreditatsiyadan o‘tkazish hamda xorijiy ekspertlik markazlari bilan ilmiy-amaliy hamkorlikni kengaytirish maqsadga muvofiqdir.[150]

Xulosa qilib aytganda, O‘zbekiston Respublikasi Vazirlar Mahkamasining 2026-yil 20-fevraldagi 74-son qarori nodavlat sud-ekspertiza institutining huquqiy asoslarini tubdan takomillashtirdi hamda sud ekspertizasi faoliyatini zamonaviy rivojlanish bosqichiga olib chiqdi. Mazkur normativ-huquqiy hujjat ekspertiza faoliyatining tashkiliy va huquqiy asoslarini mustahkamlash, sud ekspertlarini tayyorlash va ularning malakasini oshirish tizimini takomillashtirish, raqamli texnologiyalarni ekspertiza amaliyotiga keng joriy etish orqali sud ekspertizasi xizmatlarining sifati, tezkorligi va ishonchliligini oshirishga xizmat qiladi.

## Foydalanilgan adabiyotlar

1. https://lex.uz/uz/docs/-7717938
2. https://lex.uz/uz/docs/-8059475
3. https://lex.uz/uz/docs/-8058586?ONDATE=23.02.2026%2000
4. https://sudex.uz/?page_id=6784
5. https://www.iso.org/ru/standards.html

[150] https://www.iso.org/ru/standards.html

# ЦИФРОВАЯ СУДЕБНАЯ ЭКСПЕРТИЗА И ЗАРУБЕЖНЫЙ ОПЫТ: НАУЧНО-ТЕОРЕТИЕСКИЙ АНАЛИЗ И НАПРАВЛЕНИЯ СОВЕРШЕНСТВОВАНИЯ НАЦИОНАЛЬНОЙ ПРАКТИКИ

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***АННОТАЦИЯ.*** *В данном исследовании глубоко научно-аналитически освещены теоретико-правовые основы цифровой судебной экспертизы, специфические процессуальные особенности электронных доказательств, а также передовой опыт таких ведущих зарубежных стран, как США, Великобритания, Европейский Союз, Сингапур и Южная Корея. Также всесторонне рассмотрены вопросы цифровизации системы судебно-экспертной деятельности в Республике Узбекистан, практические проблемы работы с электронными доказательствами и пути их устранения. Автором выдвинуты концептуальные и практические предложения по приведению национального законодательства в соответствие с международными стандартами (ISO/IEC 27037, ISO/IEC 17025), повышению профессиональной компетентности судебных экспертов, внедрению современных аппаратно-программных комплексов, а также расширению международного сотрудничества в борьбе с трансграничными киберпреступлениями.*

***Ключевые слова:*** *цифровая судебная экспертиза, электронные доказательства, Digital Forensics, киберпреступность, компьютерно-техническая экспертиза, NIST, SWGDE, ACPO, ENISA, ISO/IEC 27037,*

*искусственный интеллект, хеш-суммы, Chain of Custody (непрерывность цепочки владения доказательствами).*

***ANNOTATSIYA.*** *Mazkur tadqiqotda raqamli sud ekspertizasining nazariy-huquqiy asoslari, elektron dalillarning o‘ziga xos protsessual xususiyatlari hamda AQSh, Buyuk Britaniya, Yevropa Ittifoqi, Singapur va Janubiy Koreya kabi yetakchi xorijiy davlatlarning tajribasi chuqur ilmiy-tahliliy jihatdan yoritilgan. Shuningdek, O‘zbekiston Respublikasida sud ekspertizasi tizimini raqamlashtirish, elektron dalillar bilan ishlashning amaliy muammolari va ularni bartaraf etish yo‘llari atroflicha ko‘rib chiqilgan. Muallif tomonidan milliy qonunchilikni xalqaro standartlarga (ISO/IEC 27037, ISO/IEC 17025) muvofiqlashtirish, sud ekspertlarining kasbiy kompetensiyasini oshirish, zamonaviy apparat-dasturiy majmualarni joriy etish hamda transchegaraviy kiberjinoyatlarga qarshi kurashda xalqaro hamkorlikni kengaytirish yuzasidan konseptual va amaliy takliflar ilgari surilgan.*

***Kalit so‘zlar:*** *raqamli sud ekspertizasi, elektron dalillar, Digital Forensics, kiberjinoyat, kompyuter-texnikaviy ekspertiza, NIST, SWGDE, ACPO, ENISA, ISO/IEC 27037, sun’iy intellekt, xesh-summalar, Chain of Custody.*

***ANNOTATION.*** *This study provides an in-depth scientific and analytical examination of the theoretical and legal foundations of digital forensics, the specific procedural characteristics of electronic evidence, and the best practices of leading foreign countries such as the United States, Great Britain, the European Union, Singapore, and South Korea. It also comprehensively addresses the digitalization of the forensic examination system in the Republic of Uzbekistan, practical challenges associated with handling electronic evidence, and ways to resolve them. The author puts forward conceptual and practical proposals for harmonizing national legislation with international standards (ISO/IEC 27037, ISO/IEC 17025), enhancing the professional competence of forensic experts, implementing modern hardware and software systems, and expanding international cooperation in combating cross-border cybercrime.*

***Keywords:*** *digital forensics, electronic evidence, cybercrime, computer-technical expertise, NIST, SWGDE, ACPO, ENISA, ISO/IEC 27037, artificial intelligence, hash sums, Chain of Custody.*

XXI век по праву считается эпохой глобальной цифровой трансформации, в рамках которой информационно-коммуникационные технологии, искусственный интеллект, облачные вычисления, Интернет вещей **(Internet of Things, IoT),** технологии блокчейн, большие данные (Big Data), квантовые

вычисления и цифровые платформы стали неотъемлемой частью общественной жизни.[151] Современные государства активно внедряют цифровые технологии практически во все сферы государственного управления, экономики, банковско-финансовой деятельности, здравоохранения, образования, транспорта, промышленности, электронной коммерции и предоставления государственных услуг. Цифровизация значительно повысила эффективность общественных отношений, обеспечила ускорение обмена информацией, расширила возможности дистанционного взаимодействия и создала качественно новую модель развития общества.

Вместе с тем стремительное развитие цифровой среды обусловило возникновение принципиально новых угроз национальной и международной безопасности. Существенно изменились не только формы общественных отношений, но и способы совершения противоправных деяний. Если ранее преступления преимущественно оставляли материальные следы, подлежащие исследованию средствами традиционной криминалистики, то сегодня значительная часть противоправной деятельности осуществляется в цифровом пространстве. Киберпреступность превратилась в одно из наиболее динамично развивающихся направлений современной преступности, охватывая неправомерный доступ к компьютерной информации, распространение вредоносного программного обеспечения, незаконное вмешательство в функционирование информационных систем, хищение цифровых активов, кибермошенничество, атаки с использованием программ-вымогателей **(Ransomware),** незаконный оборот персональных данных, финансовые преступления в сети Интернет, преступления с использованием криптовалют, а также транснациональные кибератаки, затрагивающие интересы сразу нескольких государств.[152]

В условиях цифровизации общественных отношений традиционные криминалистические методы исследования уже не способны в полной мере обеспечить эффективное выявление, раскрытие и расследование преступлений. Это обусловлено тем, что современные следы преступной деятельности всё чаще существуют не в материальной форме, а в виде цифровой информации, содержащейся в памяти персональных компьютеров, мобильных устройств, серверов, облачных хранилищ, социальных сетей, электронных почтовых сервисов, систем видеонаблюдения, интернет-платформ, цифровых платёжных

[151] https://www.weforum.org/publications/
[152] https://www.oecd.org/en/topics/digital.html

систем и иных электронных информационных ресурсов. Именно такие сведения становятся важнейшим источником доказательственной информации, позволяющей установить обстоятельства совершённого преступления, личность виновного, механизм противоправного деяния и причинно-следственную связь между действиями участников уголовного процесса.

В этой связи особое значение приобретает судебная цифровая экспертиза **(Digital Forensics),** которая в настоящее время рассматривается как одно из наиболее перспективных и быстро развивающихся направлений судебно-экспертной деятельности.[153] По своей правовой и научной природе цифровая судебная экспертиза представляет собой комплексную область знаний, сформировавшуюся на стыке судебной экспертологии, криминалистики, информационной безопасности, компьютерных наук, программирования, криптографии, цифровой электроники и процессуального права. Её основное предназначение заключается в научно обоснованном обнаружении, фиксации, изъятии, копировании, сохранении, восстановлении, исследовании и интерпретации цифровой информации, имеющей значение для правильного разрешения уголовных, гражданских, административных и экономических дел.

Следует отметить, что цифровая судебная экспертиза уже давно вышла за рамки исключительно уголовного судопроизводства. В современных условиях практически все виды судебной юрисдикции сталкиваются с необходимостью исследования электронных доказательств. Это обусловлено тем, что значительная часть гражданско-правовых, корпоративных, финансовых и коммерческих отношений осуществляется посредством электронного документооборота, электронных подписей, банковских транзакций, интернет-платформ, цифровых контрактов, мессенджеров и иных информационных технологий. Электронные письма, сообщения в социальных сетях, журналы регистрации событий (лог-файлы), записи камер видеонаблюдения, информация с мобильных устройств, облачных сервисов и интернет-ресурсов всё чаще становятся самостоятельными доказательствами, обладающими высокой юридической значимостью.

Специфика цифровых доказательств заключается в их принципиальном отличии от традиционных вещественных доказательств. Электронная информация обладает высокой степенью изменяемости и уязвимости, поскольку любое несанкционированное вмешательство может привести к утрате,

[153] https://publicadministration.un.org/egovkb

искажению либо уничтожению данных. Более того, многие цифровые сведения существуют исключительно в оперативной памяти устройств и исчезают сразу после их отключения. Значительная часть информации хранится в зашифрованном виде либо распределяется между несколькими серверами, расположенными в различных юрисдикциях, что существенно усложняет процесс её обнаружения, исследования и процессуального закрепления.

Именно поэтому судебная цифровая экспертиза основывается на строгом соблюдении международно признанных научно-технических стандартов. Одним из ключевых элементов обеспечения достоверности электронных доказательств является использование криптографических хеш-функций **(MD5, SHA-1, SHA-256, SHA-3 и других),** позволяющих подтвердить неизменность исследуемых данных. Не менее важное значение имеет принцип **Chain of Custody** — непрерывной цепочки хранения доказательств, предусматривающий документирование каждого этапа работы с цифровым объектом, начиная с момента его обнаружения и заканчивая представлением результатов исследования в суде. Соблюдение данного принципа обеспечивает допустимость доказательств и исключает возможность их фальсификации либо изменения в процессе расследования.

Мировая практика свидетельствует о том, что эффективность цифровой судебной экспертизы напрямую зависит от наличия современной нормативно-правовой базы, высокотехнологичного оборудования, аккредитованных лабораторий, единых методических подходов и высококвалифицированных специалистов. В Соединённых Штатах Америки ведущую роль в стандартизации судебной цифровой экспертизы играет Национальный институт стандартов и технологий **(NIST),**[154] разрабатывающий научно-методические рекомендации для судебно-экспертных учреждений. Существенный вклад в развитие единых подходов вносит также Scientific **Working Group on Digital Evidence (SWGDE),**[155] формирующая современные требования к исследованию цифровых доказательств. Особое место в судебной практике США занимает стандарт **Дауберта (Daubert Standard),**[156] в соответствии с которым оценивается научная обоснованность экспертной методики, её воспроизводимость, уровень возможной погрешности и признание научным сообществом.

[154] https://csrc.nist.gov/
[155] https://www.swgde.org/
[156] https://www.law.cornell.edu/wex/daubert_standard

В Великобритании фундамент цифровой криминалистики составляют принципы, разработанные **Ассоциацией старших офицеров полиции (ACPO),** согласно которым любые действия с электронными носителями информации не должны изменять содержащиеся на них данные, исследование должно проводиться исключительно компетентными специалистами, все этапы работы подлежат обязательному документированию, а эксперт несёт персональную ответственность за соблюдение процессуальных требований. В дальнейшем указанные положения получили развитие в деятельности **Forensic Science Regulator,** который сформировал современную систему контроля качества судебно-экспертных исследований.

На уровне Европейского союза развитие цифровой судебной экспертизы осуществляется при активном участии Европейского агентства по кибербезопасности **(ENISA)** и Европейской сети судебно-экспертных учреждений (ENFSI). Разработанные ими методические рекомендации направлены на унификацию процедур обращения с электронными доказательствами, обеспечение совместимости национальных систем судебной экспертизы, повышение эффективности расследования трансграничных киберпреступлений и соблюдение требований законодательства о защите персональных данных.[157]

Особый интерес представляет опыт государств Азии, прежде всего Сингапура и Республики Корея, которые рассматриваются в качестве мировых лидеров по внедрению цифровых технологий в деятельность правоохранительных органов. Использование искусственного интеллекта, технологий Big Data, автоматизированных аналитических платформ, систем машинного обучения и высокопроизводительных программно-аппаратных комплексов позволяет данным государствам значительно повысить эффективность выявления и расследования киберпреступлений, а также сократить сроки проведения экспертных исследований.

В Республике Узбекистан вопросам совершенствования судебно-экспертной деятельности в последние годы уделяется особое внимание. Последовательно реализуются меры по цифровизации судебной системы, внедрению электронного документооборота, модернизации материально-технической базы экспертных учреждений, развитию компьютерно-технической экспертизы и совершенствованию подготовки судебных экспертов. Вместе с тем

[157] https://enfsi.eu/

развитие цифровой экономики объективно требует дальнейшего совершенствования правового регулирования обращения с электронными доказательствами, разработки современных процессуальных механизмов их обнаружения, фиксации, исследования и оценки, а также внедрения международных стандартов **ISO/IEC 17025 и ISO/IEC 27037** в практическую деятельность судебно-экспертных учреждений.[158]

Не менее актуальной задачей остаётся формирование системы непрерывной подготовки специалистов в области цифровой криминалистики. Современный судебный эксперт должен обладать не только глубокими юридическими знаниями, но и профессиональными компетенциями в сфере информационной безопасности, компьютерных сетей, программирования, криптографии, анализа вредоносного программного обеспечения, облачных технологий, цифровых финансовых активов и искусственного интеллекта. Лишь междисциплинарный подход способен обеспечить качественное проведение судебных экспертиз в условиях стремительной цифровой трансформации общества.

Настоящее исследование посвящено комплексному анализу теоретико-правовых основ цифровой судебной экспертизы, изучению процессуальной природы электронных доказательств, исследованию передового зарубежного опыта Соединённых Штатов Америки, Великобритании, Европейского союза, Сингапура и Республики Корея, а также оценке современного состояния цифровизации судебно-экспертной деятельности в Республике Узбекистан. Особое внимание уделяется выявлению существующих проблем национальной практики и разработке научно обоснованных предложений по совершенствованию законодательства, внедрению международных стандартов, развитию экспертной инфраструктуры, повышению квалификации судебных экспертов и расширению международного сотрудничества в сфере борьбы с киберпреступностью.

Реализация предложенных в исследовании научно-практических рекомендаций будет способствовать дальнейшему развитию института судебной экспертизы, повышению эффективности использования электронных доказательств в судопроизводстве, укреплению гарантий законности и справедливости судебного разбирательства, обеспечению надёжной защиты прав и законных интересов участников процесса, а также интеграции Республики

[158] https://www.iso.org/standard/44381.html

Узбекистан в современную международную систему судебно-экспертной деятельности, основанную на общепризнанных научных стандартах и передовых цифровых технологиях.

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# ТРАНСФОРМАЦИЯ СЕМЕЙНЫХ ЦЕННОСТЕЙ И ИНТЕГРАЛЬНАЯ МОДЕЛЬ ДЕТЕРМИНАНТ РАЗВОДА

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***Аннотация:*** *Трансформация семейных ценностей в современном обществе не означает полного отказа от традиции. Скорее меняется соотношение между коллективной ответственностью и индивидуальным выбором. Для старших поколений семья чаще выступала как институт долга, родства, продолжения рода и социальной устойчивости. Для значительной части молодёжи семья всё чаще связывается с эмоциональной близостью, уважением личных границ, возможностью образования, профессионального роста и взаимного признания. Эти два взгляда могут сосуществовать, но в первых годах брака они нередко сталкиваются в конкретных бытовых решениях.*

В узбекском обществе ценность семьи остаётся высокой. Уважение к старшим, забота о родителях, материнство, верность, родственные связи и общественное признание брака сохраняют устойчивое значение. Однако меняется содержание супружеской лояльности. Молодые люди всё меньше воспринимают сохранение брака как самоцель любой ценой. В браке начинают искать не только соответствие традиции, но и психологический комфорт. Появляется ожидание эмоционального разговора, поддержки, уважения к образованию женщины, признания вклада обоих супругов. Если эти ожидания остаются без ответа, формируется чувство одиночества внутри брака.

Индивидуализация брачно-семейных установок особенно заметна у образованной молодёжи и девушек, ориентированных на профессиональное развитие. Образование повышает самостоятельность, расширяет круг общения и меняет представление о норме супружеских отношений. Молодая женщина может соглашаться с ценностью семьи, но не принимать модель полного подчинения мужу и его родственникам. Молодой мужчина может сохранять уважение к традиции, но испытывать давление ожиданий, связанных с ролью

кормильца и главы семьи. В обоих случаях традиция не исчезает. Она начинает обсуждаться, переосмысляться, иногда оспариваться.

Наиболее болезненной зоной становится распределение власти и обязанностей. Патриархальная модель предполагает жёсткую спецификацию ролей: мужчина отвечает за внешнюю сферу, женщина — за дом, уход и послушание в семье мужа. Эгалитарная модель строится на партнёрстве, договорённости и взаимном участии в быте, воспитании детей, выборе работы и распоряжении бюджетом. Молодые семьи часто оказываются между этими моделями. Супруги могут декларировать партнёрство, но в реальном быту воспроизводить иерархические ожидания. Или наоборот: публично сохранять традиционный образ, а внутри семьи стремиться к равноправному порядку. Такая двойственность порождает скрытый конфликт.

**Таблица 1.5. Сопоставление традиционной и партнёрской логики молодой семьи**

| Сфера | Традиционная логика | Партнёрская логика | Зона возможного конфликта |
|---|---|---|---|
| Основание брака | долг, родство, продолжение рода | личный выбор, близость, совместный проект | разная оценка того, ради чего сохраняется брак |
| Власть и решения | иерархия и старшинство | обсуждение и взаимное согласие | несовпадение права последнего слова |
| Роль мужа | кормилец, защитник, представитель рода | кормилец и эмоционально включённый партнёр | давление противоречивых ожиданий |
| Роль жены | дом, забота, включение в семью мужа | дом, образование, труд и участие в решениях | спор о границах самореализации |
| Участие родителей | право направлять и контролировать | поддержка при сохранении автономности пары | неразличение совета и вмешательства |
| Критерий успешности | сохранение брака и внешняя репутация | качество отношений и взаимное признание | разная граница допустимого терпения |

Примечание. Модели представлены как аналитические полюса. Реальная молодая семья обычно сочетает их элементы.

Важным фактором выступает изменение представлений о брачном выборе. Традиционные формы участия родителей в выборе партнёра сохраняются, но молодёжь всё чаще хочет личного согласия, эмоциональной симпатии и права отказаться. Ранний брак или брак под давлением родственников повышает риск развода тогда, когда молодые супруги вступают в семейную жизнь без психологической готовности. Формальное согласие на свадьбу не всегда означает готовность к повседневному браку. После окончания свадебного ритуала начинается обычная жизнь, где быстро обнаруживаются несовпадения характера, привычек, целей, сексуально-эмоциональных ожиданий и семейных правил.

Свадебные расходы и долговая нагрузка также включены в ценностную трансформацию. Пышная свадьба остаётся символом статуса семьи, уважения к родственникам и соблюдения общественной нормы. Но для молодых супругов и их родителей она может обернуться кредитами, долгами и длительным финансовым напряжением. При отсутствии собственного жилья и стабильного дохода долговые обязательства становятся постоянным раздражителем. Они редко выступают единственной причиной развода, но усиливают раздражительность, зависимость от родителей и чувство несвободы. Особенно заметно это в первые пять лет брака, когда семья ещё не имеет экономического запаса.

Цифровая среда добавляет новый слой напряжения. Социальные сети меняют представления о «нормальной» семейной жизни, усиливают сравнение с другими парами, создают пространство для ревности и контроля. Фотографии, переписки, лайки, скрытые контакты и публичные демонстрации счастья становятся предметом обсуждения в браке. Здесь вновь важен не сам интернет, а способ его включения в отношения. Для одной пары сеть остаётся средством общения. Для другой она превращается в источник подозрений, проверки телефона, обвинений и чувства нарушения границ. Молодые супруги часто не имеют заранее согласованных правил цифровой приватности.

Отдельного внимания требует неофициальная полигиния, оформляемая через религиозный обряд без полноценной правовой защиты второй женщины. В общественной дискуссии этот фактор всё чаще связывают с разводами, изменами и чувством несправедливости в браке. Для социально-психологического анализа здесь важны переживания утраты исключительности, доверия и достоинства.

Молодая жена может воспринимать появление другой женщины не только как нарушение верности, но и как знак обесценивания её статуса в семье. При сильном культурном запрете на развод такая ситуация иногда долго скрывается. Разрыв происходит поздно, когда эмоциональные ресурсы уже исчерпаны.

Культурный запрет на развод имеет двойственное значение. Он может удерживать супругов от поспешного решения и стимулировать поиск примирения. Одновременно он может заставлять скрывать глубокие конфликты, психологическое давление и унизительные отношения. Внешне семья сохраняется, но внутренне уже теряет признаки близости. Молодые женщины и мужчины могут продолжать жить вместе из-за страха осуждения, детей или зависимости от родителей. Поздний развод в такой ситуации выглядит внезапным только для внешнего окружения. Для самих супругов он часто является завершением долгого периода внутреннего разрыва.

Трансформация ценностей меняет и критерии семейной успешности. Если раньше устойчивость брака могла оцениваться самим фактом его сохранения, то сегодня всё большее значение приобретает качество отношений. Молодые супруги сравнивают реальный брак с представлением о взаимопонимании, уважении, эмоциональной включённости и справедливом распределении нагрузки. При несоответствии ожиданий растёт разочарование. Здесь появляется один тонкий момент. Чем выше ожидание психологического комфорта, тем сильнее переживается обычный семейный конфликт. Поэтому профилактика разводов должна включать не только призыв сохранять семью, но и обучение реалистичному пониманию брака: конфликт не равен разрыву, но замалчивание конфликта разрушает доверие.

В эмпирической части настоящего исследования трансформация ценностей рассматривается через несколько индикаторов: отношение к равноправию супругов, допустимость работы и образования женщины после брака, готовность жить отдельно от родителей, отношение к вмешательству родственников, понимание супружеской верности, представления о справедливом распределении домашних обязанностей, значение личного счастья и эмоциональной близости. Эти индикаторы позволяют перейти от общих рассуждений к измеряемым показателям. Без такой операционализации понятие «ценностная трансформация» остаётся слишком широким.

**Таблица 1.6. Основные группы социально-психологических детерминант развода**

| Группа детерминант | Наблюдаемые признаки | Психологический механизм | Измеряемый индикатор |
|---|---|---|---|
| Ценностные | расхождение традиционной и партнёрской модели | борьба за признание и справедливость | индекс ценностной согласованности |
| Ролевые | разные ожидания мужа, жены и родителей | накопление претензий к исполнению роли | коэффициент ролевого расхождения |
| Коммуникативные | обвинения, избегание, длительное молчание | снижение доверия и невозможность уточнить смысл | шкала готовности к диалогу |
| Родственно-семейные | давление старших, публичность спора | потеря автономности супружеской пары | индекс родительского вмешательства |
| Материально-бытовые | жильё, доход, долги, свадебные расходы | хроническое напряжение и зависимость | шкала материально-жилищного стресса |
| Цифровые | контроль телефона, ревность, сравнение | подозрение и нарушение личных границ | шкала цифрового контроля |
| Эмоциональные | одиночество, обесценивание, отсутствие поддержки | потеря образа партнёра как близкого человека | шкала эмоционального отчуждения |

Примечание. В эмпирической модели детерминанты рассматриваются одновременно, поскольку их сочетание важнее отдельной частоты.

**1. УСЛОВИЯ БРАКА**
**выбор, жильё, ресурсы**

**2. РОЛИ И ЦЕННОСТИ**
**не согласованы**

**3. КОНФЛИКТ**
**обвинение, уход, контроль**

↓




**Схема 1.3. Интегральный механизм формирования риска развода в молодой семье**

Примечание. Профилактическое воздействие направляется прежде всего на промежуточные звенья цепи: согласование ожиданий, изменение конфликтного поведения и восстановление эмоционального контакта.

В целом нестабильность молодых семей в условиях трансформации ценностей возникает не из-за модернизации как таковой. Разрушительным становится отсутствие согласования между старым и новым порядком. Если молодые супруги и их родственники способны договориться о границах вмешательства, уважении к образованию, распределении обязанностей и финансовой ответственности, ценностные изменения могут укреплять семью. Если же каждый участник считает только свою модель единственно правильной, брак быстро превращается в пространство борьбы за признание. Именно это противоречие лежит в основе многих разводов в современных молодых семьях.

Трансформация семейных ценностей в Узбекистане имеет неоднородный характер. Нельзя говорить, что традиционная семья исчезает или что молодёжь полностью отвергает опыт старших. Скорее меняется внутреннее соотношение между долгом и личным благополучием. Раньше сохранение брака само по себе часто воспринималось как главный признак правильной семейной жизни. Сейчас всё большее значение получает качество отношений: уважение, взаимопонимание, эмоциональная поддержка, право на спокойный разговор. Этот сдвиг не разрушает семью напрямую, но меняет критерии терпения.

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