ISSN 2181-371X
SJIF: 5.305 VOLUME 4 ISSUE 34
INNOVATIONS IN TECHNOLOGY AND SCIENCE EDUCATION

JAMOAT XAVFSIZLIGINI TA'MINLASHDA RAQAMLASHTIRISH: MUAMMOLAR, IMKONIYATLAR VA ISTIQBOLLAR.

ЦИФРОВИЗАЦИЯ В ОБЕСПЕЧЕНИИ ОБЩЕСТВЕННОЙ БЕЗОПАСНОСТИ: ПРОБЛЕМЫ, ВОЗМОЖНОСТИ И ПЕРСПЕКТИВЫ.

DIGITIZATION IN ENSURING PUBLIC SAFETY: CHALLENGES, OPPORTUNITIES, AND PROSPECTS.

Zabixullayev Safullaxo'ja Ziyodulla o'g'li
O'zbekiston Respublikasi Huquqni muhofaza qilish Akademiyasi talabasi, e-mail: zabixullayevsafulla3@gmail.com
Забикуллаев Сафуллахуджа Зиводуллаевич
студент Академии обеспечения правопорядка Республики Узбекистан, e-mail: zabixullayevsafulla3@gmail.com
Zabixullayev Safullaxo'ja Zivodulla
Student, Academy of Law Enforcement of the Republic of Uzbekistan, e-mail: zabixullayevsafulla3@gmail.com

Abstract (3 languages):

- **Uzbek**: Ushbu maqola O'zbekiston Respublikasida jamoat xavfsizligini ta'minlashda raqamlashtirish jarayonlarini tahlil qiladi. Raqamli texnologiyalarning (sun'iy intellekt, IoT, Big Data, Blockchain va 5G) xavfsizlik sohasidagi o'rnini, mavjud muammolarni (texnologik, huquqiy va institutsional) va kelajakdagi istiqbollarni o'rganadi. Tadqiqot natijalari raqamli transformatsiyani muvaffaqiyatli amalga oshirish uchun huquqiy bazani mustahkamlash va infratuzilmani modernizatsiya qilish zarurligini ko'rsatadi.
- **Russian**: Данная статья анализирует процессы цифровизации в обеспечении общественной безопасности в Республике Узбекистан. Рассматривается роль цифровых технологий (искусственный интеллект, IoT, Big Data, Blockchain и 5G) в сфере безопасности, существующие проблемы (технологические, юридические и институциональные) и будущие перспективы. Результаты исследования показывают необходимость укрепления правовой базы и модернизации инфраструктуры для успешной цифровой трансформации.

- **English**: This article analyzes the processes of digitization in ensuring public safety in the Republic of Uzbekistan. It examines the role of digital technologies (artificial intelligence, IoT, Big Data, Blockchain, and 5G) in the security sector, existing challenges (technological, legal, and institutional), and future prospects. The research findings highlight the need to strengthen the legal framework and modernize infrastructure for successful digital transformation.

Key Words (3 languages):

- **Uzbek**: jamoat xavfsizligi, raqamlashtirish, sun'iy intellekt, kiberxavfsizlik, huquqiy tartibga solish
- **Russian**: общественная безопасность, цифровизация, искусственный интеллект, кибербезопасность, правовое регулирование
- **English**: public safety, digitization, artificial intelligence, cybersecurity, legal regulation

Introduction (Kirish)

In the era of globalization and rapid technological advancement, ensuring public safety has become a critical priority for modern states. The Republic of Uzbekistan, aligning with the "Digital Uzbekistan – 2030" strategy and the Public Safety Concept (Presidential Decree PF-27, 2021), is actively integrating digital technologies into its security systems. These technologies, including artificial intelligence (AI), the Internet of Things (IoT), Big Data, Blockchain, and 5G, offer significant potential to enhance crime prevention, real-time monitoring, and emergency response. However, their implementation faces numerous challenges, such as underdeveloped digital infrastructure, inadequate legal frameworks, and institutional inefficiencies.

This article aims to explore the role of digitization in public safety, identify key obstacles, and propose actionable solutions based on national and international experiences. The relevance of this topic is underscored by the growing incidence of cybercrimes rising from 863 cases in 2019 to 58,800 in 2024 and the need to align Uzbekistan's security policies with global standards.

Literature Review (Mavzuga oid adabiyotlar tahlili)

The study builds on a wide range of scholarly works and legal documents. Mamadaminov (2021) provides a theoretical foundation for public safety, emphasizing its social and legal dimensions. Ergashev (2019) and Murodov (2022) highlight the application of digital technologies in law enforcement, while international authors like Trojanowicz (1990) advocate for community policing models. Legal frameworks, such

as the Cybersecurity Law of Uzbekistan (2022) and the EU's GDPR, offer insights into regulatory approaches.

However, existing literature lacks a comprehensive analysis of Uzbekistan-specific challenges in digitizing public safety. This gap is addressed by integrating local survey data (94 respondents) and international case studies from Estonia, Singapore, and South Korea, where digital governance has significantly improved security outcomes.

Research Methodology (Tadqiqot metodologiyasi)

The research employs a mixed-method approach, combining qualitative and quantitative techniques. Analytical methods were used to assess legal and technological frameworks, while a comparative analysis evaluated international practices (e.g., Estonia's X-Road system). A survey of 94 respondents, including law enforcement officers and IT specialists, provided empirical data on perceptions of digitization challenges. Statistical data from the Ministry of Internal Affairs (2019-2024) on cybercrime trends further enriched the analysis. The methodology ensures a systematic and evidence-based evaluation of the topic.

Analysis and Results (Tahlil va natijalar)

Technological Challenges

The analysis reveals that Uzbekistan's digital infrastructure remains underdeveloped, with 5G coverage projected to reach only 80% by 2030. Integration of information systems is hindered by a lack of interoperability, and a shortage of cybersecurity experts estimated at 5,000 needed by 2030 poses a significant barrier.

Legal and Institutional Issues

The legal framework, including the Cybersecurity Law (2022), lacks consistency with modern technologies, and personal data protection mechanisms are inadequate, with 59.6% of survey respondents noting partial protection. Institutionally, poor coordination among agencies and weak strategic planning further complicate digitization efforts.

International Insights

Estonia's e-governance model and Singapore's Smart Nation initiative demonstrate the effectiveness of integrated digital platforms. However, adapting these models to Uzbekistan requires addressing local cultural and economic contexts, as noted by 51.1% of survey respondents who see international practices as highly applicable.

Survey Findings

- 71.3% of respondents consider digitization highly important for public safety.
- Key technologies like AI (4.5/5) and Big Data (4.3/5) received high approval ratings.
- Modernization of infrastructure (88.3%) and legal reforms (80.9%) were identified as critical solutions.

Statistical Trends

Cybercrime cases increased by over 68 times from 2019 to 2024, causing economic losses of 1.91 trillion soums in 2024, underscoring the urgency of digital transformation.

Conclusion/Recommendations (Xulosa va takliflar)

The digitization of public safety in Uzbekistan holds immense potential but requires a multifaceted approach. The study concludes that technological upgrades, legal harmonization with international standards (e.g., ISO/IEC 27001), and institutional reforms are essential. Recommendations include:

1. Modernizing digital infrastructure with a focus on 5G and IoT integration.
2. Developing a unified legal framework for cybersecurity and data protection by 2027.
3. Establishing a National Digital Safety Council to enhance inter-agency collaboration.
4. Training 5,000 cybersecurity specialists by 2030 through specialized programs like Cyber University.

These measures, if implemented, could position Uzbekistan as a regional leader in digital public safety by 2030, aligning with the “Digital Uzbekistan – 2030” vision.

References (Foydalanilgan adabiyotlar rO‘yxati)

1. Mamadaminov, Sh.F. (2021). *Jamoat xavfsizligi: Nazariy va amaliy muammolar*. Toshkent: IIV Akademiyasi nashriyoti.
2. Ergashev, B.X. (2019). *Axborot texnologiyalari va jamoat tartibi*. Toshkent: O‘zbekiston nashriyoti.
3. Murodov, M.M. (2022). *Jinoyatchilikka qarshi kurashda raqamli texnologiyalar*. Toshkent: Adolat nashriyoti.
4. Trojanowicz, R.C., & Bucqueroux, B. (1990). *Community Policing: A Contemporary Perspective*. Cincinnati: Anderson Publishing Co.
5. O‘zbekiston Respublikasi Prezidenti. (2021). *PF-27-son Farmoni*. Toshkent: Adolat nashriyoti.

6. O‘zbekiston Respublikasi. (2022). *Kiberxavfsizlik tO‘g’risida Qonun*. Toshkent: Adolat nashriyoti.
7. e-Estonia. (2023). *X-Road: Interoperability Services*. https://eestonia.com/solutions/x-road-interoperability-services/x-road/
8. Ministry of Internal Affairs of Uzbekistan. (2024). *Cybercrime Statistics 2019-2024*. https://iiv.uz/
9. Smart Nation Singapore. (2022). *Smart Nation Initiative Report*. https://www.smartnation.gov.sg/
10. ISO/IEC. (2021). *ISO/IEC 27001: Information Security Management*. https://www.iso.org/standard/27001

Ilova A: So‘rovnoma savollari va natijalari
O‘zbek tilida

SO‘ROVNOMA

“Jamoat xavfsizligini ta’minlashda raqamlashtirish: muammolar va istiqbollar” mavzusidagi bitiruv malakaviy ishi doirasida tuzilgan so‘rovnoma.

Hurmatli ishtirokchi!

Ushbu so‘rovnoma O‘zbekiston Respublikasida jamoat xavfsizligini ta’minlashda raqamlashtirish jarayonining holati, mavjud muammolari va istiqbollarini aniqlashga qaratilgan. Sizning javoblaringiz ilmiy va amaliy tahlillar uchun muhim hisoblanadi. Iltimos, barcha savollarga halol va aniq javob bering. Shaxsiy ma’lumotlaringiz maxfiylikda saqlanadi.

1. UMUMIY MA’LUMOTLAR
1.1. Sizning hozirgi kasbingiz yoki lavozimingiz:

☐ Huquqni muhofaza qiluvchi organ xodimi
☐ Axborot texnologiyalari mutaxassisi
☐ Talaba / o‘quvchi
☐ Boshqa (iltimos, ko‘rsating): _____

1.2. Yosh toifangiz:

☐ 18–25 yosh

☐ 26–35 yosh

☐ 36–50 yosh

☐ 51–60 yosh

☐ 60 yoshdan yuqori

1.3. Jinsingiz:

☐ Erkak

☐ Ayol

2. RAQAMLASHTIRISHNING JAMOAT XAVFSIZLIGIGA TA'SIRI

2.1. Sizningcha, raqamlashtirish jamoat xavfsizligini ta'minlashda qanchalik muhim omil?

☐ Juda muhim

☐ Muhim

☐ Uncha muhim emas

☐ Umuman muhim emas

2.2. Quyidagi texnologiyalar qaysi darajada jamoat xavfsizligiga ijobiy ta'sir ko'rsatmoqda deb hisoblaysiz?

(1 – umuman ta'sir qilmaydi, 5 – juda katta ta'sir qiladi)

Texnologiya	1	2	3	4	5
Sun'iy intellekt	☐	☐	☐	☐	☐
IoT (Narsalar interneti)	☐	☐	☐	☐	☐
Big Data	☐	☐	☐	☐	☐
Blockchain texnologiyasi	☐	☐	☐	☐	☐
5G tarmog'i	☐	☐	☐	☐	☐

3. MUAMMOLAR VA CHEKLOVLAR

3.1. Sizningcha, quyidagi muammolar jamoat xavfsizligiga salbiy ta'sir ko'rsatadimi? *(Har biriga belgi qo'ying)*

Muammo	Ha	Qisman	Yo'q
Raqamli infratuzilmaning rivojlanmaganligi	☐	☐	☐
Axborot tizimlarining integratsiyalashmaganligi	☐	☐	☐
Kiberxavfsizlik bo'yicha malakali mutaxassislar tanqisligi	☐	☐	☐

Huquqiy hujjatlarning zamonaviy texnologiyalarga mos emasligi ☐ ☐ ☐

3.2. Shaxsiy ma’lumotlar himoyasini qanday baholaysiz?

☐ Yetarli darajada ta’minlangan

☐ Qisman ta’minlangan

☐ Umuman ta’minlanmagan

4. RIVOJLANISH ISTIQBOLLARI

4.1. Quyidagilarning qaysi biri jamoat xavfsizligini raqamlashtirish orqali yaxshilashda samarali bo‘lishi mumkin? *(Har birini belgilash mumkin)*

☐ Raqamli infratuzilmani modernizatsiya qilish

☐ Sun’iy intellektni joriy etish

☐ Huquqiy hujjatlarni isloh qilish

☐ Mutaxassislar tayyorlash tizimini takomillashtirish

☐ Fuqarolarni raqamli savodxonlikka o‘rgatish

☐Boshqa:

_____

_____

4.2. Xalqaro tajribalarni (Estoniya, Singapur va boshqalar) O‘zbekistonda qo‘llash darajasi qanday bo‘lishi mumkin?

☐ Juda samarali

☐ Qisman samarali

☐ Samarasiz

4.3. Sizningcha, jamoat xavfsizligini ta’minlashda yana qanday chora-tadbirlar zarur?_____

_____

_____

_____

5. UMUMIY XULOSA VA TAKLIFLAR

5.1. 2030-yilgacha raqamlashtirish orqali qanday o‘zgarishlar bo‘lishi mumkin deb hisoblaysiz?

☐ Katta yutuqlar

☐ Sekin rivojlanish

☐ Jiddiy o‘zgarishlar bo‘lmaydi

5.2. Sizning qo‘shimcha taklif va mulohazalaringiz:_____

_____

_____

SO‘ROVNOMA NATIJALARI

Ushbu so‘rovnoma “Jamoat xavfsizligini ta’minlashda raqamlashtirish: muammolar va istiqbollar” mavzusidagi bitiruv malakaviy ishining ilovasi sifatida ishlab chiqilgan. Unda jami 94 nafar respondent ishtirok etgan bo‘lib, ularning yoshi, kasbi va fikrlari asosida muammolar va takliflar tahlil qilindi.

1. UMUMIY MA’LUMOTLAR

1.1. Sizning hozirgi kasbingiz yoki lavozimingiz:

☑ Huquqni muhofaza qiluvchi organ xodimi – 41 nafar (43.6%)

☑ Axborot texnologiyalari mutaxassisi – 18 nafar (19.1%)

☑ Talaba / o‘quvchi – 24 nafar (25.5%)

☑ Boshqa – 11 nafar (11.7%)

1.2. Yosh toifangiz:

☑ 18–25 yosh – 52 nafar (55.3%)

☑ 26–35 yosh – 28 nafar (29.8%)

☑ 36–50 yosh – 9 nafar (9.6%)

☑ 51–60 yosh – 0 nafar (0%)

☑ 60 yoshdan yuqori – 5 nafar (5.3%)

1.3. Jinsingiz:

☑ Erkak – 79 nafar (84.0%)

☑ Ayol – 15 nafar (16.0%)

2. RAQAMLASHTIRISHNING JAMOAT XAVFSIZLIGIGA TA’SIRI

2.1. Raqamlashtirish jamoat xavfsizligini ta’minlashda qanchalik muhim omil?

☑ Juda muhim – 67 nafar (71.3%)

☑ Muhim – 27 nafar (28.7%)

☑ Uncha muhim emas – 0 nafar (0%)

☑ Umuman muhim emas – 0 nafar (0%)

2.2. Quyidagi texnologiyalarning ijobiy ta’siri (1–5 ballik tizimda o‘rtacha baho):

☑ Sun’iy intellekt – 4.5

☑ IoT – 4.2

☑ Big Data – 4.3
☑ Blockchain – 4.0
☑ 5G – 4.1

3. MUAMMOLAR VA CHEKLOVLAR

3.1. Quyidagi muammolarning jamoat xavfsizligiga ta’siri:

☑ Raqamli infratuzilmaning rivojlanmaganligi – 47 nafar (50%) katta ta’sir
☑ Axborot tizimlarining integratsiyalashmaganligi – 28 nafar (29.8%) o‘rtacha, 16 nafar (17.0%) katta ta’sir
☑ Mutaxassislar tanqisligi – 63 nafar (67.0%) ha, 31 nafar (33.0%) yo‘q
☑ Huquqiy hujjatlar mos emasligi – 60 nafar (63.8%) juda muammoli, 24 nafar (25.5%) o‘rtacha, 10 nafar (10.6%) kam muammoli

3.2. Shaxsiy ma’lumotlar himoyasi:

☑ Yetarli – 18 nafar (19.1%)
☑ Qisman – 56 nafar (59.6%)
☑ Umuman yo‘q – 20 nafar (21.3%)

4. RIVOJLANISH ISTIQBOLLARI

4.1. Samarali bo‘lishi mumkin bo‘lgan chora-tadbirlar:

☑ Raqamli infratuzilmani modernizatsiya qilish – 83 nafar (88.3%)
☑ Sun’iy intellektni joriy etish – 70 nafar (74.5%)
☑ Huquqiy hujjatlarni isloh qilish – 76 nafar (80.9%)
☑ Mutaxassis tayyorlash – 72 nafar (76.6%)
☑ Raqamli savodxonlik – 59 nafar (62.8%)

4.2. Xalqaro tajriba (Estoniya, Singapur):

☑ Juda samarali – 48 nafar (51.1%)
☑ Samarali – 29 nafar (30.9%)
☑ Kam samarali – 17 nafar (18.1%)

4.3. **Erkin javoblar (tanlab olinganlar):**

- Jamoatchilikni raqamli xavfsizlik bo‘yicha xabardor qilish;
- Davlat platformalarini birlashtirish va yagona axborot bazasini yaratish.

5. UMUMIY XULOSA VA TAKLIFLAR

5.1. 2030-yilgacha kutilayotgan o‘zgarishlar:

☑ Katta yutuqlar – 46 nafar (48.9%)

☑ Sekin rivojlanish – 36 nafar (38.3%)

☑ O‘zgarish bo‘lmaydi – 12 nafar (12.8%)

5.2. Erkin takliflar (tanlab olinganlar):

- Maxsus qonunlar qabul qilish;
- Texnik va inson resurslarini birlashtirish bo‘yicha davlat dasturlari tuzish.

In English

SURVEY

Survey developed within the framework of the thesis on "Digitization in Ensuring Public Safety: Challenges and Prospects"

Dear Participant!

This survey aims to assess the state, challenges, and prospects of digitization in ensuring public safety in the Republic of Uzbekistan. Your responses are crucial for scientific and practical analysis. Please answer all questions honestly and accurately. Your personal information will remain confidential.

1. GENERAL INFORMATION

1.1. Your current occupation or position:

☐ Law enforcement officer

☐ Information technology specialist

☐ Student / learner

☐ Other (please specify): _____

1.2. Age group:

☐ 18–25 years

☐ 26–35 years

☐ 36–50 years

☐ 51–60 years

☐ Over 60 years

1.3. Gender:

☐ Male

☐ Female

2. IMPACT OF DIGITIZATION ON PUBLIC SAFETY

2.1. How important do you consider digitization in ensuring public safety?

☐ Very important
☐ Important
☐ Somewhat important
☐ Not important at all

2.2. To what extent do you believe the following technologies positively impact public safety? (1 – no impact, 5 – significant impact)

Technology	**1**	**2**	**3**	**4**	**5**
Artificial Intelligence	☐	☐	☐	☐	☐
IoT (Internet of Things)	☐	☐	☐	☐	☐
Big Data	☐	☐	☐	☐	☐
Blockchain Technology	☐	☐	☐	☐	☐
5G Network	☐	☐	☐	☐	☐

3. CHALLENGES AND LIMITATIONS

3.1. Do you believe the following issues negatively affect public safety?

Issue	**Yes**	**Partially**	**No**
Underdeveloped digital infrastructure	☐	☐	☐
Lack of integration of information systems	☐	☐	☐
Shortage of qualified cybersecurity specialists	☐	☐	☐
Incompatibility of legal frameworks with modern technologies	☐	☐	☐

3.2. How do you assess the protection of personal data?

☐ Fully ensured
☐ Partially ensured
☐ Not ensured at all

4. PROSPECTS FOR DEVELOPMENT

4.1. Which of the following measures could effectively improve public safety through digitization?

☐ Modernizing digital infrastructure
☐ Implementing artificial intelligence
☐ Reforming legal frameworks
☐ Improving specialist training systems

☐ Educating citizens in digital literacy

☐ Other: _____

4.2. To what extent can international experiences (Estonia, Singapore, etc.) be applied in Uzbekistan?

☐ Highly effective

☐ Partially effective

☐ Ineffective

4.3. What additional measures do you believe are necessary to ensure public safety?

---

5. GENERAL CONCLUSION AND SUGGESTIONS

5.1. What changes do you expect through digitization by 2030?

☐ Significant achievements

☐ Gradual development

☐ No significant changes

5.2. Your additional suggestions and comments:

SURVEY RESULTS

This survey was conducted among 94 respondents between April and May 2024. The key findings are presented below:

1. GENERAL INFORMATION

1.1. Occupation distribution:

☑ Law enforcement officer – 41 respondents (43.6%)

☑ Information technology specialist – 18 respondents (19.1%)

☑ Student / learner – 24 respondents (25.5%)

☑ Other – 11 respondents (11.7%)

1.2. Age group:

☑ 18–25 years – 52 respondents (55.3%)

☑ 26–35 years – 28 respondents (29.8%)

☑ 36–50 years – 9 respondents (9.6%)

☑ 51–60 years – 0 respondents (0%)

☑ Over 60 years – 5 respondents (5.3%)

1.3. Gender:

☑ Male – 79 respondents (84.0%)

- ☑ Female – 15 respondents (16.0%)

2. IMPACT OF DIGITIZATION ON PUBLIC SAFETY

2.1. Importance of digitization:

- ☑ Very important – 67 respondents (71.3%)
- ☑ Important – 27 respondents (28.7%)
- ☑ Somewhat important – 0 respondents (0%)
- ☑ Not important at all – 0 respondents (0%)

2.2. Impact of technologies (average rating, 1–5 scale):

- ☑ Artificial Intelligence – 4.5
- ☑ IoT – 4.2
- ☑ Big Data – 4.3
- ☑ Blockchain – 4.0
- ☑ 5G – 4.1

3. CHALLENGES AND LIMITATIONS

3.1. Impact of issues:

- ☑ Underdeveloped digital infrastructure – 47 respondents (50%) significant impact
- ☑ Lack of integration of information systems – 28 respondents (29.8%) moderate, 16 respondents (17.0%) significant
- ☑ Shortage of qualified cybersecurity specialists – 63 respondents (67.0%) yes, 31 respondents (33.0%) no
- ☑ Incompatibility of legal frameworks – 60 respondents (63.8%) highly problematic, 24 respondents (25.5%) moderate, 10 respondents (10.6%) minor

3.2. Personal data protection:

- ☑ Fully ensured – 18 respondents (19.2%)
- ☑ Partially ensured – 56 respondents (59.6%)
- ☑ Not ensured at all – 20 respondents (21.2%)

4. PROSPECTS FOR DEVELOPMENT

4.1. Effective measures:

- ☑ Modernizing digital infrastructure – 83 respondents (88.3%)
- ☑ Implementing artificial intelligence – 70 respondents (74.5%)
- ☑ Reforming legal frameworks – 76 respondents (80.9%)

- ☑ Improving specialist training – 72 respondents (76.6%)
- ☑ Educating citizens in digital literacy – 59respondents (62.8%)

4.2. **International experience**:

- ☑ Highly effective – 48 respondents (51.1%)
- ☑ Partially effective – 29 respondents (30.9%)
- ☑ Ineffective – 17 respondents (18.1%)

4.3. **Selected open-ended responses**:

- Raising public awareness about digital safety
- Integrating government platforms and creating a unified information database

5. GENERAL CONCLUSION AND SUGGESTIONS

5.1. **Expected changes by 2030**:

- ☑ Significant achievements – 46 respondents (48.9%)
- ☑ Gradual development – 36 respondents (38.3%)
- ☑ No significant changes – 12 respondents (12.8%)

5.2. **Selected open-ended suggestions**:

- Adopting specific laws
- Developing state programs to integrate technical and human resources