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## MEANS AND METHODS OF CONVICT CORRECTION: FROM CLASSICAL APPROACHES TO DIGITAL TECHNOLOGIES

As part of the ongoing transformation in criminal justice policy and digitalization of public administration, the penitentiary system requires a review of approaches to correction of individuals convicted. This study investigates means and methods of correction in Kazakhstan with an eye towards traditional practices versus digital technologies as tools of correction – with the ultimate aim being identifying digitalization's potential as a means to enhance effectiveness while humanizing criminal punishment.

Scientific and practical importance of this work lies in its detailed examination of Kazakhstan's current correctional system with reference to international experiences, employing comparative legal, doctrinal, critical-analytical, and interdisciplinary methodologies in its methodology.

The findings reveal that Kazakhstan, despite lacking a comprehensive digitalization strategy for its penal correction system, has both resources and institutional prerequisites necessary for the implementation of electronic monitoring, digital profiling, online education programs and artificial intelligence tools in the near future. Furthermore, research highlights the need to protect human rights, maintain algorithmic transparency and individualize rehabilitation approaches accordingly.

The study's value lies in providing direction for modernization of penitentiary policy, adopting successful international practices and formulating recommendations for legal, institutional and technological reform of Kazakhstan's penal correction system. Furthermore, its practical significance lies in potentially applying proposed measures toward creating a national digital transformation strategy for prisons.

**Keywords:** penal correction system, correction of convicts, digitalization, electronic monitoring, resocialization.

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### Сотталғандарды түзету құралдары мен әдістері: классикалық тәсілдерден сандық технологияларға

Қылмыстық сот төрелігі және мемлекеттік басқаруды цифрландыру саласындағы саясатты үздіксіз трансформациялау шеңберінде пенитенциарлық жүйе сотталғандарды түзету тәсілдерін қайта қарауды талап етеді. Бұл зерттеуде түзету құралдары ретінде цифрлық технологиялармен салыстырғанда дәстүрлі тәжірибелер тұрғысынан Қазақстанда түзету құралдары мен әдістері қарастырылады, өйткені түпкі мақсат қылмыстық жазаны ізгілендіру кезінде тиімділікті арттыру құралы ретінде цифрландыру әлеуетін анықтау болып табылады.

Бұл жұмыстың ғылыми және практикалық маңыздылығы салыстырмалы-құқықтық, доктриналық, сыни-талдамалық және пәнаралық әдістерді қолдана отырып, халықаралық тәжірибеге сілтеме жасай отырып, Қазақстанның қолданыстағы пенитенциарлық жүйесін егжей-тегжейлі зерттеу болып табылады.

Алынған нәтижелер Қазақстанның өзінің қылмыстық-атқару жүйесін цифрландырудың кешенді стратегиясының жоқтығына қарамастан, таяу болашақта электрондық мониторингті, цифрлық бейіндеуді, онлайн-білім беру бағдарламаларын және жасанды интеллект құралдарын енгізу үшін қажетті ресурстарға да, институционалдық алғышарттарға да ие екенін көрсетеді. Сонымен қатар, зерттеулер адам құқықтарын қорғау, алгоритмдік ашықтықты сақтау және оңалту тәсілдерін сәйкесінше даралау қажеттілігін көрсетеді.

Зерттеудің құндылығы пенитенциарлық саясатты жаңғырту бағыттарын айқындау, табысты халықаралық тәжірибені қолдану және Қазақстанның қылмыстық-атқару жүйесін құқықтық, институционалдық және технологиялық реформалау бойынша ұсынымдарды тұжырымдау болып табылады. Сонымен қатар, оның практикалық маңыздылығы түрмелерді цифрлық түрлендірудің ұлттық стратегиясын құру үшін ұсынылған шараларды қолдану болып табылады.

**Түйін сөздер:** қылмыстық-атқару жүйесі, сотталғандарды түзету, цифрландыру, электрондық мониторинг, қайта әлеуметтендіру.

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### **Средства и методы исправления осужденных: от классических подходов к цифровым технологиям**

В рамках продолжающейся трансформации политики в области уголовного правосудия и цифровизации государственного управления пенитенциарная система требует пересмотра подходов к исправлению осужденных. В данном исследовании рассматриваются средства и методы исправления в Казахстане с точки зрения традиционных практик в сравнении с цифровыми технологиями в качестве инструментов исправления, так как конечной целью является выявление потенциала цифровизации как средства повышения эффективности при гуманизации уголовного наказания.

Научная и практическая значимость данной работы заключается в детальном изучении действующей пенитенциарной системы Казахстана со ссылкой на международный опыт, используя в своей методологии сравнительно-правовые, доктринальные, критико-аналитические и междисциплинарные методы.

Полученные результаты показывают, что Казахстан, несмотря на отсутствие всеобъемлющей стратегии цифровизации своей уголовно-исполнительной системы, располагает как ресурсами, так и институциональными предпосылками, необходимыми для внедрения электронного мониторинга, цифрового профилирования, онлайн-образовательных программ и инструментов искусственного интеллекта в ближайшем будущем. Кроме того, исследования подчеркивают необходимость защиты прав человека, поддержания алгоритмической прозрачности и соответствующей индивидуализации подходов к реабилитации.

Ценность исследования заключается в определении направлений модернизации пенитенциарной политики, применении успешного международного опыта и формулировании рекомендаций по правовой, институциональной и технологической реформе уголовно-исполнительной системы Казахстана. Кроме того, его практическая значимость заключается в возможном применении предложенных мер для создания национальной стратегии цифровой трансформации тюрем.

**Ключевые слова:** уголовно-исполнительная система, исправление осужденных, цифровизация, электронный мониторинг, ресоциализация.

## **Introduction**

Modern penal correction systems face an urgent need to update traditional methods of rehabilitation of convicted individuals amid rapid advances in digital technologies. Kazakhstan, like most countries worldwide, is gradually shifting away from repressive practices toward models focused on resocialization, sustainability and humanism; yet domestic academic and practical discourse lack comprehensive research that explores interactions between traditional correctional methods and innovative digital mechanisms such as artificial intel-

ligence, electronic monitoring or virtual rehabilitation mechanisms.

Key strategic documents demonstrate the relevance of this topic. Kassym-Jomart Tokayev's Address to the Nation on September 1, 2023 highlighted the necessity of digital solutions in public administration and justice systems [<https://www.akorda.kz/en/president-kassym-jomart-tokayevs-state-of-the-nation-address-economic-course-of-a-just-kazakhstan-283243>]. The Concept of Legal Policy for Kazakhstan up to 2030 emphasizes the priority of humanizing criminal policy and expanding alternative punishments that offer a balance of isolation,

control and correctional opportunities (<https://adilet.zan.kz/rus/docs/U2100000674>). Within the National Human Rights Plan, it is made abundantly clear that conditions of punishment execution should align with international standards – specifically UN Standard Minimum Rules for the Treatment of Prisoners (“Mandela Rules”) ([https://www.unodc.org/documents/justice-and-prison-reform/Nelson\\_Mandela\\_Rules-E-ebook.pdf](https://www.unodc.org/documents/justice-and-prison-reform/Nelson_Mandela_Rules-E-ebook.pdf)).

Studies conducted abroad, particularly in the EU, USA, China and Slovakia, demonstrate the successful use of electronic surveillance (EM) and algorithmic solutions within penitentiaries as effective and sustainable tools. For example, K. Borsekova et al (2020) found that digital technologies contributed significantly towards decreasing recidivism rates, social reintegration efforts and economic sustainability within correctional facilities; yet simultaneously raised risks such as dehumanization due to legal oversight over AI systems as well as increasing inequality of access to resocialization programs (Borsekova, K. et al., 2020).

This research explores the system of execution of punishments in Kazakhstan, with an aim of understanding its evolution and correlation with traditional and modern methods of convict correction, their effectiveness, risks, and potential for digital solutions within humanistic and legal perspectives.

This study proposes that modern digital technologies introduced into penal enforcement systems could increase their efficiency at correcting convicts if humanism, human rights and individualization of punishment principles are observed.

Scientific novelty and significance of this article lie in its ability to demonstrate the possibility of merging classical and digital approaches into a single legal model that provides for control, correction and individual rights in digital states.

## Material and methods

Material used for this research included regulatory legal acts issued by the Republic of Kazakhstan related to penal enforcement (e.g. the Penal Enforcement Code and related by-laws and state strategies and concepts); official statistical information from the Committee of Penal Enforcement System in Ministry of Internal Affairs in Republic of Kazakhstan as well as analytical publications reflecting both theoretical and applied aspects of correction convicts.

Quantitatively, several documents, scientific publications and the practices of other nations (Germany, the Netherlands, USA Slovakia and Russia

among them) that had implemented digital technologies into their penitentiary systems were studied.

The qualitative component of this research involves three levels of analysis: national (legal framework, official policy and practice in Kazakhstan); comparative legal (foreign experience and models for applying IT and AI technology in prisons); and conceptual (assessment of correctional models from perspectives of human rights, effectiveness, and sustainability).

Digital technologies and innovative correctional impact tools such as artificial intelligence, online resocialization, and electronic monitoring hold great promise to enhance prisoner rehabilitation and reduce recidivism rates, but only when properly integrated into an existing system while respecting legal, ethical, and humanistic principles.

This study employs an inclusive methodology that promotes an holistic and multidisciplinary analysis of correction means and methods. First and foremost, dogmatic analysis was utilized in reviewing provisions from Kazakhstan’s Penal Enforcement Code as well as relevant legal acts concerning punishment execution; additionally a comparative legal analysis was utilized to compare national practices with international models, particularly exploring modern approaches such as electronic monitoring systems; virtual and augmented reality technologies to aid resocialization efforts and the implementation of digital platforms within penitentiaries systems.

To assess the intersection between traditional and innovative correctional approaches, a systems method was employed, enabling this phenomenon to be understood as a multi-level structure that includes coercion, control and humanistic influence elements. Content analysis was then employed on academic literature, strategic policy documents, international reviews and English-language sources in order to reveal key directions within scholarly discourse on this topic.

Critical-analytical methodology was applied, which allowed for an evaluation of potential risks and ethical challenges associated with artificial intelligence and algorithmic decision-making within a penitentiary system. Furthermore, official statistical data such as indicators for prisoner employment, participation in educational and rehabilitation programs, discipline practices, recidivism rates were examined for evidence.

## Literature Review

Studies of means and methods of convict correction encompass both classic and cutting-edge tech-

nological approaches. Foreign academic literature on this topic has produced extensive research analyzing concepts like penitentiary influence, changing punishment objectives, and the integration of digital and algorithmic solutions into correctional systems.

Garland (2001) and Foucault (1977), who detail the historical development of penitentiary systems from disciplinary institutions to models of control and social adaptation ([http://www.antonioacasella.eu/nume/Garland\\_control\\_2001.pdf](http://www.antonioacasella.eu/nume/Garland_control_2001.pdf)).

Cullen & Gendreau (2000) highlight the need for cognitive-behavioral programs and rehabilitation-oriented methods in correctional practice; Petersilia emphasizes their significance as vital elements of successful reintegration (<https://www.ojp.gov/ncjrs/virtual-library/abstracts/assessing-correctional-rehabilitation-policy-practice-and-prospects>).

Classic theoretical approaches to correction are detailed by Garland and Foucault in their works, who traced its development from disciplinary institutions into models of control and social adaptation. Cullen & Gendreau stressed the necessity of applying cognitive-behavioral programs and rehabilitation-oriented methods into correctional practices. Petersilia (2003) stresses the significance of transition periods and post-penitentiary support as integral elements for successful reintegration ([https://www.researchgate.net/publication/299143977\\_When\\_Prisoners\\_Come\\_Home\\_Parole\\_and\\_Prisoner\\_Reentry](https://www.researchgate.net/publication/299143977_When_Prisoners_Come_Home_Parole_and_Prisoner_Reentry)).

Recent years have witnessed increasing emphasis on the integration of technology into correctional processes. Brennan & Oliver (2013) and Tollenaar & van der Heijden (2019) examined machine-learning-based risk assessments for recidivism risk assessment systems (<https://academic.oup.com/jrssa/article/176/2/565/7077811?login=false>). Other authors investigated both its potential and risks within criminal justice, such as algorithmic bias risks or violations to individual rights.

Borseková et al. (2020), in their study focused on Slovakia and EU countries, emphasize that the digitalization of punishment execution (through electronic monitoring, video communication, online education, and virtual training) can not only increase the efficiency of the penal system but also reduce recidivism rates. Similar conclusions are drawn by Schmallegger & Smykla (2022), who note that digital tools enable the adaptation of punishment to the individual needs of the convict.

The works of some authors focus on the ethical implications of technology implementation: issues of privacy, digital inequality, and the observance of

human rights within digital prison infrastructure.

Review of literature shows that foreign academic thought has gained significant experience in analyzing the effectiveness of classical methods of correction; assessing digital solutions such as artificial intelligence (AI), electronic supervision and online socialization as potential solutions, as well as legal, ethical and social risks related to introducing technology into penitentiaries systems.

However, this article addresses certain scientific gaps: insufficient study of integrating traditional and digital methods as one system of influence on convicts; lack of comprehensive analysis of Kazakhstani model correction in relation to international digital trends; no multidisciplinary approach combining legal, technological and criminological perspectives.

Thus, this article seeks to address these gaps by offering a comprehensive view of how digitalization has transformed means and methods for convict correction, with particular consideration for legal humanization and technological sustainability.

## Results and discussion

Recent analyses of law enforcement practice in Kazakhstan have revealed that, despite the goals outlined in its Penal Execution Code of the Republic of Kazakhstan, traditional means remain the main means for impacting convicts – labor, educational work, educational programs and detention regime (<https://adilet.zan.kz/eng/docs/K1400000234>). According to the Committee of Penal Enforcement System at Ministry of Internal Affairs of Republic of Kazakhstan between 2018-2023 employment was focused upon, with level of resocialization remaining unstable while rates of crime among released prisoners range between 25-30%.

According to Kazakhstan's Committee of Penal Enforcement System, in 2024 there were 63 penitentiary institutions and 17 pre-trial detention facilities operating. At present there are approximately 29,000 men, 2,000 women, and 52 minors serving sentences there." Often prison officers serve sentences for crimes such as murder, intentional infliction of serious harm to health, theft, drug trafficking or fraud ([https://tengrinews.kz/kazakhstan\\_news/skolko-kazahstantsev-izolirovali-ot-obschestva-526508/](https://tengrinews.kz/kazakhstan_news/skolko-kazahstantsev-izolirovali-ot-obschestva-526508/)).

Recent years have witnessed a decrease in prison population, yet recidivism remains an area of great concern. While accurate recidivism data for Kazakhstan are limited, in Russia's Federal Commissioner for Human Rights' data 59.8% of released

citizens were reconvicted again within 2 years of release – this reinforces the need to develop programs focused on providing effective support to individuals released from incarceration. ([https://kazkenes.kz/ru/news/internal/732?utm\\_source](https://kazkenes.kz/ru/news/internal/732?utm_source)).

Kazakhstan is working diligently to enhance detention conditions and decrease recidivism rates through modernizing penitentiary institutions and social adaptation programs, including modernizing penitentiaries built during the mid-20th century that need urgent renovation. According to the Committee of Penal Correction System, many such correctional facilities need updating immediately.

Kazakhstan's penitentiary system has seen significant improvements, yet challenges still exist, these include further modernizing institutions, developing effective resocialization programs, and decreasing repeat offending rates.

Within this environment, implementation of digital solutions in the penal system--such as distance learning, digital inmate profiling and pilot electronic monitoring (EM) projects--is still lacking a cohesive regulatory and methodological framework. Kazakhstan has yet to adopt legislation regarding electronic monitoring (EM) as an official form of punishment execution; although discussions regarding it began back in 2020. Some elements have been implemented within probation but they don't cover most individuals serving custodial sentences.

An analysis of Kazakhstan's penal correction policy has demonstrated that, despite its humanistic approach and legislation proclaiming otherwise, punishment execution remains predominantly traditional: detention conditions regulated according to legislation; labor; educational activities conducted within basic schooling systems; psychological assistance as well as traditional correctional methods like labor. According to Article 9 of Kazakhstan's Penal Enforcement Code's main means of correction includes prescribed procedure for sentence execution as well as labor, educational work, socially beneficial activities, psychological support as primary methods.

As for the education of individuals convicted of crimes, in 2023 the Rules for Organising Access to Primary, Basic Secondary, General Secondary, Technical and Vocational Education for Convicted Persons came into force, following approval by Resolution of the Government of Kazakhstan dated June 29, 2023, No 509. Under these rules every inmate should receive education; however in practice this remains challenging due to limited access to modern educational technologies and shortage of

qualified teachers (<https://adilet.zan.kz/rus/docs/V14C0009753>).

Countries with more advanced penal systems, unlike Kazakhstan, have already implemented digital technologies as tools of correction and resocialization – for instance:

Since 2009 in Baden-Wurttemberg state in Germany, an electronic monitoring system (ankle bracelets) have been in use to track parolees 24/7. The program has proven its worth as part of both probationary processes and alternative forms of punishment (<https://www.dw.com/ru/в-баден-вюртемберге-будут-использовать-электронные-кандалы/a-4419929>).

The Netherlands was among the first nations to implement “digital prisons”, consisting of correctional institutions equipped with video surveillance systems and emotion-recognition microphones as well as Internet, email communication, and online education platforms for prisoners. ([https://www.cnews.ru/news/line/v\\_niderlandah\\_otkrylas\\_vysokotekhnologichnaya](https://www.cnews.ru/news/line/v_niderlandah_otkrylas_vysokotekhnologichnaya)).

Electronic monitoring is widely utilized by U.S. states for individuals on parole or house arrest, as well as video conferencing systems, digital learning platforms, and virtual rehabilitation programs.

Slovakia conducted a national experiment in penal digitalization. Borsekova et al.'s (2020) research indicated that use of electronic monitoring as an alternative to imprisonment reduced recidivism while cutting costs associated with imprisonment, garnering positive evaluations from judges and probation officers alike.

Russia is making substantial advances in digital technologies, such as video surveillance, electronic bracelets, unified FSIN information platforms and domestic software solutions. A particular emphasis has been put on creating digital profiles of prisoners for analysis to tailor correctional strategies accordingly (<https://cyberleninka.ru/article/n/k-voprosu-o-zarubezhnoy-praktike-primeneniya-sistemy-elektronnogo-monitoringa-podkontrolnyh-lits>).

As international experience has shown, digital technologies can drastically enhance the efficiency of punishment execution, improve detention conditions and strengthen social ties among convicted individuals. They must however adhere to stringent regulatory frameworks in order to minimize risks such as dehumanization, secondary stigmatization and digital inequality.

Kazakhstan's implementation of digital solutions remains disjointed: electronic monitoring is only used selectively within the probation system

and digital educational environments are available only at certain institutions. No unified strategy for digitalizing penal correction exists yet and no legal framework for AI, big data analysis and algorithmic decision-making has yet been defined.

Based on this analysis, it can be concluded that Kazakhstan's penal policy should focus on combining traditional correctional methods with innovative digital tools and complying with international humanitarian and legal standards (such as United Nations Standard Minimum Rules for Prisoners (Mandela Rules)) while still remaining competitive in global terms.

Consider Slovakia, as detailed in a study by K. Borsekova et al. (2020). A national pilot project on electronic monitoring as an alternative to incarceration was implemented, with 144 professionals (judges, probation officers) being surveyed regarding sustainability and social acceptability of such technologies. Notably, electronic monitoring (EM) has shown to reduce likelihood of reoffending while strengthening family connections and decreasing state expenditure – estimates suggest housing an inmate costs three-to five times more than administering similar level control EM can achieve.

These findings jibe with research conducted in the US that has demonstrated how when implemented effectively, electronic monitoring (EM) significantly reduces recidivism, especially when combined with comprehensive support measures like employment, healthcare and psychological assistance. Unfortunately, such technologies also pose potential ethical concerns over privacy breaches, discriminatory actions against members of society and digital inequality issues.

Given this context, the primary challenge facing Kazakhstan becomes evident: its failure to develop an all-encompassing digitalization strategy for its penal system and lack of regulatory norms regarding modern technologies used for correctional practice. Adopting international best practices while considering national differences such as digital literacy levels among staff and inmates alike as well as infrastructure capacity limitations and cultural differences will require adaption accordingly.

Therefore, the results of this study verify the hypothesis about the significant potential of digital technologies (AI and EM) as a complement to classical correctional methods. Their effectiveness depends on systematic implementation that adheres to human rights principles while remaining transparent for algorithmic decisions; hence legislative initiatives, interagency collaborations, and pilot pro-

grams at regional levels may all be needed in order for such technologies to work as intended.

## Conclusion

Kazakhstan's penal correction system continues to operate on traditional methods for convict rehabilitation – including regulated detention conditions, labor, educational and correctional work, basic education and psychological assistance – despite humanistic provisions enshrined in legislation, despite some limited and unsystematic implementation of digital technologies.

International experience shows that digital tools – specifically electronic monitoring, online learning platforms, inmate profiles and elements of artificial intelligence – can greatly increase punishment execution effectiveness, decrease recidivism rates and provide for a more flexible individualized model of resocialization.

Kazakhstan possesses both institutional and technical prerequisites necessary for adopting digital solutions; however, due to a lack of a unified strategy for digitization of its penal correction system and regulatory and legal loopholes that impede its comprehensive transformation.

This research sought to assess and identify the current state of means and methods of convict rehabilitation within Kazakhstan's penal correction system, taking into account how digital technologies have altered traditional practices. To meet its objective, this investigation employed comparative legal, dogmatic, systemic, critical analytical methods as well as official statistics, international studies, and foreign practices as sources.

Based on this analysis, it was found that:

1. Correctional methods still primarily depend on traditional approaches like labor, educational work and detention while digitalization of resocialization and control processes is mostly executed sporadically and does not adhere to any legally prescribed strategy.

2. Digital technologies – such as electronic monitoring, online education, automated offender profiling and AI-based risk analytics – implemented in foreign countries like Germany, Netherlands, USA or Slovakia have proven highly successful at both reducing recidivism rates while optimizing financial and institutional resources within penitentiary systems.

3. Comparative analyses demonstrate that Kazakhstan should not merely adapt foreign experience but should also take into account its own national

specifics, including legal infrastructure, technical capacities of institutions, staff training levels and digital literacy of convicts.

4. Our research hypothesis has been verified: the integration of digital technologies into the correctional system is both feasible and promising; however, its implementation must adhere to human rights principles, algorithmic transparency, ethical responsibility, and protect personal data.

Based on these findings, the following practical directions and areas for development are proposed:

- Adopt a comprehensive strategy for digitalization of penal correction system, including legal regulation governing AI, electronic monitoring systems, online learning platforms and other digital tools;

- Implementation of comprehensive resocialization programs, using technologies such as VR and cognitive training for post-penitentiary support;

- Establishment of a legal framework governing electronic monitoring as an alternative to imprisonment;

- Implementation of pilot projects at the regional level in partnership with nongovernmental organizations, academic communities, and international partners.

Thus, this study makes an essential contribution to scientific knowledge regarding the transformation of penal policy in an age of digitalization. The results obtained may serve as the foundation for future academic research, legislative drafting, or practical reform within Kazakhstan's penitentiary system.

### Литература

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