

## PEMANFAATAN TEKNOLOGI INFORMASI DALAM KEAMANAN LABORATORIUM UNTUK MENGANTISIPASI PENYELUNDUPAN NARKOBA DI INDONESIA

### THE UTILIZATION OF INFORMATION TECHNOLOGY IN PRISON SECURITY TO ANTICIPATE DRUG SMUGGLING IN INDONESIA

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**Abstract (In English).** This study aims to analyze the opportunities for utilizing information technology in preventing drug smuggling in correctional institutions, with a particular focus on the integration of information systems into security management. The research employs a descriptive qualitative approach based on secondary data from internal policies, security practices, incident records, and previous studies. The findings indicate that the use of information technology such as AI-powered CCTV systems, digital access control, and integrated visitor management has made significant contributions to reducing the potential for smuggling. However, major challenges remain, including the lack of integrated information systems, limited technological infrastructure, low digital literacy among officers, cybersecurity threats, and resource constraints. In conclusion, digital transformation in prison security must become a priority through infrastructure enhancement, capacity building for human resources, and inter-agency collaboration for early detection and prevention. This study contributes to the development of correctional policies and information systems that are more adaptive to modern threats.

**Keywords:** Digital Security; Correctional Institution; Drug Smuggling; Information System; Cyber Security.

**Abstract (In Bahasa).** Penelitian ini bertujuan untuk menganalisis peluang pemanfaatan teknologi informasi dalam pencegahan penyelundupan narkoba di lembaga pemasyarakatan, dengan fokus pada integrasi sistem informasi dalam pengamanan. Metode penelitian menggunakan pendekatan kualitatif deskriptif berbasis data sekunder dari kebijakan internal, praktik keamanan, catatan insiden, dan studi terdahulu. Hasil penelitian menunjukkan bahwa pemanfaatan teknologi informasi seperti sistem CCTV berbasis kecerdasan buatan, pengendalian akses digital, dan integrasi manajemen data pengunjung memberikan kontribusi penting dalam pencegahan penyelundupan. Namun, hambatan utama masih ditemukan, berupa kurangnya integrasi sistem informasi, keterbatasan infrastruktur teknologi, rendahnya literasi digital petugas, ancaman keamanan siber, serta keterbatasan sumber daya. Kesimpulannya, transformasi digital dalam pengamanan lapas perlu menjadi prioritas melalui penguatan infrastruktur, peningkatan kapasitas SDM, serta kolaborasi antarlembaga untuk deteksi dini dan pencegahan. Penelitian ini berkontribusi pada pengembangan kebijakan dan sistem informasi pemasyarakatan yang lebih adaptif terhadap ancaman modern.



**Keywords:** *Pengamanan Digital; Lembaga Pemasyarakatan; Penyelundupan Narkoba; Sistem Informasi; Keamanan Siber,*

## 1. INTRODUCTIONS

Drug-related crime is an organized international offense characterized by extensive networks, substantial financial backing, and the use of advanced technology (Hariyanto, 2018). Drugs represent one of the most serious issues threatening social stability, public health, and national security. According to data from the National Narcotics Board (BNN), the number of drug users has increased annually (Kemit et al., 2025). Similar findings were reported by the National Criminal Information Center in 2025, showing that between January and September 2025, drug-related crimes ranked as the second most prevalent in Indonesia, with a total of 36,264 cases (Polri, 2025). The illicit circulation of drugs occurs not only in public spaces but also infiltrates correctional institutions (Lapas). This condition indicates that prisons, which should serve as facilities for rehabilitation and correction, have instead become potential hotspots for drug smuggling and distribution.

Indonesia has become one of the main targets of international drug trafficking networks. Numerous cases of drug distribution and smuggling have been reported across almost all regions of the country (Hilmy et al., 2024). Drug smuggling represents a major challenge in criminal justice and correctional systems globally, including in Indonesia. Correctional facilities are expected to fulfill their primary function of maintaining security and managing inmates. However, attempts to smuggle drugs into prisons pose a significant threat to public safety and inmate rehabilitation (Bramada & Wibowo, 2022).

According to (Putri Amelia & Wibowo, 2023), drug smuggling into correctional facilities occurs through various methods, including concealment in food, drinks, clothing, toothpaste, and other packages; throwing drugs over prison walls; and even collusion with correctional staff without adequate screening. The presence of drugs in correctional facilities threatens inmate welfare while strengthening drug networks both inside and outside the institutions. This undermines rehabilitation efforts and contributes to rising levels of drug-related crime in society. Therefore, prison security plays a critical role in preventing drug smuggling (Hirlathatsi, 2021).

In the context of technological developments, drug smuggling is no longer limited to physical methods but has expanded into the digital domain. Communication between inmates and external networks is often facilitated through smuggled electronic devices, illegal SIM cards, or even covert internet access. This shift highlights that threats to prison security now extend to cybersecurity and information system management.

Consequently, a more comprehensive approach is required, particularly the integration of information technology into correctional security systems. AI-based CCTV, digital access control, activity log monitoring, and integrated data management for inmates and visitors represent transformational steps toward modernized security. Adaptive information systems also enable pattern analysis, early detection, and enhanced operational transparency.

One critical element of prison security is the correctional security unit, which is tasked with maintaining order and preventing smuggling. In the digital era, this role must be reinforced through the application of information technology

as a tool for detection, monitoring, and prevention of potential threats. Thus, integrating information systems into the operational functions of security units is essential to strengthen effectiveness and ensure timely responses to security disruptions.

By enhancing the role of correctional security units, correctional institutions can create safer environments while ensuring rehabilitation objectives are achieved. Therefore, research on the use of information technology in correctional security to prevent drug smuggling is highly relevant to improving the effectiveness and security of correctional facilities within the criminal justice system.

## **2. METHOD**

This research employs a qualitative descriptive method, relying on secondary data as the primary source of information. This approach was chosen to gain an in-depth understanding of the opportunities for using information technology to prevent drug smuggling in correctional facilities, as well as to describe practices that have been implemented in prisons and comparable institutions (Ogotan, 2019).

The descriptive approach allows for a narrative presentation of conditions within correctional facilities regarding opportunities for leveraging information technology to prevent smuggling. This provides readers with insights into both the roles and challenges correctional institutions face. In doing so, the study is expected to offer valuable perspectives for improving prison security systems and policies.

Secondary data were drawn from various sources, including internal reports from correctional facilities, security policies, records of past smuggling incidents, and relevant prior studies. These data included information on measures undertaken to secure facilities and prevent smuggling. Careful analysis of this data allowed the identification of trends, effective practices, and challenges faced by correctional institutions.

## **3. DISCUSSIONS**

The research findings reveal that opportunities for utilizing information technology in preventing drug smuggling within Indonesian prisons continue to face various challenges that must be addressed. Several key findings highlight issues such as the lack of integration of information systems across related units, the urgent need to adopt more modern security technology infrastructure, and the importance of strengthening internal policies as a governance framework. In addition, increasingly complex cybersecurity threats have emerged as new risk factors that can be exploited by irresponsible actors. On the other hand, limitations in human resources and funding further exacerbate the challenges in optimizing the use of technology. Therefore, this section elaborates on how each of these findings illustrates both opportunities and obstacles in building an effective prison surveillance system that is free from drug smuggling practices.

### **1) Lack of Integrated Information Systems**

The lack of integration of information systems across prison units remains one of the main obstacles to effective detection and prevention of

drug smuggling. Critical units such as security, registration, intelligence, and visitor services often still use separate systems (silos) or even rely on manual recordkeeping. This lack of integration results in important data such as visitor histories, inmate movement patterns, security incident reports, and intelligence information being scattered and unanalyzed in a comprehensive manner on a single platform.

As a consequence, potential smuggling attempts that should be detectable through cross-unit data correlation are difficult to identify. For instance, inmates who frequently receive visits from certain individuals cannot be directly mapped against records of security violations, since visitor data and incident reports are not connected in real time. This fragmented system also hinders the development of early detection mechanisms based on information technology, as the available data is partial and dispersed.

To address this, the use of technologies such as big data analytics and artificial intelligence (AI) can support correctional officers in identifying patterns and trends of drug smuggling across various prisons in different regions. This would allow for the early identification of potential threats and enable more effective preventive measures (Clarina et al., 2024). Accordingly, the development of an Integrated Security Information System (SIKT) is necessary to link all operational and security functions into a single digital platform. Such integration will allow more efficient supervision, automated data processing, and data-driven decision-making that is both more accurate and faster in responding to potential smuggling within correctional facilities.

## **2) Adoption of Security Technology Infrastructure**

The adoption of security technology infrastructure in correctional facilities is an essential element in preventing drug smuggling that threatens the integrity of these institutions and worsens internal drug problems. The use of more advanced security technologies includes the installation of modern CCTV systems, deployment of more accurate drug detection devices, and integrated security tools. These technologies help correctional facilities monitor sensitive areas more efficiently. Enhancements to physical security also include stricter access control within prisons (Sumardin et al., 2019). This reflects the awareness that smuggling attempts may occur through various entry points, including official access gates. Consequently, tighter access control such as more thorough identity verification for anyone entering the facility becomes crucial. In addition to tighter surveillance, reliable drug detection methods are also necessary. The use of detection devices such as X-ray scanners, body scanners, or narcotic-sniffing dogs can assist in identifying drugs that may be smuggled by inmates, staff, or visitors (Wirmyati & Remaja, 2019).

Efforts to adopt security infrastructure must align with international security standards and relevant national regulations. This is important to ensure that correctional facilities comply with established guidelines and principles for preventing smuggling. The use of advanced security technologies also requires continuous training for staff responsible for operating and monitoring these devices. Personnel must be skilled in recognizing smuggling indicators and in responding effectively to related

security incidents. Thus, the adoption of such infrastructure is not only a priority in anticipating drug smuggling but also reflects the commitment of correctional institutions to safeguard public security, support inmate rehabilitation, and uphold the integrity of the correctional system itself.

### **3) Strengthening Internal Policies**

The importance of stricter internal policies within correctional facilities cannot be overlooked. These policies include stringent procedures for screening goods, staff, and visitors, as well as managing inmates deemed suspicious. However, these policies will only be effective if consistently enforced and applied with strict supervision. This requires institutional commitment to ensuring compliance with internal regulations and imposing appropriate sanctions for violations. The role of prison security units in maintaining prison order and safety reinforced by the use of information technology for security monitoring represents a crucial element in preventing drug smuggling. Security units bear the primary responsibility for maintaining internal security. With stronger surveillance, opportunities for smuggling can be minimized. Security units have also implemented effective preventive measures such as strict inspections of incoming goods and more thorough checks of individuals interacting with inmates (Seno & Yuska, 2022).

In addition, policies regarding drug awareness campaigns need to be strengthened and digitized to raise awareness among inmates about the dangers of narcotics. *ACCORDING TO* (Maiyana et al., 2019), the lack of public awareness of drug dangers is one of the main causes of individuals becoming involved in narcotics.

Strengthening prison security through strict internal policies and close cooperation with external law enforcement agencies forms a solid foundation. Nevertheless, challenges such as resource limitations and the involvement of rogue officers also require serious attention. To maintain institutional integrity, various actions and measures must be taken simultaneously (Seno & Yuska, 2022). These include steps aimed at reducing the risk of staff involvement in smuggling activities.

### **4) Cybersecurity Threats**

Cybersecurity threats to correctional information systems have become increasingly evident as reliance on digital technologies grows in managing security and prison operations. Systems such as inmate databases, visitor access logs, network-based CCTV recordings, and internal communication systems store sensitive and strategic data. If accessed by unauthorized parties, such data could be exploited to facilitate illegal activities, including drug smuggling.

However, most correctional facilities in Indonesia still lack adequate cybersecurity frameworks, whether in terms of technical procedures, system access control, or digital incident detection systems (intrusion detection systems). As a result, information systems remain vulnerable to hacking, malware insertion, data manipulation, or digital identity theft. Such vulnerabilities may be exploited by both external actors and insiders, including rogue staff with administrative access.

The absence of minimum standards, such as ISO/IEC 27001, or internal information security audits also makes violations difficult to detect at an early stage. Moreover, many systems are not protected by data encryption protocols, network segmentation, or multi-factor authentication, further increasing the risk of data compromise. In the midst of digital transformation efforts within correctional institutions, strengthening cybersecurity is no longer optional but a critical necessity. It must be integrated into policies, technology planning, and the capacity-building of human resources responsible for managing prison information systems.

## **5) Resource Challenges**

Efforts to prevent drug smuggling inevitably require various resources. Resource challenges such as budget constraints and limited personnel affect the ability of correctional facilities to maintain security (Nugraha & Santoso, 2025). Increasing resource allocation particularly for security technologies and staff training can make significant contributions to the effectiveness of prison security (Hirlathatsi, 2021).

In terms of improving human resource capacity and preparedness, it is crucial to provide continuous and adequate training for prison security personnel. Training should cover a deep understanding of effective tactics and techniques for preventing smuggling, as well as training related to digital transformation in the use of information technology. The utilization of such technology offers opportunities and advantages that can improve efficiency in preventing drug smuggling (Gafallo, 2022).

The results of this study provide insights into the opportunities for using information technology in prison security to anticipate drug smuggling. These findings can serve as a foundation for identifying areas requiring improvement in smuggling prevention efforts.

Thus, to enhance the effectiveness of prison security and to anticipate smuggling attempts, a holistic approach is required covering all aspects described above. Within this context, the use of information technology for security is one of the key factors in achieving drug smuggling prevention objectives within correctional institutions.

## **4. IMPLICATIONS**

The implications of this study are highly relevant to the utilization of information technology in strengthening correctional security to prevent drug smuggling. Several key implications can be identified as follows:

- 1) The lack of integration of information systems across units such as security, registration, visitor services, and intelligence directly impacts the slow tracking of suspicious activities. This underscores the urgency of developing an Integrated Security Information System (SIKT) capable of connecting all operational data within a single platform to support data-driven decision-making.
- 2) The adoption of security technology infrastructure, such as smart CCTV and drug detection devices, reflects ongoing digital transformation; however, implementation remains uneven. Therefore, national standardization policies and regular evaluations of technological

infrastructure across all correctional facilities are required to ensure that digital security outcomes are more measurable and consistent.

- 3) The strengthening of internal policies must be supported by information systems capable of digitally recording and monitoring compliance, including audit trail mechanisms for staff and inmate activities. This step will reinforce transparency, accountability, and the prevention of abuses of authority.
- 4) Cybersecurity threats highlight the need for a comprehensive information security policy, which should include the adoption of international standards (e.g., ISO/IEC 27001), stronger firewalls, network segmentation, and regular cyber hygiene training for staff. Without robust cyber protection, correctional information systems remain at risk of being exploited to support smuggling networks.
- 5) Resource-related challenges, particularly regarding human resources and budgets, remain fundamental barriers. Structured training strategies, the recruitment of personnel with digital competencies, and proportional budget allocations for technology are therefore required. Without such support, the implementation of technology will remain superficial and ineffective in detecting or preventing drug smuggling.

Overall, the implications of this research emphasize the importance of a holistic, digitally driven approach to addressing drug smuggling challenges in correctional institutions. This approach includes infrastructure improvements, personnel capacity development, strong information security governance, and cross-sector collaboration. With these strategic measures, correctional institutions can more effectively safeguard the integrity of the criminal justice system, protect society, and support the success of inmate rehabilitation.

## 5. CONCLUSION

The security of correctional institutions in anticipating drug smuggling represents a complex challenge that requires a comprehensive approach. The findings of this study indicate that serious obstacles remain, including the lack of integration of information systems across units, limited security technology infrastructure, weak internal policies, cybersecurity threats, and challenges related to human and financial resources. Therefore, strengthening correctional security units must be supported through the use of integrated information technology, the implementation of digital security standards, and the continuous enhancement of personnel capacity through training. A holistic approach that combines modern technology, strict policies, and cross-sector collaboration is key to safeguarding the integrity of correctional institutions, protecting society, and supporting the success of inmate rehabilitation programs.

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