Overview of the Benefits and Challenges of Using Biometric Solutions in Migration and Border Management

فرص وتحديات استخدام حلول القياسات الحيوية في الهجرة وإدارة الحدود

Key Outcomes

- By acquiring official biometric representation of an individual's personally identifiable information, biometric technologies such as fingerprints, facial and iris recognition perform a significant reduction in identity fraud and improve security. These tools can more easily spot fake documents, reduce the likelihood of people making multiple asylum claims and alert data showing people on watchlists, such as INTERPOL's databases. They also enhance national security by deterring transnational crimes, such as human trafficking and terrorism.

- Increased Efficiency and Accuracy: The use of biometric automated systems, such as e-gates at borders, makes the identity verification process smoother and less time-consuming, and reduces human errors. Faster and more accurate checks allow officials to focus on high-risk cases, easing the movements of migrants and travelers.

- Regional Cooperation and Data Sharing: Databases and other shared biometric information between Arab states may also improve the capacity for cooperative cross-border tracking and police cooperation. Integrated systems would enhance regional security and address irregular migration and smuggling.

Abstract

Effective migration and border management is an essential aspect of national sovereignty, public safety, and regional stability. In recent years, biometric technologies have become central tools in enhancing the security, efficiency, and accountability of border control operations. These solutions — including fingerprint recognition, facial recognition, iris scans, and voice authentication — are increasingly integrated into border systems worldwide to streamline identity verification, reduce fraud, and improve migrant processing. This policy brief offers a comprehensive overview of the key benefits and emerging challenges associated with the deployment of biometric solutions in migration and border management, with a focus on their relevance to the Arab region. It highlights practical applications, risks, and policy considerations for member states of the League of Arab States.

المستخلص

تعد الإدارة الفعالة لحركة الهجرة والحدود عنصرًا أساسيًا للحفاظ على السيادة الوطنية، والأمن العام، والاستقرار الإقليمي. وفي السنوات الأخيرة، اعتمدت تطبيقات مراقبة الحدود بشكل متزايد على تقنيات القياسات الحيوية لتعزيز الأمن وضمان الاستخدام المسؤول. تتضمن هذه التقنيات بدائل مثل أجهزة قراءة بصمات الأصابع، والتعرف على الوجه، ومسح القزحية، والمصادقة الصوتية. تُطبّق حلول القياسات الحيوية هذه على نطاق واسع اليوم في نظم أمن الحدود على مستوى العالم لتسهيل تحديد هوية المسافرين والمهاجرين، والحد من الاحتيال، وتسريع العمليات على المعابر الحدودية.

بناءً على ذلك، تقدّم ورقة تحليل السياسات الآتية نظرةً شاملةً على الفوائد الرئيسية والتحديات الناشئة المرتبطة بنشر الحلول البيومترية في إدارة الهجرة والحدود، مع التركيز على أهميتها في المنطقة العربية. ويُسلّط الضوء على التطبيقات العملية والمخاطر والاعتبارات السياسية للدول الأعضاء في جامعة الدول العربية.

introduction

This policy brief offers a succinct overview of the current opportunities and drawbacks with regard to the application of biometric systems and tools for migration and border management, especially in the Arab region. It covers the utilization, hazards, and policy implications for STS member states at the League of Arab States.

Biometrics in Support of the Border and Migration Management Speakers Biometrics are integral to border and immigration control. They are used at different points in the migration process, from application for visas, through crossing borders, applying for asylum, and operations for return.

Key Applications:

- Border Management and Entry/Exit: Establish identity by checking people against information held by the government to prevent them from

entering or leaving the country illegally.

- Visa/Residency Approval: Biometrics simplifies the approval and can be furnished as identity evidence for visa approvals, residency, work, and student permits, etc.
- Refugees/Asylum Processing Registration and Identification: Registration procedures for asylum seekers are speeded up with improved tracking of applicants and reduction in multiple registrations.
- Police/Criminal Records Check: Includes names that can be checked against national and international databases, even INTERPOL.
- Voluntary Return and Reintegration: Biometrics during the reintegration process with biometrics, proof about the identity increases the efficiency and transparency of reintegration activities.

Benefits of Biometric Solutions

1. Improved National and Regional Security

Biometrics makes it much more difficult for individuals to use forged identities or stolen documents.

Systems such as fingerprint and facial recognition is used to detect suspects and prevent of transnational crimes, including illicit trafficking, terrorism, human trafficking.

2. Improved Identity Assurance

Biometrics offer a reliable way to verify and establish identity, particularly for Undocumented person.

This is particularly critical in humanitarian situations, where migrants or displaced persons may have lost all identification.

3. Efficiency and Accuracy in Border Management

Automated border control (ABC) systems reduce wait times, border crossings, and allow border officials to focus on high-risk security factors.

Decreases human error and subjectivity in identity checks.

4. Facilitation of International Cooperation

Shared biometric data systems between countries (e.g., regional databases) enable more effective monitoring of movement across borders and support joint investigations.

5. Supports Legal and Safe Migration Pathways

Biometrics supports to identify the regular and irregular migrants, supporting more unbiassed access to legal migration channels and services.

Challenges and Risks

1. Privacy and Data Protection Concerns

Biometric data is extremely sensitive; any compromise on the data can lead to severe implications. o The lack of

data protection laws in some countries is a deficiency concerning the secure manner of acquiring, storing, and transmitting biometric information.

2. Interoperability and Standardization Issues

Biometric systems usually rely on heterogeneous formats and standards, leading to data inoperability across borders.

The absence of standards could impede regional cooperation and collective border security initiatives.

3. Cost and Infrastructure Challenges

The upfront cost of biometric systems installation and maintenance is high – the cost of hardware, software, training, and high-side data center operation being a significant investment.

In some countries, budgetary constraints may preclude full adoption and upgrading of such systems.

4. Technological Limitations and Errors

False positives (when a positive ID indicates the wrong person) and negatives (when negatives fail to ID the right person) are more likely to occur under less than optimal lighting conditions, aging populations, or challenging-to-acquire biometric datasets.

Biometric systems may not perform the same for all people, leading to exclusion or failure to identify.

5. Ethical and Legal Challenges

Over-reliance on biometric surveillance may lead to concerns over mass surveillance, discriminatory profiling, or infringement on civil liberties.

There is a need to balance state security interests with individual rights and international human rights standards.

Opportunities for the Arab Region

With the growing mobility, migration challenges, and security imperatives in the Arab region, biometric techniques provide an important space for transforming and standardizing border processes:

Transnational Collaboration: The League of Arab States could facilitate unified protocols and regional biometric-sharing platforms, promoting collective border resilience.

Capacity Building: investment of border officials and technical staff to ensure that biometric tools will be applied in an effective and ethical way.

Public-Private Partnerships: Partnerships between the public and private sectors will allow governments to work with technology vendors to implement scalable affordable biometric technology

Humanitarian Applications: Biometrics can play a role in enabling safe access to aid by IDPs or populations affected by conflict and/or displacement and reduce identity fraud in relief programmes.

Policy Recommendations

To ensure responsible and effective use of biometric technologies in the context of migration and border management, the following is recommended for the League of Arab States:

1. Develop Regional Standards and Guidelines

Create a standard BMS' biometric data formats, privacy policies, and the system interoperability requirements across all member states.

Adopt or update, if necessary, national legislation that governs the collection, use, and dissemination of biometric information, and is consistent with international human rights norms.

3. Invest in Infrastructure and Training

Invest resources in developing secure data systems, the performance of border sector infrastructure, and ongoing training to measure staff on biometric system operation and data safeguard.

4. Promote Responsible Use of Technology

Create independent ethics review boards to determine the deployment of biometric systems, especially among high-risk or vulnerable populations.

5. Enhance Regional Information Sharing Mechanisms

Create independent ethics review boards to determine the deployment of biometric systems, especially among high-risk or vulnerable populations.

6. Include Civil Society and Stakeholder Input

Dialogue with civil society organizations, migrants' associations, and human rights defenders when planning and implementing biometric measures. design and implementation of biometric policies.

Conclusion

Biometric solutions are changing the game of migration and border management around the world, serving as very useful instruments for security enhancement, efficiency of operation, and support in positive identification.

In the case of the Arab countries, the professional application of these mechanisms could offer a strategic opportunity to strengthen border security, support regular migration, and build confidence in state institutions.

But this must be layered with a strong assurance of good governance, data privacy, and regional cooperation.

It is possible that, if we all subscribe to common policies on the basis of shared standards and principles and if we take joint actions, such positive steps for the application of biometric solutions can be taken at the level of the League of Arab States, with due respect to the rights and dignity of potential beneficiaries in search of a better future.

References

Quick Overviews

International Organization for Migration (IOM). IOM and Biometrics, November 2018.

International Organization for Migration (IOM). Biometrics and International Migration Law, 2005.

Michela Pugliese. The multiple threats of biometric technology at European borders, EuroMed Human Rights Monitor, 16 February 2022.[1]

Masha Borak. The challenges of biometric border crossings Border Security Report webinar examines implications of EES, Biometrics Update, 23 September 2023.

Marion Cordebart, Scarlett Dezan, Cléo Gerigny, Alexandra Morosova. EU-US Border Control: Collaboration for AI Biometric Data Sharing, Trans-European Policy Studies Association (TEPSA), August 2024.

United Nations High Commissioner for Refugees (UNHCR). When technology improves the lives of refugees, 8 March 2019.

United Nations High Commissioner for Refugees (UNHCR). More than half a million Rohingya refugees receive identity documents, most for the first time, 9 August 2019.

United Nations High Commissioner for Refugees (UNHCR). Iris scan system provides cash lifeline to Syrian refugees in Jordan, 23 March 2023.

Haneen Dajani. Iris Scans Catching What Eyes Miss, The National, 13 February 2009.[2]

International Organization for Migration (IOM). "Glossary on Migration." International Organization for Migration, 2019.

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1. Possible issue with political correctness from using this organization's article, follow up necessary. The article does a good job of summarizing issues however.
2. The source as well as the fact that it mentions how the technology has helped stop deported individuals returning needs to be assessed for political correctness, follow up necessary.

Diving Deeper

Stephen Gelb and Aarti Krishnan. Technology, migration and the 2030 Agenda for Sustainable Development, Overseas Development Institute (ODI), September 2018.

Privacy International. Responsible use and sharing of biometric data in counter-terrorism, July 2020.

Jessica Bither and Astrid Ziebarth. AI, Digital Identities, Biometrics, Blockchain: A Primer on the Use of Technology in Migration Management, Migration Strategy Group on International Cooperation and Development, June 2020.

United Nations Office of Counter-Terrorism (UNCT). United Nations Compendium of Recommended Practices for the Responsible Use and Sharing of Biometrics in Counter-terrorism, 2018.

International Organization for Migration (IOM). Introduction to Biometrics, 2024.

Oxfam. Biometrics in the Humanitarian Sector, March 2018.

Joint Research Centre (JRC), European Commission (EC), Max Snijder. Biometrics, surveillance and privacy, 2016.

Tambiama Madiega and Hendrik Mildebrath, European Parliamentary Research Service (EPRS). Regulating facial recognition in the EU, September 2021.

Zawadzka, Sylwia. "BIOMETRIC TECHNOLOGY IN EUROPEAN UNION BORDER MANAGEMENT AFTER 2015." (2022).

Indriani, Masitoh and Amira Paripurna. "Biometric Data Sharing in Addressing Irregular Migration and Security Issues within The Bali Process Framework for Indonesia and ASEAN Member States." (2020).

International Organization for Migration (IOM). Cross-Border Human Mobility Amid and After Covid-19, 21 July 2020.

IOM Global Migration Data Analysis Centre. Registration and identity management of irregular migrants in the EU, January 2018.

Costica Dumbrava, European Parliamentary Research Service (EPRS). Artificial intelligence at EU borders Overview of applications and key issues, July 2021.

Ujhegyi, Péter and Tibor Kovács. "Managing the New Wave of Migration With Biometric Identification." Journal of Security and Sustainability Issues (2022): n. pag.

Christina Khoury and Maegan Hendow. Advances in Border Management: Digitalisation trends and emerging technologies, International Centre for Migration Policy Development (ICMPD), January 2025.

Stenum, Helle. The Body-Border. Governing Irregular Migration through Biometric Technology. In: spheres: Journal for Digital Cultures. Media and Migration, Jg. 4 (2017), S. 1–16. DOI: https://doi.org/10.25969/mediarep/3852.

Giacomo Zandonini. Biometrics: The new frontier of EU migration policy in Niger, The New Humanitarian, 6 June 2019.

Roda Siad. Challenges and risks associated with biometric-enabled cash assistance, Forced Migration Review (FMR), May 2024.

National Institute of Standards and Technology (NIST). NIST Study Evaluates Effects of Race, Age, Sex on Face Recognition Software Demographics study on face recognition algorithms could help improve future tools, 19 December 2019.

Manuals, Reports and Toolkits

Claus Folden, Marina Manke, and Thomas Mortensen. Sharing Data: Where to Start - An Emerging Approach to Migration Data Management, Technical Cooperation Centre for Europe and Central Asia International Organization for Migration, 2007.

Anil K. Jain, Patrick Flynn, Arun A. Ross. Handbook of Biometrics, 2008.

Frontex. Technology Foresight on Biometrics for the Future of Travel, 21 October 2022.

Joint Research Centre (JRC), European Commission (EC). Biometrics at the Frontiers: Assessing the Impact on Society, February 2005.

Stephan Scheel. Autonomy of Migration? Appropriating Mobility within Biometric Border Regimes, Routledge, 31 March 2021.

Michael Friedewald, Melek Önen, Eva Lievens, Stephan Krenn, Samuel Fricker. Privacy and Identity Management. Data for Better Living: AI and Privacy, Springer, 2019.

European Union Agency for Fundamental Rights. Under watchful eyes: biometrics, EU IT systems and fundamental rights, 2018.

National Security and Intelligence Review Agency. Study of the Government of Canada's Use of Biometrics in the Border Continuum, 7 July 2022.