

# Integrating Facial Recognition Technology in IndoAI App with eKYC Case Study & Future of AI Cameras in Banking

Vivek Gujar

Director, Indoai Technologies P Ltd, Pune, India

**Abstract:** *IndoAI's eKYC solution, powered by its Facial Recognition Technology, not only simplifies and accelerates the identity verification process for banks but also enhances security and accuracy. By integrating cutting - edge technology with seamless user experience, banks can provide their customers with a secure and convenient way to update their eKYC details, setting new standards for digital identity verification in the financial sector. A case study is discussed where IndoAI's cutting - edge application utilizes Facial Recognition Technology (FRT) to transform verification system, providing customers with a smooth, secure, and streamlined method to update their eKYC details. By eliminating the requirement for physical paperwork and automating the verification process, IndoAI's solution establishes a groundbreaking benchmark for speed and precision in the banking sector. The future promises the integration of AI cameras into the eKYC ecosystem.*

**Keywords:** eKYC, Aadhar, IndoAI, AI Camera, Facial Recognition System, Verification

## 1. Introduction

In the rapidly evolving landscape of digital banking, ensuring customer identity verification is paramount. Electronic Know Your Customer (eKYC) has emerged as a pivotal tool for banks, streamlining processes, enhancing security, and providing customers with a seamless experience. This article explores into the significance of eKYC in modern banking, exploring its multifaceted benefits and the revolutionary impact of AI - powered cameras in this domain and case study of how a simple IndoAI app can help streamline eKYC process with facial recognition technology

### 1.1 What is eKYC

eKYC refers to the electronic means to conduct customer identification and allow online and/or digital verification of the customer's identity [1].

eKYC is the automated process through which companies can perform customer identity verification digitally. eKYC is an alternative to the traditional process that required physical documents [2]

eKYC (Electronic KYC) is a digital customer KYC verification procedure wherein the identifying details of a customer desirous of obtaining services from a regulated business are verified electronically [3].

eKYC primarily involves KYC verification through the UIDAI (Unique Identification Authority of India) database and is completely paperless, requiring no physical documentation.

The only prerequisite for eKYC is the possession of the 12 - digit Aadhaar number. This, along with a registered mobile number (in most cases), is all customers need to complete KYC procedures.

### 1.2 Why eKYC - The Evolution of Banking: A Digital Frontier

Traditional banking methods, reliant on extensive paperwork and manual verifications, have become outdated in the face of technological advancement. With the advent of digital transactions and online banking, the need for a robust, efficient, and secure identification system became imperative. eKYC emerged as the answer, revolutionizing the way banks interact with their customers.

The rule describes its ideal AML program as including four core elements of Customer Due Diligence, CDD [1]:

- a) Customer Identification and Verification, CIV
- b) beneficial ownership identification and verification,
- c) understanding the nature and purpose of customer relationships to develop a customer risk profile; and
- d) ongoing monitoring for reporting suspicious transactions and, on a risk - basis, maintaining and updating customer information.

### 1.3 Global KYC Models and Innovations [4]

As the banking sector rapidly integrates digital solutions, Electronic Know Your Customer (eKYC) processes have become pivotal in ensuring secure customer onboarding. Different countries have adopted diverse eKYC models, each with its unique approach to identity verification. Claus Christensen explored four prominent global eKYC models, shedding light on their methodologies and innovations.

#### 1.3.1 Identity Authentication & Matching: The Hong Kong Model

Hong Kong's approach to eKYC, as exemplified by the Anti - Money Laundering Ordinance and Counter - Terrorist Financing Ordinance (AMLO), emphasizes flexibility. Unlike rigid mandates, Hong Kong's regulations allow financial institutions to adopt technology - driven solutions, encompassing identity authentication and matching techniques such as facial recognition and liveness detection. This adaptable model fosters a broad ecosystem of solutions,

Volume 12 Issue 11, November 2023

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

although the vagueness of requirements can challenge compliance teams aiming to incorporate innovative technologies.

### 1.3.2 Video Verification: The German Model

Germany pioneered the use of video verification, allowing customer identification and verification via live two-way video links with compliance professionals. This method, also adopted by the Reserve Bank of India and the Monetary Authority of Singapore, offers a digital alternative to in-person onboarding. While effective in preventing identity theft, the scalability of video verification remains a challenge, necessitating robust systems to manage the influx of video calls.

### 1.3.3 Digital ID Schemes: The Swedish and Indian Models

India's Aadhaar system, a centralized digital ID initiative, stands as a pioneering example. Launched in 2009, Aadhaar provides unique identification numbers to subscribers, streamlining identity verification. However, centralization poses security risks, as witnessed in data leaks. Conversely, Sweden employs a federated digital ID system, initiated by banks but recognized by government authorities. This approach decentralizes identity data, enhancing security and reducing vulnerability to hacking attacks.

### 1.3.4 Enhanced vs Simplified Due Diligence: The UK Model

The UK's Financial Conduct Authority adopts a nuanced approach, distinguishing between simplified due diligence (SDD) and enhanced due diligence. Low-risk customers qualify for SDD, where financial institutions validate basic information against trustworthy sources, promoting a streamlined onboarding process. This method, termed "2+2," ensures compliance by matching two customer-provided data points with two data points from reliable sources.

## 1.4 Crucial role of eKYC

- 1) *Enhancing Security*: eKYC employs cutting-edge technology to verify customer identities. By linking official documents with a biometric identifier, such as facial recognition through an App or AI cameras, the chances of identity theft and fraud are drastically reduced. Real-time verification ensures that the person interacting with the bank is indeed who they claim to be, fortifying the security infrastructure of banking institutions.
- 2) *Regulatory Compliance*: Banks operate within a stringent framework of regulations and compliance standards. eKYC ensures that these regulations are met efficiently. By automating the verification process and validating customer details against official government databases, banks can confidently adhere to legal requirements, thus mitigating the risk of penalties and legal complications.

According to Fugkeaw [5] the security and privacy-related compliance regulated by financial institutions around the globe take customer due diligence as the core consideration and emphasize the following four common requirements for digital identification including KYC compliance.

- Verification of customer identification information must be truly authenticated multiple factors and data sources. The proof of identity (POI) must be identifiable and technically and legally valid without tampering. Multiple sources of POI issued by government units and trusted ID providers are required.
- Privacy of customers' credentials or PII should be protected. Encryption and digital signing based on PKI should be employed.
- Auditing feature for all transactions and its lineage must be provided.
- Collecting the customers' credentials must obtain consent from the customers.

The banking industry is witnessing significant shifts driven by key factors [6].

Firstly, regulatory bodies are emphasizing risk effectiveness, efficiency, and innovation. Banks are urged to enhance risk coverage, minimize errors by automating manual processes, and reevaluate offshoring and outsourcing approaches. Collaboration with utilities becomes essential for streamlined operations.

Secondly, customer expectations are evolving, with a growing demand for B2C-like experiences in KYC processes. Fintech vendors are setting high standards, prompting traditional banks to meet these demands for speed and convenience. Banks excelling in customer experience enjoy advantages such as a 3 percent growth rate, 15 percent revenue increase, and improved efficiency ratios, as per McKinsey analysis.

Thirdly, poor data quality remains a challenge, contributing up to 26 percent of operational costs. Leading organizations are striving for a unified global customer view and real-time data, aiming to enhance accuracy and reliability.

Lastly, escalating KYC-program costs amid shrinking budgets necessitate strategic investments in technology and analytical capabilities. The average US annual operational costs for financial-crime compliance have surged by 43 percent, while most respondents anticipate a 25 percent decrease in KYC-program budgets, underscoring the need for prudent investments to sustain growth amidst financial constraints.

- 3) *Operational Efficiency*: eKYC significantly expedites the onboarding process for new customers and simplifies the updating of customer information. By eliminating the need for physical documents, banks save time and resources. Customers can now open accounts or update their details within minutes, enhancing their overall banking experience. AI-powered cameras play a pivotal role here, capturing accurate facial scans swiftly and securely.

## 1.5 Market of EKYC

The global e-KYC market was valued at USD 447.53 Million in 2021 and is expected to grow at a CAGR of 22.0% during the forecast period [7].

eKYC Global Market - USD Billion

(2021- 30) CAGR - 20%



Ref: fnfresearch.com

Key Insights [8]

- As per the analysis shared by our research analyst, the global e - KYC market is estimated to grow annually at a CAGR of around 21.55% over the forecast period (2023 - 2030)
- In terms of revenue, the global e - KYC market size was valued at around USD 1571.12 billion in 2021 and is projected to reach USD 2792 billion, by 2030.

The labour force in India increased by 8.8 million from 428.4 million in March 2022 to 437.2 million in April 2022 [9]. eKYC of this market is huge challenge unless a smooth, friendly process technology offers.

eKYC services can be divided as follows.

| By Product                                                                                                                  | By Deployment Mode            | By End - Use                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| *Identity Authentication and Matching<br>*Video Verification<br>Digital ID Schemes<br>*Enhanced vs Simplified Due Diligence | Cloud - Based<br>On - Premise | Banks<br>Financial Institutions<br>E - payment Service Providers<br>Telecom Companies<br>Government Entities<br>Insurance Companies<br>Unregulated market eg Labour supply, etc |

1.6 Benefits of using EKYC

**Efficiency and Speed:** eKYC processes significantly reduce the time and effort required for customer verification. Digital verification methods streamline the onboarding process, allowing customers to get started with banking services swiftly.

**Enhanced Security:** Utilizing advanced technologies such as biometrics and facial recognition, eKYC ensures a higher level of security by verifying the customer's identity accurately. This reduces the risk of identity theft and fraud.

**Cost Savings:** eKYC eliminates the need for physical paperwork, reducing administrative costs related to manual data entry, storage, and retrieval. It also minimizes the expenses associated with in - person verification processes.

**Paperless Environment:** By moving away from paper - based verification, eKYC contributes to environmental conservation by reducing paper usage. This aligns with sustainable practices and eco - friendly initiatives.

**Improved Customer Experience:** Customers benefit from a seamless and convenient onboarding experience. The simplified process enhances overall satisfaction, leading to higher customer retention rates and positive brand perception.

**Regulatory Compliance:** eKYC systems are designed to adhere to regulatory standards and guidelines. Banks can ensure compliance with legal requirements, reducing the risk of penalties and legal complications.

**Accurate Data:** Digital verification processes reduce the likelihood of errors in customer data. By directly integrating with government databases, eKYC systems ensure accurate and up - to - date customer information.

**Scalability:** eKYC solutions can handle a large volume of verifications simultaneously, making them scalable for banks serving diverse customer bases. Whether for individual or business accounts, eKYC processes can accommodate varying verification needs.

**Remote Access:** Customers can complete the verification process remotely, eliminating the need to visit a physical branch. This is particularly convenient for individuals in remote areas, leading to increased financial inclusion.

**Data Analytics:** eKYC systems generate valuable data that can be analyzed for insights. Banks can use this data to understand customer behavior, preferences, and demographics, enabling them to tailor their services effectively.

Incorporating eKYC not only transforms customer verification but also enhances operational efficiency, security, and customer satisfaction in the banking sector [10].

- *eKYC is fast and simple*, as it uses automated systems to speed up the KYC process so that it takes a matter of minutes or hours, rather than days or weeks, to complete.
- *eKYC can present significant opportunities for businesses to save time and money* and to offer customers a more streamlined and low - effort experience.
- *Firms can exceed the minimum standards required to comply with KYC laws*, providing additional customer

screening and monitoring through real - time online and database checks.

### 1.7 Future Banking: eKYC with AI Camera Technology

The integration of AI - powered cameras in the eKYC process marks a significant leap forward. These advanced cameras employ facial recognition algorithms, ensuring unparalleled accuracy in identity verification. By analyzing facial features and comparing them with official documents in real - time, these cameras provide an added layer of security. Moreover, they enhance user experience by making the process swift and convenient, aligning perfectly with the demands of the digital age.

Please read the small information at the end of this article.

In the ever - evolving landscape of banking, technology continues to reshape traditional processes, making them more efficient, secure, and customer - friendly. One such transformative innovation is the integration of eKYC (Know Your Customer) with AI Camera technology, promising a paradigm shift in how banks authenticate and onboard customers.

#### Enhanced Security and Accuracy:

Utilizing AI - powered facial recognition technology, eKYC with AI Camera ensures unparalleled security and accuracy in customer identification. Advanced algorithms analyze facial features with precision, significantly reducing the risk of identity theft and fraud. Customers' unique facial characteristics serve as an unforgeable digital signature, providing an extra layer of security for their accounts and transactions.

#### Streamlined Onboarding Process:

The integration of eKYC and AI Camera technology streamlines the onboarding process remarkably. Customers can complete the entire verification process within minutes, eliminating the need for cumbersome paperwork and in - person visits to bank branches. The simplicity of capturing a selfie via the AI Camera app enhances user experience, making it not only convenient but also appealing to tech - savvy customers.

#### Real - time Verification and Compliance:

AI - powered eKYC enables real - time verification by instantly comparing the captured facial scan with official documents, such as Aadhar cards. This instant verification ensures compliance with regulatory requirements while reducing the administrative burden on financial institutions. Banks can seamlessly adhere to KYC regulations, confident in the accuracy and immediacy of the verification process.

The convergence of eKYC and AI Camera technology heralds a new era in banking. Not only does it redefine the customer onboarding experience, but it also sets higher standards for security, efficiency, and compliance. As more financial institutions embrace this innovation, the banking landscape will continue to evolve, ensuring a future where banking services are not only advanced but also accessible to all.

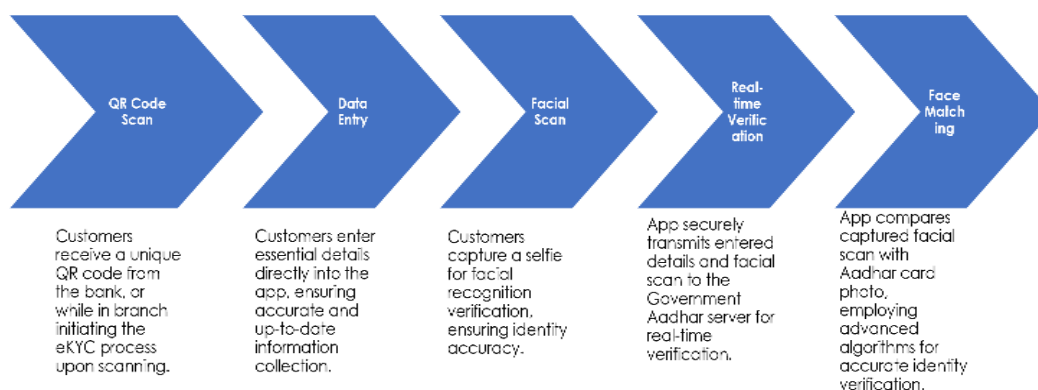
### 1.8 Case Study of INDOAI App for eKYC Verification with FRT

Introduction: A sector - wide eKYC utility could avoid the repeated execution of the KYC process at different banks. These systems typically use biometrics such as fingerprints, iris scans, or facial recognition. The data are then stored on a smart ID card and online in a central database, together with personally identifiable information such as the customer's name, age, and place of residence. During the KYC process, the customer's biometric data are captured and matched against the data in the central online database [11].

Traditional eKYC processes in banks often involve time - consuming procedures and manual verification. IndoAI's innovative app leverages Facial Recognition Technology to revolutionize this system, offering a seamless, secure, and efficient way for customers to update their eKYC details. By eliminating the need for physical documentation and automating the verification process, IndoAI's solution sets a new standard for speed and accuracy in the banking industry.

#### The Process:

## Streamlined eKYC Process: IndoAI App



#### 1) QR Code Scan:

- Customers receive a unique QR code from the bank or while in a bank the customer can scan the QR code in the branch, using their mobile devices.

- Scanning the QR code opens the IndoAI app, initiating the eKYC process.  
*This process can be done on the bank's website too.*
- 2) Data Entry:**
- Customers enter their essential details directly into the app, including Name, Mobile Number, Bank Account Number, Aadhar Number, and Email ID.
  - This step ensures that the most up-to-date information is collected accurately.
- 3) Facial Scan:**
- Customers capture a selfie, which serves as a facial scan for verification purposes.
  - The facial recognition technology analyzes facial features, ensuring that the person in the selfie matches the photo on the Aadhar card.
- 4) Real-time Verification:**
- The app securely transmits the entered details, including the facial scan, to the Government Aadhar server for real-time verification.
  - The server cross-references the provided information with the official Aadhar database, ensuring the accuracy and authenticity of the customer's identity.
- 5) Face Matching:**
- Simultaneously, the app compares the captured facial scan with the photo on the Aadhar card and verifies the user's identity.
  - The sophisticated facial recognition algorithms ensure a high level of accuracy, mitigating the risk of identity theft or fraud.

### Aadhar Photo Face Matching & Percentage



**Test results of IndoAI app:** The app verifies name, mobile number, Aadhar number and registered photo on Aadhar with present scanned photo of person with percentage

#### Benefits:

**1) Swift and Convenient:**

- The entire eKYC process takes no more than a minute, providing customers with a quick and hassle-free experience.
- Eliminates the need for customers to visit a bank branch in person, saving time and effort.

**2) Enhanced Security:**

- Facial Recognition Technology adds an extra layer of security, making it significantly more challenging for unauthorized individuals to impersonate customers.
- Real-time verification on the Aadhar server ensures the accuracy and legitimacy of the provided information.

**3) Paperless and Environmentally Friendly:**

- By eliminating the requirement for physical documents, the process reduces paper usage, contributing to environmental conservation.
- Banks transition to a more sustainable, paperless environment, aligning with global eco-friendly initiatives.

## 2. Conclusion

In the rapidly evolving landscape of banking, the integration of eKYC processes with innovative technologies is not just a convenience; it's a necessity. Our exploration of eKYC integration within the IndoAI app, authenticating customer accounts on Aadhar servers, has illuminated a transformative path for the banking industry. The synergy between cutting-edge technologies and streamlined processes is reshaping the way customers interact with their financial institutions.

The case study we examine showcased the real-world impact of the IndoAI app. By seamlessly connecting with banking systems, it will demonstrate the app's ability to authenticate customers efficiently, securely, and in record time. This pilot serves as a testament to the potential of IndoAI, illustrating its pivotal role in enhancing the banking experience for both customers and financial institutions.

Looking ahead, the future promises an even more remarkable evolution: the integration of AI cameras into the eKYC ecosystem. This forward-thinking approach not only enhances security measures but also offers unparalleled convenience. Imagine a banking experience where your identity is verified with just a glance, where every transaction is not just secure but swift, and where trust is not just a promise but a tangible reality. This is the vision we are moving toward.

As IndoAI continues to innovate and AI cameras become an integral part of the eKYC landscape, the synergy between technology and security will redefine customer expectations. With every facial scan, every authentication, and every transaction, we are shaping a future where banking is not just a service but a seamless, secure, and empowering journey.

As we embrace these advancements, the fusion of eKYC, IndoAI app, and AI cameras will not only redefine banking but also inspire a new era of trust and reliability. Together, we are charting a course toward a future where innovation meets integrity, and where every interaction is a step toward a safer, smarter, and more connected world.

## References

- [1] Perlman, L, Gurung, N, Focus Note: The Use of eKYC for Customer Identity and Verification and AML, SSRN - id3370665
- [2] <https://complyadvantage.com/insights/what-is-ekyc>
- [3] <https://signdesk.com/in/ekyc/ekyc-explained-all-you-need-to-know-about-ekyc>
- [4] Claus Christensen, Know Your Customer Lt, The Four e-KYC Models Around the World, <https://www.knowyourcustomer.com/insights/ekyc-models-around-the-world>

//www.regulationasia.com/the - four - e - kyc - models  
- around - the - world/

- [5] S. Fugkeaw, Enabling Trust and Privacy - Preserving e - KYC System Using Blockchain, IEEE Access, vol.10, pp.49028 - 49039, 2022, doi: 10.1109/ACCESS.2022.3172973
- [6] [https://www.mckinsey.com/capabilities/risk - and - resilience/our - insights/five - actions - to - build - next - generation - know - your - customer - capabilities](https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/five-actions-to-build-next-generation-know-your-customer-capabilities)
- [7] [https://www.polarismarketresearch.com/industry - analysis/e - kyc - market](https://www.polarismarketresearch.com/industry-analysis/e-kyc-market)
- [8] [https://www.fnfresearch.com/e - kyc - market](https://www.fnfresearch.com/e-kyc-market)
- [9] [https://economictimes.indiatimes.com/news/economy/indicators/indias - labour - force - increases - by - 8 - 8 - million - in - april - one - of - the - largest - monthly - rises/articleshow/91512662.cms](https://economictimes.indiatimes.com/news/economy/indicators/indias-labour-force-increases-by-8-8-million-in-april-one-of-the-largest-monthly-rises/articleshow/91512662.cms)
- [10] [https://complyadvantage.com/insights/what - is - ekyc](https://complyadvantage.com/insights/what-is-ekyc)
- [11] Vincent Schlatt, Johannes Sedlmeir, Simon Feulner, Nils Urbach, Designing a Framework for Digital KYC Processes Built on Blockchain - Based Self - Sovereign Identity, <https://arxiv.org/pdf/2112.01237.pdf>