ASEAN VALUERS ASSOCIATON

MINISTRY OF FINANCE
REPUBLIC OF INDONESIA

SCANNING THE FUTURE:

QR CODE INTEGRATION IN VALUATION REPORTS FOR TRUST, TRACEABILITY, AND TECHNOLOGICAL INNOVATION

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Scanning the Future: QR Code Integration in Valuation Reports for Trust, Traceability, and Technological Innovation

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INTRODUCTION

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The Strategic Role of Valuation

Valuation professionals serve as critical pillars in economic decision-making across public and private sectors. Their expertise influences investment decisions, financial reporting standards, taxation policy, and national wealth measurement.

01

Asset Valuation

Determining fair value for land, buildings, and businesses for taxation, collateral, and investment purposes

02

National Wealth Measurement

Comprehensive property valuations that inform macroeconomic policy and national accounting

03

Market Intelligence

Real estate trend monitoring and economic analysis supporting data-driven policy decisions

04

Financial Decision Support

Enabling sound credit and financing decisions for banks and financial institutions

05

Public Asset Management

Valuing government properties for development projects and establishing transparent market values

Given these mission-critical functions, valuation reports must be **reliable, credible, consistent, and easily verifiable** to maintain stakeholder confidence.

02

LITERATURE REVIEW

Indonesia's Valuation Ecosystem

In Indonesia, valuation services are delivered through **Public Valuation Firms (KJPP)**, which are licensed and supervised by the Ministry of Finance. These firms employ certified Public Appraisers who produce formal **Valuation Reports**—professional documents providing expert opinions of value.

The number of valuation reports has grown steadily, reflecting expanding economic activity. However, this growth has exposed critical weaknesses in reporting integrity, monitoring systems, and verification processes.

The Standardization Initiative

To strengthen transparency, the Ministry issued **Circular Letter SE-6/PPPK/2018**, mandating standardized numbering for all valuation reports. This aimed to ensure unique identification, systematic archiving, and regulatory verification.

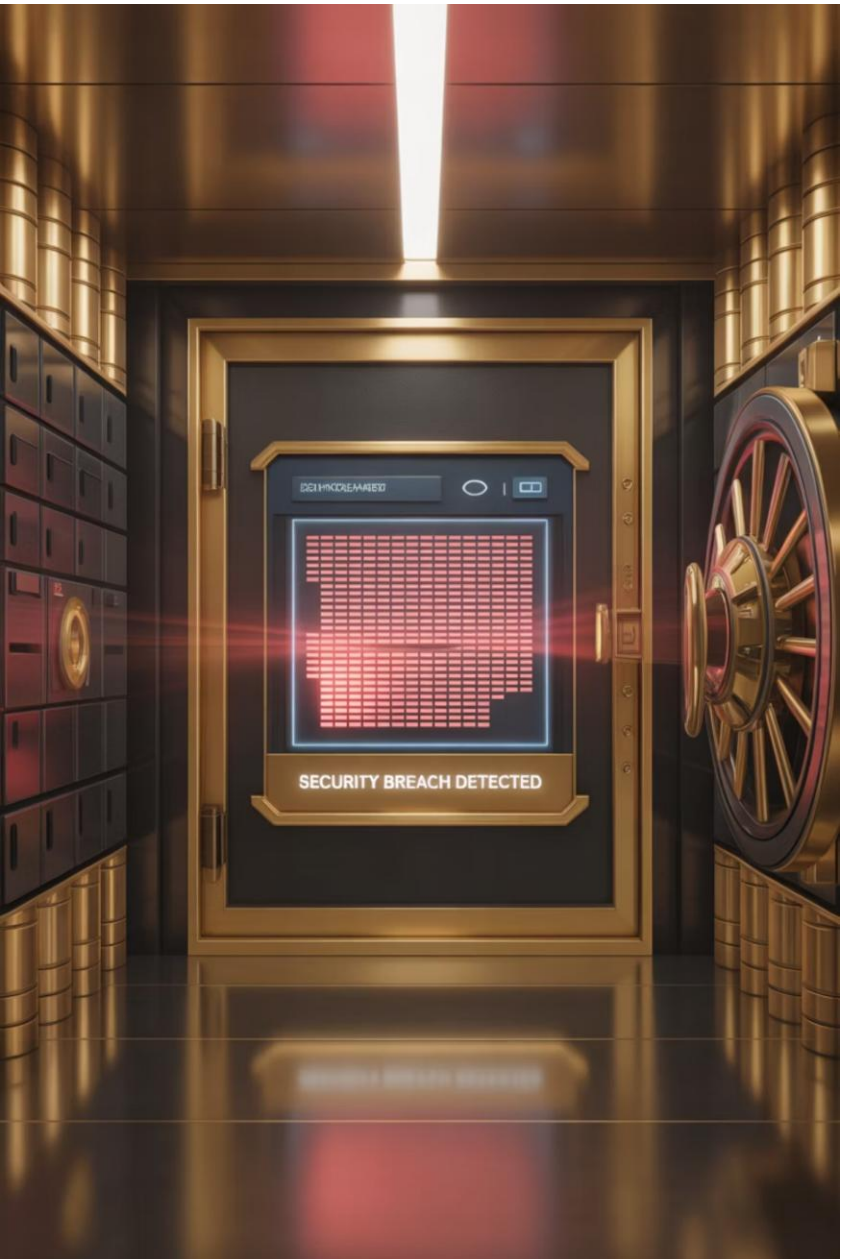
Human Error
Incorrect application of complex numbering formats

Incomplete Submission
Reports not properly registered in regulatory databases

Data Inaccuracies
Manual entry errors compromising record quality

Report Forgery
Falsified documents issued by unlicensed individuals

The Forgery Crisis



The rise of forged valuation reports represents a serious threat to professional integrity. Fake reports bearing the names of legitimate KJPP firms have been used to secure bank loans, qualify for tenders, and facilitate fraudulent asset transactions.

30+

Formal Complaints

Cases of falsified reports recorded by MAPPI between 2020-2023

> **Critical Vulnerability:** The sequential nature of standardized numbering allows forgers to predict and fabricate seemingly authentic report numbers once they obtain a single valid report.

These incidents demonstrate that standardized numbering alone cannot prevent fraud without secure, technology-based authentication mechanisms. A reactive, post-incident investigation approach is insufficient.

Global Digital Authentication Trends

Countries worldwide have adopted digital technologies to combat document fraud and enhance verification. QR Code-based systems have proven particularly effective due to their accessibility, low implementation cost, and user-friendly verification process.

Singapore

Digitally certified property and financial documents with QR verification linked to centralized validation systems

India

Digital Valuation Certificates with Aadhaar-based digital signatures ensuring identity-linked authentication

Hong Kong

Public Key Infrastructure (PKI) systems validating authenticity and origin of digital professional reports

South Korea

PKI-based electronic authentication for government and professional documentation

This study investigates how Indonesia can adapt these proven models to strengthen its valuation profession, developing a practical roadmap for QR Code integration that addresses local challenges while embracing global best practices.

Regulatory Framework for Valuation in Indonesia

Professional Licensing

Indonesia's valuation profession operates under strict Ministry of Finance oversight. **Public Appraisers** must obtain licenses and practice through authorized **Public Appraisal Firms (KJPP)**, which implement quality control systems and business management frameworks.

Valuation Reports

The formal output of professional valuation is the **Valuation Report**—a written expert opinion on economic value prepared according to **Indonesian Valuation Standards (SPI)**.

SPI 105 on "Reporting" provides detailed technical guidance on report contents and format, ensuring consistency and adherence to international best practices across the profession.

This regulatory framework supports credibility by promoting transparency and uniformity, creating a foundation for trust—but requires technological enhancement to prevent document fraud.

PMK 101/2014

Defines Public Appraiser licensing requirements

KJPP Framework

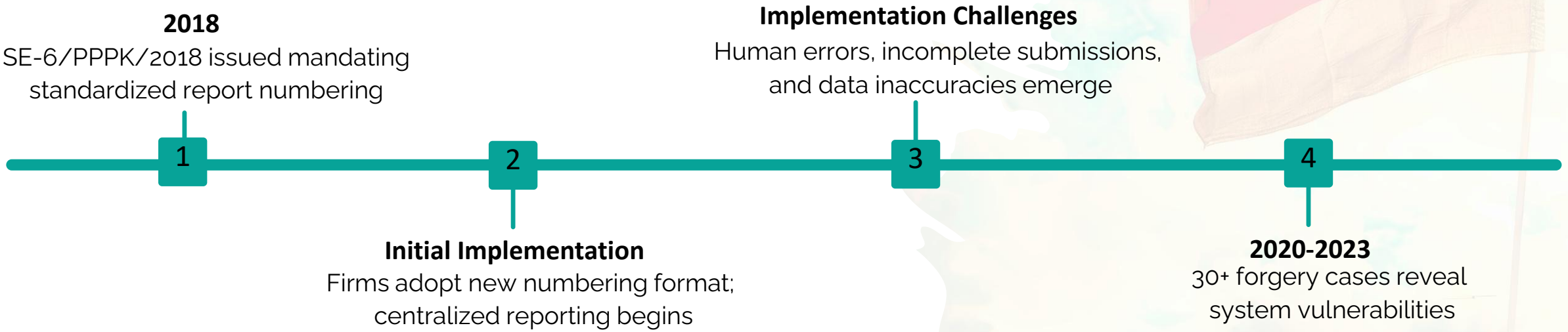
Business entity structure for valuation services

PMK 56/2017

Mandates compliance with SPI standards

Standardization Efforts and Their Limitations

The 2018 introduction of **Circular Letter SE-6/PPPK/2018** represented a significant governance improvement, mandating standardized numbering for valuation reports with unique identification codes comprising multiple components.



Why Standardization Fell Short

Complex Format

The detailed numbering system (sequence number, firm code, service type, industry classification, appraiser license number) proved difficult to apply consistently, leading to frequent mistakes.

Manual Processes

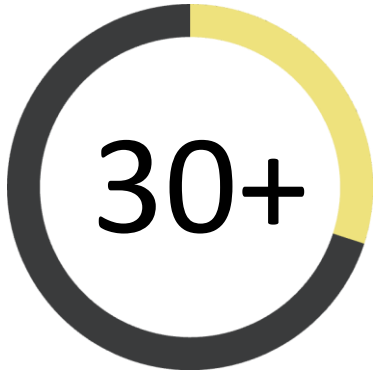
Reliance on manual data entry in Business Activity Reports (LKU) resulted in inaccuracies, omissions, and incomplete regulatory oversight.

Predictability

Sequential numbering created vulnerability—forgers could extrapolate valid numbers from a single genuine report.

These deficiencies underscore the need for **secure, technology-based solutions that authenticate reports and detect improper practices** more effectively than numbering systems alone.

Falsified Reports: Scale and Impact



Documented Cases
Formal complaints recorded 2020-2023

Reactive Discovery
All cases found through post-incident verification

Common Forgery Patterns

- → Fake reports bearing forged KJPP names and counterfeit signatures of legitimate professionals
- → Documents issued by unlicensed individuals falsely claiming professional credentials
- → Manipulated numbering that imitates SE-6/PPPK/2018 standardized format to appear authentic
- → Fraudulent reports used to secure bank financing, qualify for public tenders, or facilitate illegal transactions

Detection Challenges: Fake reports typically surface only when vigilant bank officers or fellow appraisers notice inconsistencies and request verification—highlighting the need for *proactive* rather than reactive authentication.

The sequential numbering system's predictability means forgers can generate plausible fake numbers. A centralized e-government verification system is essential to enable instant authentication before documents are used.

Legal Foundation for Digital Authentication

Indonesia's legal framework provides robust support for implementing digital verification technologies, creating a solid foundation for QR Code integration in valuation reports.

Electronic Signatures Law

ITE Law No. 11/2008 (amended 19/2016) affirms that electronic signatures have equal legal status to handwritten signatures when authenticity, integrity, and traceability criteria are met.

Certification Framework

Government Regulation No. 71/2019 distinguishes certified (TTE) from uncertified digital signatures, with certified signatures from licensed Certificate Authorities carrying greater legal weight.

Audit Profession Precedent

PMK No. 186/PMK.01/2021 mandates QR Codes on Independent Auditor's Reports linked to the PELITA system, successfully reducing forgery and improving public confidence.

QR Codes as Complementary Technology

While certified electronic signatures (TTE) provide the highest level of legal assurance through cryptographic authentication, QR Codes offer an **accessible interim solution** that connects physical or digital documents to centralized verification systems.

Any stakeholder—bank officers, regulators, or the public—can instantly verify a report's legitimacy by scanning the code with a smartphone, without requiring specialized software or internal database access.

The audit profession's successful QR implementation in PELITA demonstrates that this technology effectively prevents falsification while remaining user-friendly. The Ministry of Finance now seeks to extend this proven approach to valuation reports.

International Digital Verification Models

Countries across Asia have implemented sophisticated digital verification ecosystems, offering valuable blueprints for Indonesia's QR Code integration strategy.

Singapore

QR Codes linked to centralized validation for digitally certified property and financial documents, enabling instant public verification through government portals.

India

Digital Valuation Certificates mandate Aadhaar-based digital signatures, creating identity-linked authentication that prevents impersonation and ensures traceability.

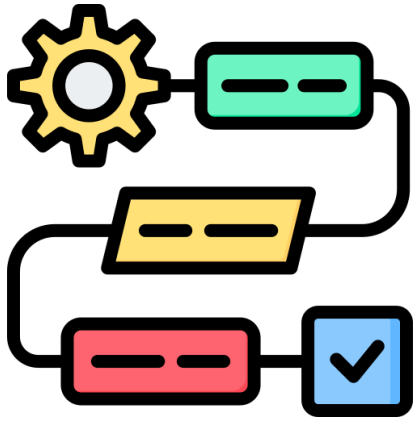
Hong Kong

Public Key Infrastructure (PKI) systems validate authenticity and origin of professional reports through cryptographic certificates issued by government authorities.

South Korea

PKI-based electronic authentication for government and professional documentation, integrated across multiple sectors and widely accepted by institutions.

These regional precedents illustrate a clear trend toward **digital verification standards that balance security with accessibility**, providing Indonesia with proven models to adapt for local implementation.



03

Research Process/Operational Process/Research

Research Methodology

This study employs a qualitative descriptive approach designed as problem-solving inquiry, examining current system deficiencies and developing practical recommendations for QR Code integration.

Problem Diagnosis

Analyze weaknesses in standardized numbering implementation

Benchmarking

Study international digital authentication practices

Solution Design

Formulate QR Code integration framework

Stakeholder Input

Validate approach through consultation

Implementation Planning

Develop phased rollout strategy

The research is exploratory and descriptive rather than hypothesis-testing, focusing on **building understanding and proposing actionable interventions** informed by both Indonesian context and global precedents.

Research Design and Approach

Qualitative Case Study

The study examines Indonesia's valuation report governance as a case study, diagnosing existing vulnerabilities and formulating an improved framework using QR Code technology.

This design captures the complex interplay of regulatory, technical, and behavioral factors affecting innovation adoption in professional reporting.

Data Collection Strategy

The study employed multiple data collection methods to ensure comprehensive understanding and triangulate findings across different sources of evidence.

Archival Analysis	Systematic review of Business Activity Reports (LKU) submitted by KJPPs to assess standardized numbering compliance and identify error patterns
Literature Review	Examination of theoretical frameworks, international best practices in digital authentication, and QR Code implementation studies
Stakeholder Interviews	Semi-structured interviews with MAPPI Valuer Council members (DP MAPPI) capturing expert insights on forgery trends and system requirements
Focus Group Discussion	Intensive technical discussion with IT specialists from MAPPI's PUSPENIT defining implementation scenarios and system specifications

Methodological Strength: Combining documentary evidence, expert knowledge, and technical expertise ensures recommendations are both theoretically sound and practically implementable.

Analytical Framework

Qualitative descriptive analysis synthesized findings through pattern identification, extracting recurring challenges, risks, and opportunities across data sources.

System Diagnosis
Identifying weaknesses in standardized numbering based on documentary and interview data

Forgery Analysis
Evaluating complaint data to understand scope and impact of falsified reports

Benchmarking
Comparative study of international QR and digital authentication initiatives

Roadmap Development
Synthesizing inputs into phased implementation model

Ensuring Rigor

The framework ensures the proposed QR Code solution directly addresses diagnosed issues rather than offering generic recommendations. Each analytical stage builds on previous findings.

Balancing Perspectives

Analysis accounts for both technical requirements (system architecture, security) and institutional considerations (regulatory changes, user acceptance, professional culture).

By systematically breaking down analysis into interconnected components, the study developed recommendations that are **evidence-based, contextually appropriate, and operationally feasible.**

04

RESULT

Key Findings: The Forgery Problem

Investigations by MAPPI's Valuer Professional Council and the Ministry's PPPK division have documented a troubling pattern of fraudulent valuation reports undermining professional integrity.

30+
Documented Cases
Formal complaints 2020-2023

100%
Reactive Detection
All discovered post-incident

0
Proactive Prevention
Current verification capability

Common Fraud Characteristics

Identity Theft: Reports bearing forged names and signatures of legitimate KJPP firms and licensed appraisers	**Number Manipulation:** Fake standardized numbers that superficially conform to SE-6/PPPK/2018 format
Unlicensed Practice: Documents issued by individuals with no professional credentials	**Financial Exploitation:** Fraudulent reports used for bank loans, tender qualifications, illegal transactions

> **Critical Insight:** MAPPI Board members emphasized that vigilant users—bank officers questioning inconsistencies—are currently the primary detection mechanism. This reactive approach leaves significant gaps in protection.

The sequential numbering system's predictability enables sophisticated forgery. Real-time, user-accessible verification through QR Codes would transform detection from reactive to proactive.

Focus Group: Pathways to Digital Solutions

The technical focus group with MAPPI's IT experts and KJPP representatives provided crucial insights into implementation strategies, revealing both opportunities and challenges for QR Code adoption.

Electronic Signatures: The Long-Term Vision

Ideal Solution: Certified electronic signatures (TTE) backed by government-authorized Certificate Authorities would provide cryptographic authentication, making document alteration virtually impossible.

As defined in Indonesia's ITE Law, certified e-signatures link verified identity to documents in tamper-evident ways.

Implementation Barriers: Not all KJPPs possess necessary infrastructure, technical expertise, or financial resources. Smaller firms lack IT systems for digital signature management.

Client and institutional acceptance remains uneven—many still expect physical signed documents.

The focus group concluded that while TTE represents the ultimate goal, **immediate implementation would face significant adoption barriers**, necessitating an interim approach.

QR Codes: The Practical First Step

The focus group strongly endorsed QR Code integration as an **attainable short-term solution** that delivers immediate fraud reduction benefits while the profession prepares for full digital signature adoption.

Alternative I: Full TTE Implementation
Certified digital signatures on all reports—ideal but faces infrastructure, cost, and acceptance barriers in near term

Alternative II: QR Code Integration
Embed QR codes in existing issuance process as "digital stamp" linking reports to official registry—practical and implementable now

Why QR Codes Work as Interim Solution

Low Barrier to Entry
No specialized hardware required; smartphone scanning is ubiquitous and familiar to users across demographics

Immediate Deterrence
Links documents to official registry, making forgery significantly harder without requiring full PKI infrastructure

Proven Precedent
Audit profession's PELITA system demonstrates effectiveness; public already comfortable with QR verification

The group conceptualized QR Codes as **a form of uncertified digital signature or seal**—not carrying full legal weight of TTE, but vastly superior to current practice and deployable immediately.

Technical Implementation Considerations

The focus group identified critical requirements and potential challenges that must be addressed for successful QR Code deployment in valuation reporting.

01

Real-Time Database Integration

QR codes must link to PPPK's eLSa-PK system in real-time at generation, ensuring immediate registration and preventing data mismatches or exploitation through delayed syncing

02

System Reliability & Capacity

Infrastructure must handle tens of thousands of monthly reports and scans without significant downtime—critical given tight SLA requirements in banking valuations

03

Workflow Integration

Generation process must integrate smoothly with existing KJPP workflows (e.g., through e-Valuation platform) to ensure compliance rather than workarounds

04

Number Booking Accommodation

System must allow provisional QR codes or number reservations for large projects while maintaining integrity through time-limited validity

Implementation Models Discussed

Government-Hosted

Centralized control ensures standardization but requires capacity scaling

Firm-Level Systems

Flexible but creates standardization challenges and disadvantages smaller firms

MAPPI e-Valuation Platform

Leverages existing infrastructure, incentivizes platform adoption, accessible to all firms

Consensus Solution: All approaches must connect to central PPPK database via secure API, ensuring single source of truth regardless of generation method.

User Experience and Adoption Strategy

The focus group emphasized that **ease of use will determine adoption success**. If QR Code generation feels burdensome, appraisers may resist or find workarounds, undermining system effectiveness.

For Appraisers

QR generation should integrate seamlessly into report finalization—ideally a one-click function within e-Valuation software or web portal. The process must be quick and add demonstrable value by proving report authenticity.

For Verifiers

Scanning should lead to clear, immediate confirmation via simple web page or mobile app showing report details and validity. Accessibility drives trust and routine verification practice.

Software Integration

Plugin for e-Valuation platform enabling automated QR insertion during report finalization

Web Portal Access

Simple interface for firms not using e-Valuation to request and download QR codes

Verification App

Mobile application or responsive website for instant scanning and authentication confirmation

If appraisers see the system as convenient and adding value, and report users find scanning easy and trustworthy, **QR Code integration will achieve widespread voluntary compliance** even before formal enforcement.

Five-Stage Implementation Roadmap

Drawing from stakeholder input and international benchmarking, the study proposes a structured, phased approach ensuring smooth transition and sustainable operation of QR Code verification.

Stage 1: Infrastructure Preparation (6 months)

Upgrade eLSa-PK database and e-Valuation platform; develop backend QR generation service and API; enhance server capacity and cybersecurity; conduct internal testing

Stage 2: Pre-Regulation (6 months)

Stakeholder consultations with KJPPs, MAPPI, banks, and users; draft regulatory circulars mandating QR usage; define data structure, security measures, and compliance requirements; early socialization workshops

Stage 3: System Development (3 months)

Build user interfaces for KJPP portals and verification platforms; develop verification app/website; pilot testing with volunteer firms; bug resolution and performance optimization

Stage 4: Socialization (3 months)

Comprehensive training programs for appraisers and KJPP staff; publish user guides, tutorials, SOPs; regional workshops and webinars; educate report users (banks, agencies); establish helpdesk support

Stage 5: Launch & Continuous Improvement

Official activation date for mandatory QR inclusion; compliance monitoring and support; establish feedback loop; usage analytics and iterative refinement; ongoing training for new practitioners

05

CONCLUSION

Conclusion: Strengthening Trust Through Technology

Current Reality

Standardized numbering (SE-6/PPPK/2018) improved structure but cannot prevent document falsification or enable real-time verification. Continued forgery cases expose administrative control limitations.

Transformative Solution

QR Code integration offers practical, scalable authentication—shifting verification from reactive investigation to proactive instant confirmation through accessible technology.

Enhanced Trust

Stakeholders can instantly verify report authenticity, strengthening confidence in profession

Fraud Prevention

Direct link to regulatory records makes forgery significantly more difficult to execute

Administrative Efficiency

Automated verification reduces manual oversight burden and improves governance

Global Alignment

Positions Indonesia alongside international best Practices in digital certificatio

> The five-stage roadmap—infrastructure development, regulatory alignment, system design, stakeholder socialization, and phased activation—ensures QR Code adoption can be executed effectively and inclusively while supporting longer-term transition toward certified electronic signatures.

By adopting QR Code verification, Indonesia's valuation profession takes a strategic step toward digital transformation, advancing transparency, accountability, and professional credibility within an increasingly competitive global landscape.

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