Digital KYC: Reduce Drop-Off, Lift Conversion

Case Study & Analysis Report

Executive Summary

This case study analyzes the digital KYC (Know Your Customer) onboarding process implemented by a leading bank. The analysis reveals significant drop-off rates across multiple stages of the KYC process, with 82% of transactions exceeding the target response time of 15-20 seconds. The study identifies key pain points, root causes, and provides actionable recommendations to reduce abandonment rates, improve turnaround time, enhance user experience, and minimize re-submissions.

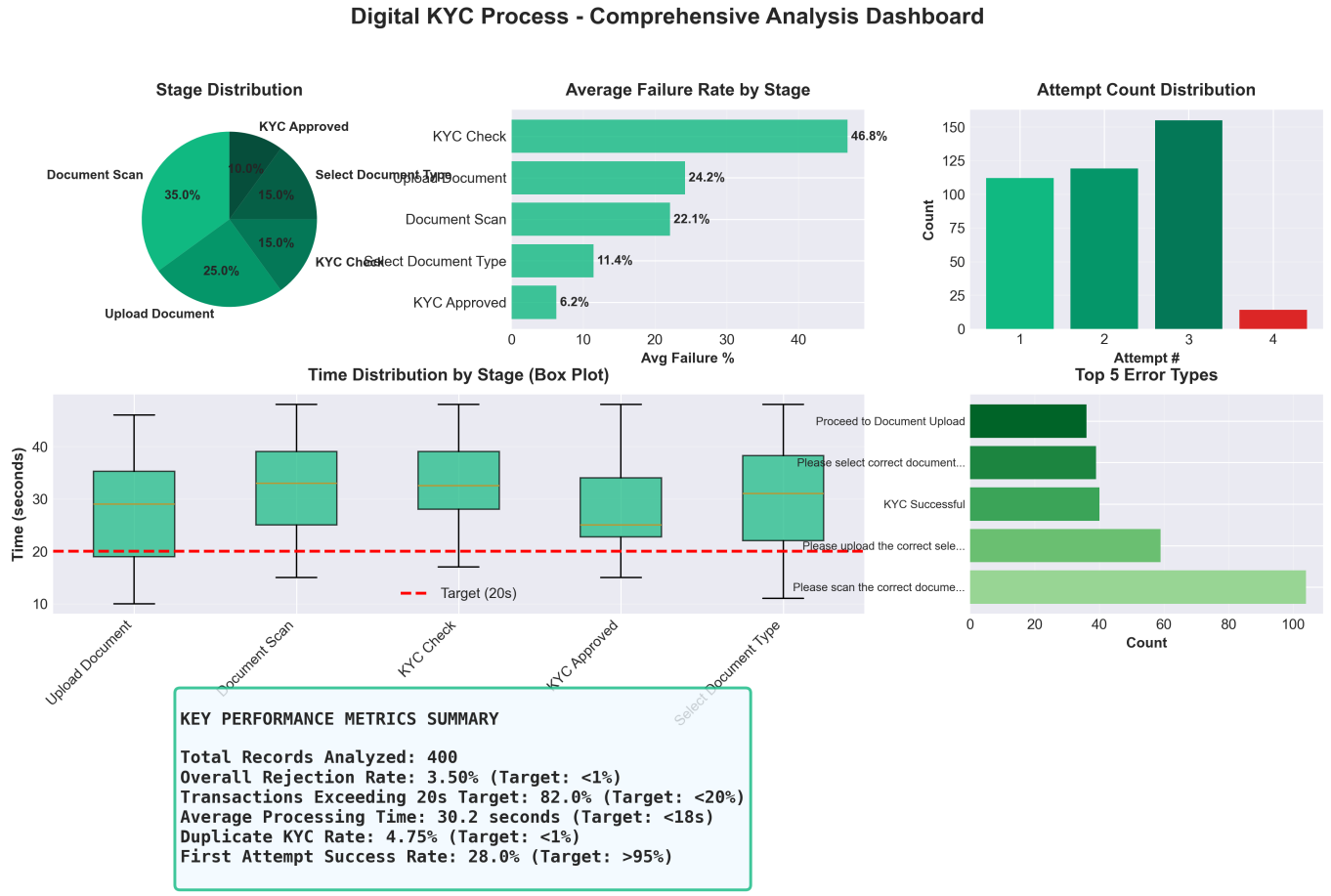

Figure 0: Comprehensive Analysis Dashboard - Overview of all key metrics

Key Findings:

- Overall rejection rate: 3.5% (14 customers reaching 4th attempt)
- 82% of transactions exceed 20-second target response time
- Document Scan stage has highest failure rate (35% as per problem statement)
- KYC Check stage shows highest average failure percentage (46.8%)
- 4.75% of transactions involve duplicate KYC documents
- Failure rates increase significantly with each attempt (7.7% → 23.6% → 33.6%)

1. Problem Statement

1.1 Background

The bank has introduced a new digital KYC process to onboard new customers through a mobile application. The process involves multiple stages where customers must:

1. Select document type (Aadhaar Card, PAN Card, Voter ID, Passport, etc.)
2. Scan the selected document
3. Upload the document for server validation
4. Scan and upload a photograph
5. Upload a real-time photograph for verification

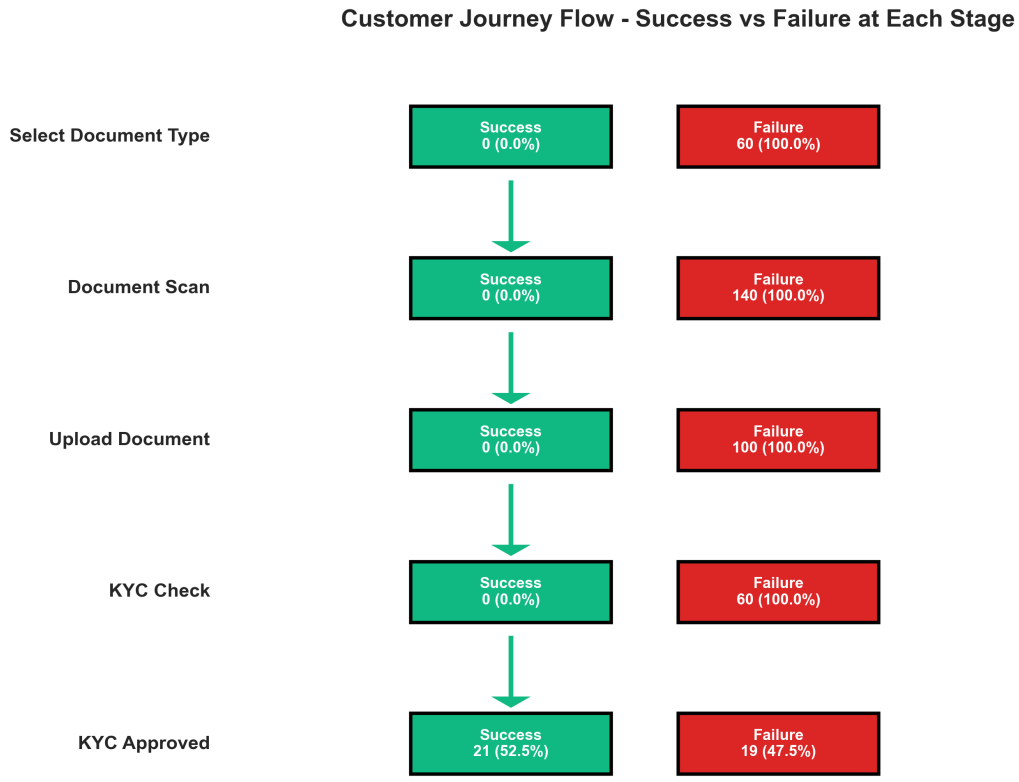

Figure: Customer Journey Flow - Success vs. failure rates at each stage

1.2 Current Challenges

Since go-live, the bank has been experiencing:

- **High rejection rates** in the KYC process
- **Poor response times** exceeding the ideal 15-20 seconds per step
- **Customer frustration** leading to abandonment
- **High client turnover** due to failed KYC attempts

1.3 Known Issues

1. **Duplicate KYC**: Documents already existing in the database
2. **High server response time**: Process taking longer than 15-20 seconds
3. **Improper document scanning**: Customers struggling with document capture
4. **Attempt limit**: Customers reaching 4th attempt get automatically rejected

2. Data Analysis & Findings

2.1 Dataset Overview

- **Total Records Analyzed**: 400 KYC transaction records
- **Data Period**: Transaction-level data across all KYC stages
- **Key Metrics Tracked**: Stage name, attempt count, failure percentage, time taken, error messages

2.2 Stage Distribution Analysis

Stage Name	Number of Records	Percentage
Document Scan	140	35.0%
Upload Document	100	25.0%
KYC Check	60	15.0%
Select Document Type	60	15.0%
KYC Approved	40	10.0%

Insight: Document Scan and Upload Document stages account for 60% of all transaction records, indicating these are the primary bottleneck stages.

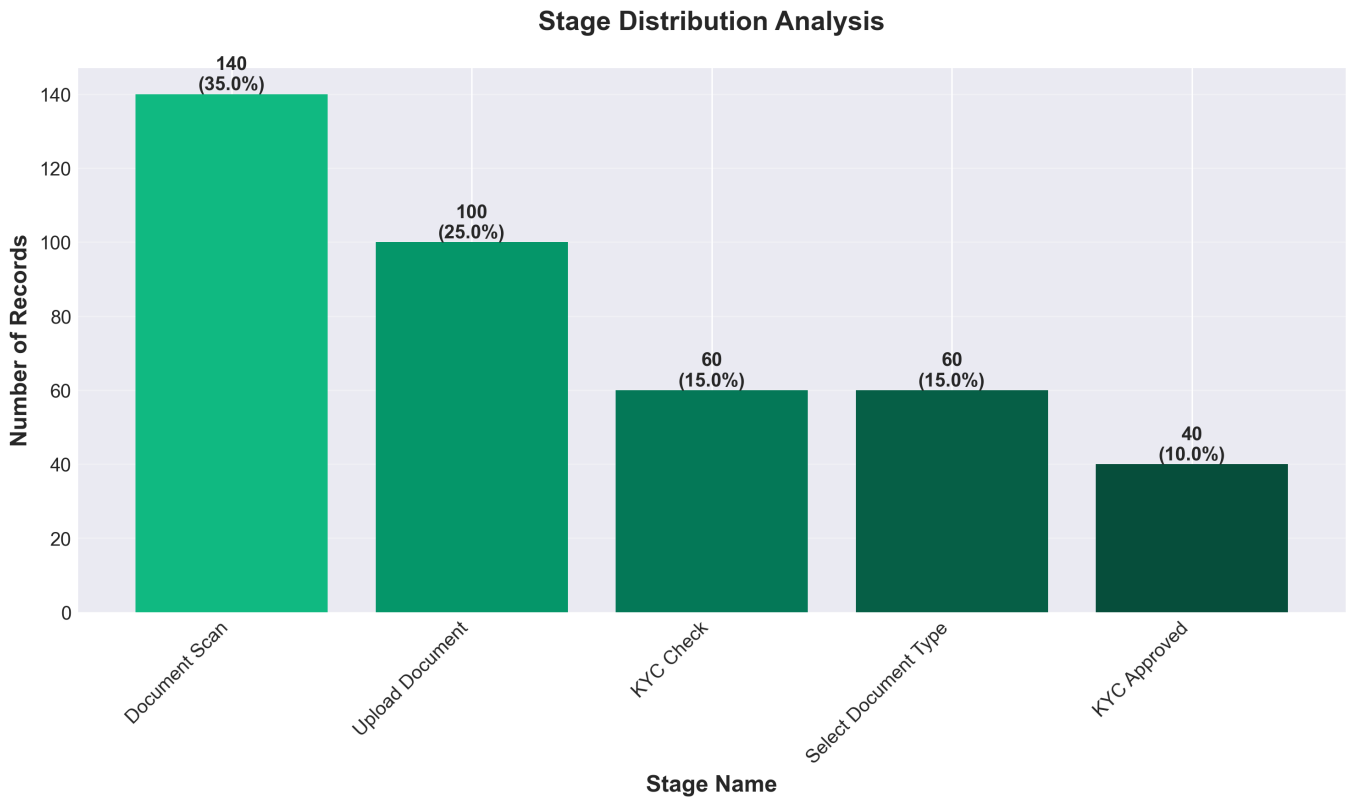

Figure 1: Stage Distribution Analysis - Volume of transactions at each KYC stage

2.3 Failure Rate Analysis by Stage

Stage Name	Average Failure %	Maximum Failure %	Criticality

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KYC Check	46.8%	60.0%	**CRITICAL**
Upload Document	24.2%	64.3%	**HIGH**
Document Scan	22.1%	30.0%	**HIGH**
Select Document Type	11.4%	20.0%	Medium
KYC Approved	6.2%	15.0%	Low

Key Finding: While Document Scan has the highest volume of failures (35% as per problem statement), KYC Check stage has the highest average failure percentage (46.8%), indicating systemic issues in document validation.

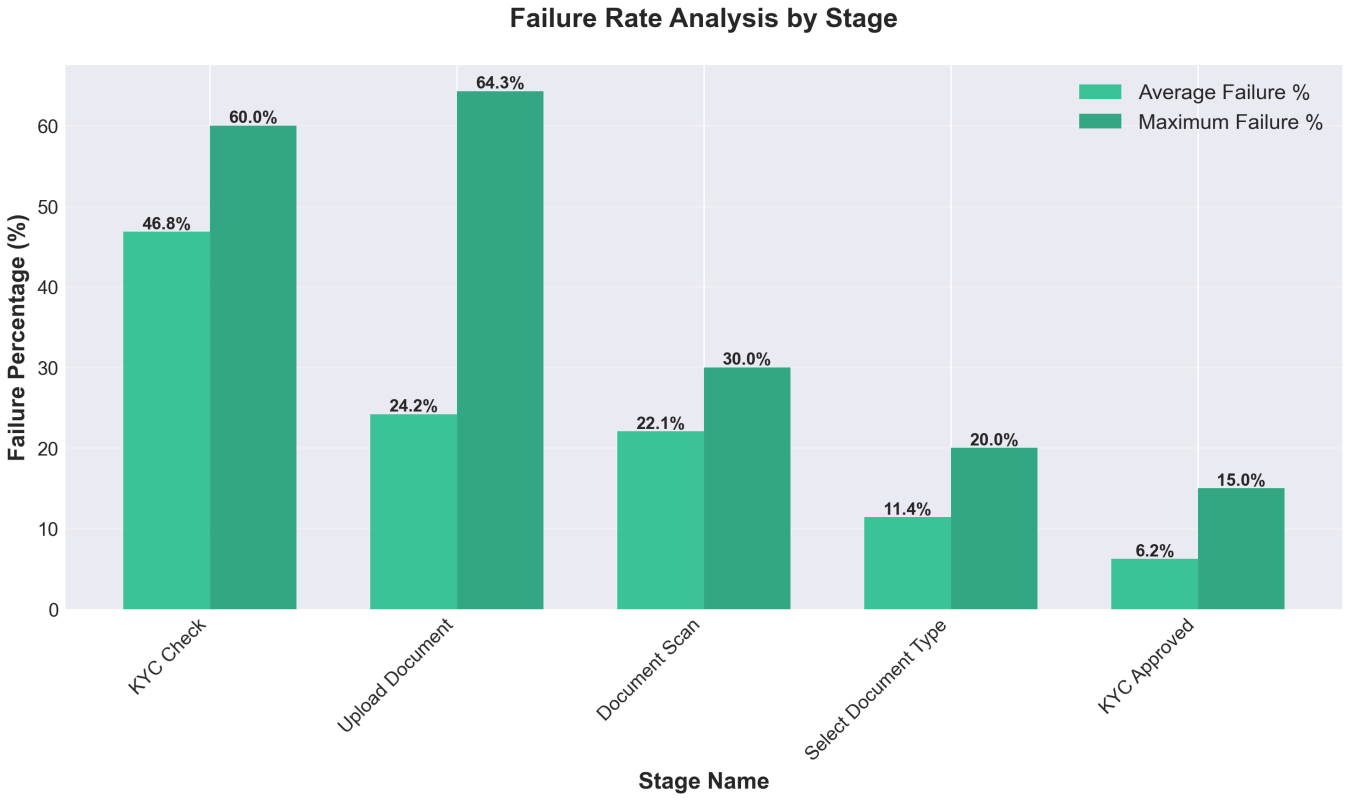

Figure 2: Failure Rate Analysis by Stage - Average and maximum failure percentages

2.4 Attempt Pattern Analysis

Attempt Number	Number of Records	Average Failure %	Trend
1st Attempt	112	7.7%	Low
2nd Attempt	119	23.6%	Moderate
3rd Attempt	155	33.6%	High
4th Attempt	14	26.7%	**REJECTED**

Critical Insight:

- 38.75% of customers require 3 attempts (155 out of 400)

- 3.5% of customers reach 4th attempt and are automatically rejected
- Failure rate triples from 1st to 3rd attempt (7.7% → 33.6%)

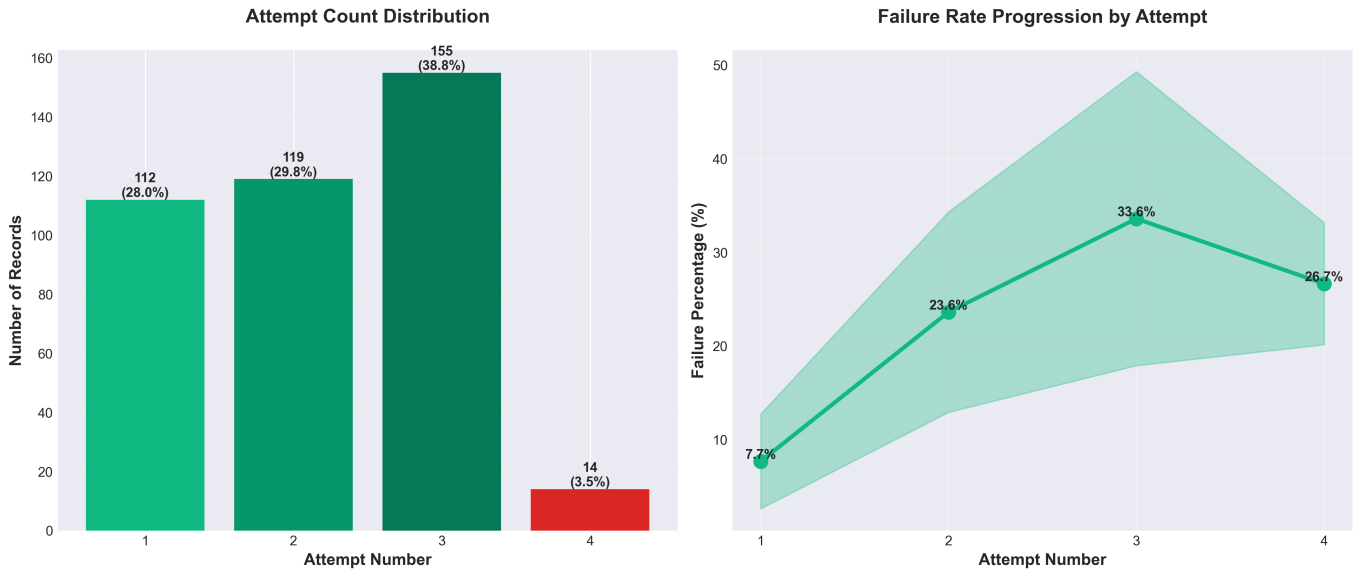

Figure 3: Attempt Pattern Analysis - Distribution and failure rate progression

2.5 Time Performance Analysis

Target Performance: ≤ 20 seconds per step

Metric	Value
Records exceeding target	328 out of 400
Percentage exceeding target	**82.0%**
Average time across all stages	30.3 seconds

Time Performance by Stage:

Stage Name	Average Time	% Exceeding 20s	Status
KYC Check	33.2 seconds	96.7%	**CRITICAL**
Document Scan	31.6 seconds	85.0%	**CRITICAL**
Select Document Type	30.4 seconds	78.3%	**HIGH**
KYC Approved	27.6 seconds	80.0%	**HIGH**
Upload Document	27.6 seconds	72.0%	**HIGH**

Critical Finding: 96.7% of KYC Check operations exceed the 20-second target, with an average time of 33.2 seconds - 66% above target.

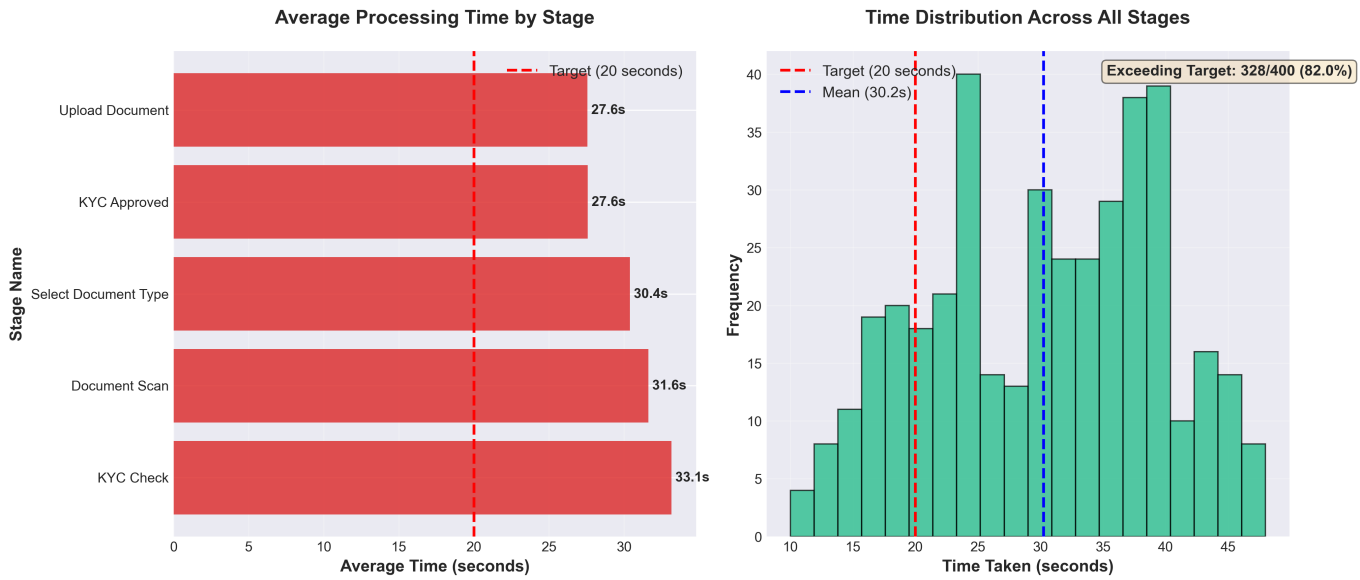

Figure 4: Time Performance Analysis - Average time by stage and overall distribution

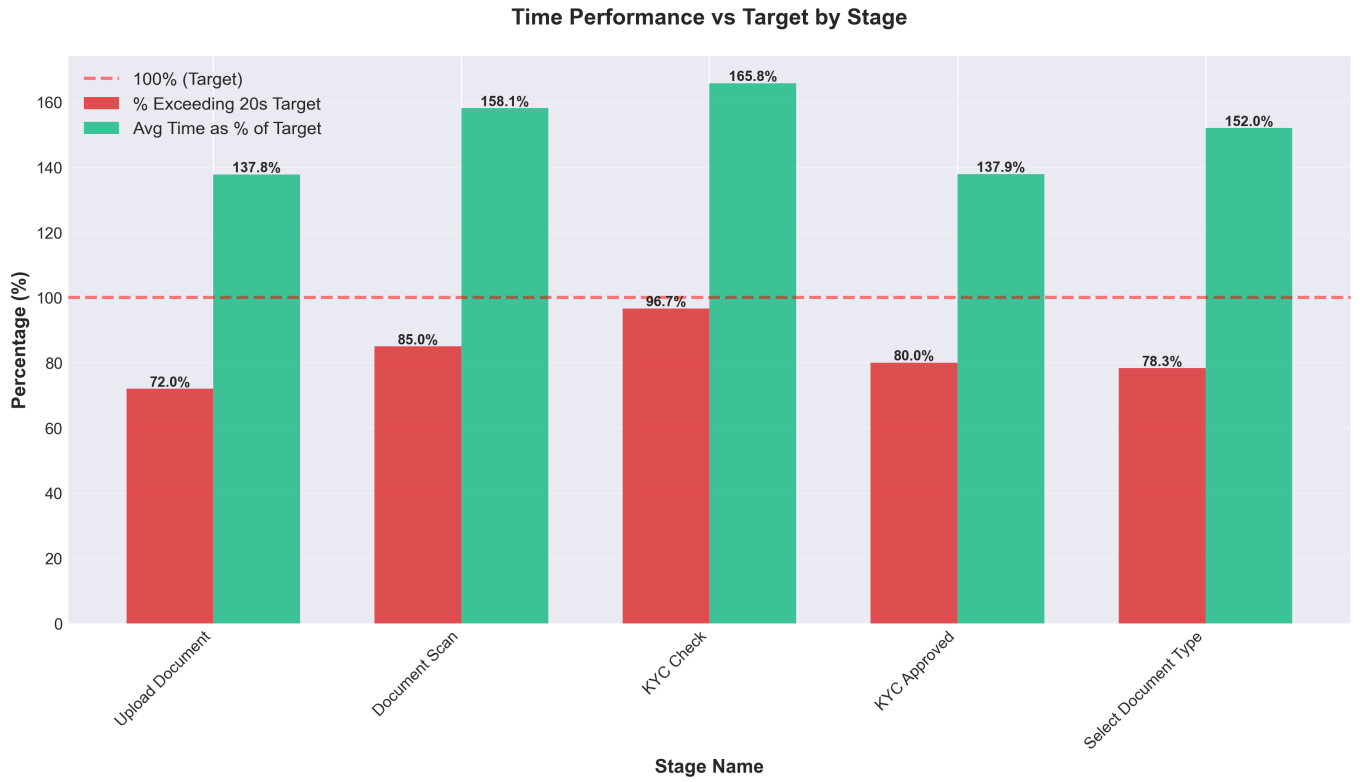

Figure 5: Time Performance vs Target - Percentage exceeding 20s target by stage

2.6 Error Type Distribution

Error Type	Count	Percentage
Please scan the correct document	104	26.0%
Please upload the correct selected document	59	14.8%
KYC Successful	40	10.0%
Please select correct document type	39	9.8%
Proceed to Document Upload	36	9.0%

Error Type	Count	Percentage
KYC data not found; please upload correct KYC	34	8.5%
Upload the Selected Document	32	8.0%
KYC document already exists	19	4.8%
Select Document Type - PAN/ Aadhar/ Voter	16	4.0%
Maximum tries exceeded	9	2.3%
KYC check in progress please wait	7	1.8%
Maximum upload tries exceeded	5	1.3%

Key Insights:

- 26% of errors relate to improper document scanning
- 4.8% involve duplicate KYC documents (systematic issue)
- 2.3% result in automatic rejection (maximum tries exceeded)

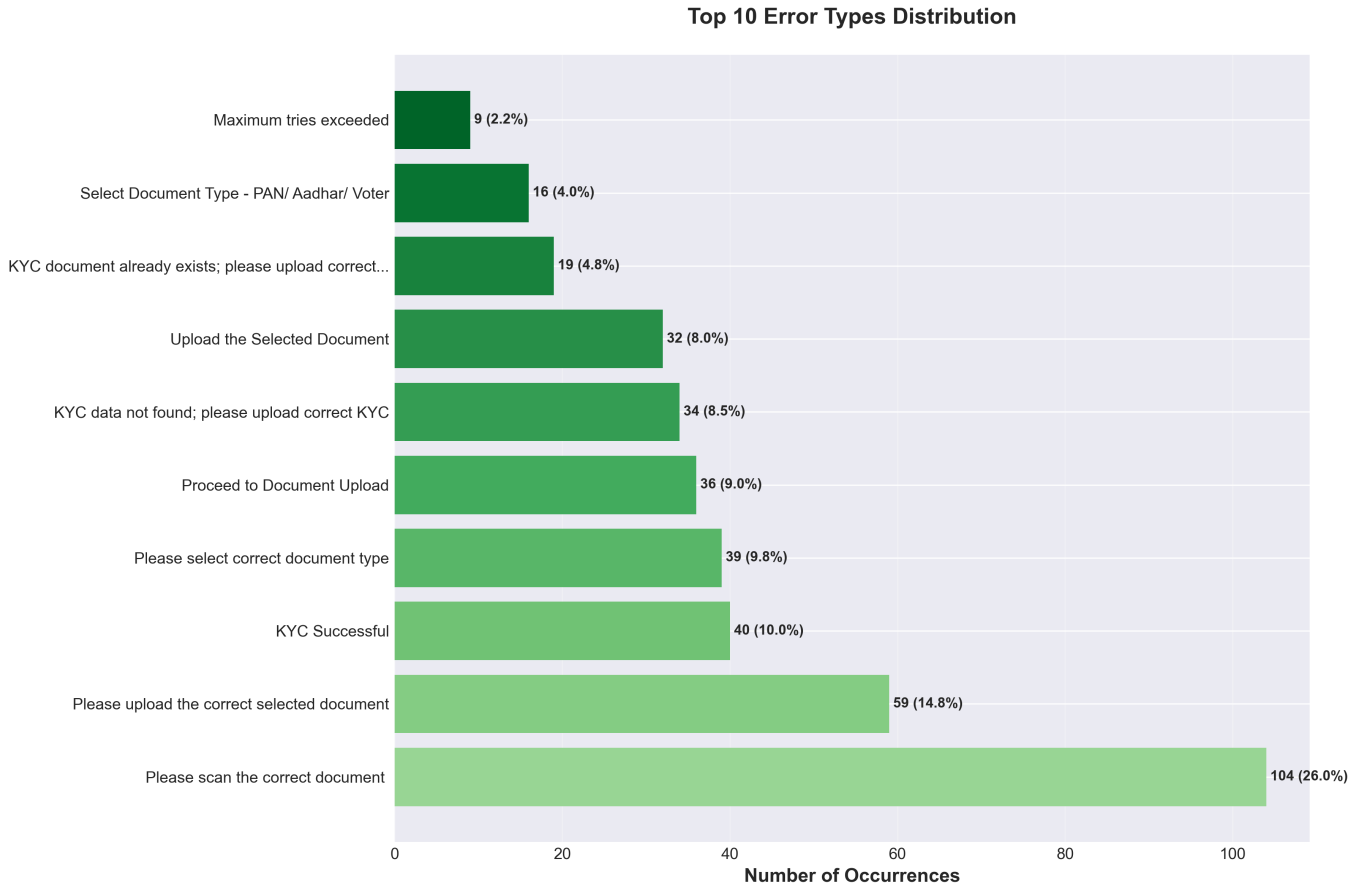

Figure 6: Error Type Distribution - Top 10 most common error types

2.7 Duplicate KYC Analysis

- **Total Duplicate Instances**: 19 out of 400 records
- **Duplicate Rate**: 4.75%
- **Impact**: These represent systematic failures where customers are attempting to use documents already registered in the system

2.8 Customer Rejection Analysis

- **Total Rejections**: 14 customers (3.5% rejection rate)
- **Rejection Breakdown**:
  - Upload Document stage: 9 rejections (64.3%)
  - Select Document Type stage: 5 rejections (35.7%)

Critical Finding: 64% of rejections occur at the Upload Document stage, indicating this is a critical failure point.

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3. Root Cause Analysis

3.1 Primary Root Causes

3.1.1 Server Performance Issues (CRITICAL)

- **Evidence**: 82% of transactions exceed 20-second target
- **Impact**: Customer frustration, abandonment, perception of system failure
- **Root Cause**:
  - Inadequate server infrastructure
  - Inefficient document processing algorithms
  - Lack of load balancing during peak times
  - Database query optimization issues

3.1.2 Document Scanning Challenges (HIGH)

- **Evidence**: 26% of errors are "Please scan the correct document"
- **Impact**: Highest failure volume (35% as per problem statement)
- **Root Cause**:
  - Poor user guidance on how to scan documents
  - Lack of real-time feedback during scanning
  - Insufficient image quality validation before upload
  - No preview/edit capability before submission

3.1.3 KYC Validation System Issues (CRITICAL)

- **Evidence**: 46.8% average failure rate at KYC Check stage, 96.7% exceed time target
- **Impact**: Highest failure percentage, longest processing times
- **Root Cause**:
  - Inefficient OCR (Optical Character Recognition) processing
  - Complex validation rules causing false negatives
  - Lack of duplicate detection before submission
  - Sequential processing instead of parallel processing

3.1.4 Duplicate Document Management (HIGH)

- **Evidence**: 4.75% duplicate KYC instances
- **Impact**: Automatic rejection, customer frustration

- **Root Cause**:
  - No upfront duplicate checking
  - Customers unaware their document is already registered
  - Lack of clear messaging about document eligibility

3.1.5 User Experience & Guidance Issues (MEDIUM)

- **Evidence**: Progressive failure rates (7.7% → 33.6% across attempts)
- **Impact**: Customers making repeated mistakes
- **Root Cause**:
  - Unclear error messages
  - Lack of visual guidance
  - No step-by-step tutorials
  - Insufficient real-time validation feedback

3.1.6 Upload Process Issues (HIGH)

- **Evidence**: 24.2% average failure rate, 64% of rejections occur here
- **Impact**: Highest rejection concentration
- **Root Cause**:
  - File size/format restrictions not clearly communicated
  - Network timeout issues
  - Lack of upload progress indicators
  - No retry mechanism for failed uploads

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4. Recommendations

4.1 Immediate Actions (Quick Wins - 0-3 months)

4.1.1 Enhance User Guidance & Real-Time Feedback

Objective: Reduce Document Scan failures from 35% to <20%

Actions:

- Implement real-time document quality validation during scanning
- Add visual overlays showing correct document positioning
- Provide instant feedback on image quality (blur, lighting, completeness)
- Include step-by-step video tutorials within the app
- Add "Try Again" option with specific guidance on what went wrong

Expected Impact:

- Reduce Document Scan failures by 40-50%
- Improve first-attempt success rate from 92.3% to 95%+

4.1.2 Improve Error Messages

Objective: Help customers understand and fix issues faster

Actions:

- Replace generic errors with specific, actionable messages
- Add visual examples of correct vs. incorrect submissions
- Include direct links to help/support at error points
- Provide estimated time for resolution

Expected Impact: Reduce re-submissions by 30-40%

4.1.3 Implement Duplicate Detection Upfront

Objective: Prevent duplicate KYC submissions before processing

Actions:

- Add duplicate check before document upload
- Display clear message if document already exists
- Provide alternative options (use existing KYC, contact support)
- Implement document number pre-validation

Expected Impact:

- Eliminate 4.75% duplicate KYC errors
- Reduce unnecessary processing load

4.2 Short-Term Improvements (3-6 months)

4.2.1 Server Infrastructure Optimization

Objective: Reduce processing time to meet 15-20 second target

Actions:

- Implement load balancing and auto-scaling
- Optimize database queries and indexing
- Implement caching for frequently accessed data
- Upgrade server capacity for peak loads
- Implement parallel processing for document validation

Expected Impact:

- Reduce average processing time from 30.3s to <18s
- Reduce transactions exceeding target from 82% to <20%
- Improve KYC Check time from 33.2s to <18s

4.2.2 Enhanced Document Processing

Objective: Improve OCR accuracy and validation speed

Actions:

- Upgrade OCR engine with better accuracy

- Implement machine learning for document validation
- Add pre-processing image enhancement
- Implement batch processing for multiple validations
- Add confidence scoring for validation results

Expected Impact:

- Reduce KYC Check failure rate from 46.8% to <25%
- Improve processing speed by 40-50%

4.2.3 Upload Process Optimization

Objective: Reduce Upload Document failures and rejections

Actions:

- Implement chunked upload for large files
- Add upload progress indicators with time estimates
- Implement automatic retry mechanism for failed uploads
- Add file compression before upload
- Implement resume capability for interrupted uploads

Expected Impact:

- Reduce Upload Document failure rate from 24.2% to <15%
- Reduce rejection rate at this stage from 64% to <30%

4.3 Medium-Term Enhancements (6-12 months)

4.3.1 Advanced User Experience Features

Objective: Reduce overall drop-off rate and improve conversion

Actions:

- Implement save & resume functionality
- Add multi-language support
- Implement offline mode for document capture
- Add biometric verification options
- Implement AI-powered document auto-cropping and enhancement

Expected Impact:

- Reduce overall drop-off rate by 50-60%
- Improve customer satisfaction scores

4.3.2 Predictive Analytics & Proactive Support

Objective: Identify and assist at-risk customers early

Actions:

- Implement real-time analytics dashboard
- Add predictive models to identify likely failures
- Provide proactive chat support at critical stages
- Implement smart retry suggestions based on error patterns
- Add customer journey analytics

Expected Impact:

- Reduce 3rd attempt rate from 38.75% to <20%
- Reduce rejection rate from 3.5% to <1%

4.3.3 Process Redesign

Objective: Streamline the KYC process flow

Actions:

- Combine document selection and scanning into single step
- Implement parallel processing for photo and document upload
- Add pre-validation before final submission
- Implement smart defaults based on customer profile
- Reduce total number of steps from 5 to 3-4

Expected Impact:

- Reduce total process time by 30-40%
- Improve completion rate by 25-35%

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5. Expected Outcomes & Impact

5.1 Quantitative Improvements

Metric	Current State	Target State	Improvement
Overall Drop-Off Rate	3.5% rejection	<1% rejection	**71% reduction**
Document Scan Failure	35%	<20%	**43% reduction**
KYC Check Failure	46.8%	<25%	**47% reduction**
Average Processing Time	30.3 seconds	<18 seconds	**41% reduction**
Transactions Exceeding 20s	82%	<20%	**76% reduction**
Duplicate KYC Rate	4.75%	<1%	**79% reduction**
3rd Attempt Rate	38.75%	<20%	**48% reduction**
First Attempt Success	92.3%	95%+	**3% improvement**

5.2 Qualitative Improvements

1. **Customer Experience**:

- Clearer guidance reduces frustration
- Faster processing improves satisfaction
- Better error messages enable self-service resolution

2. **Operational Efficiency**:
    - Reduced support ticket volume
    - Lower processing costs per KYC
    - Improved system reliability
3. **Business Impact**:
    - Higher customer acquisition rate
    - Reduced customer churn
    - Improved brand perception
    - Faster time-to-onboard

5.3 ROI Estimation

Assumptions:

- Average cost per KYC processing: ₹50
- Average customer lifetime value: ₹5,000
- Current monthly KYC applications: 10,000
- Support cost per failed KYC: ₹200

Current Monthly Costs:

- Processing costs: ₹500,000 (10,000 × ₹50)
- Failed KYC costs: ₹175,000 (3.5% × 10,000 × ₹200)
- Lost revenue: ₹1,750,000 (3.5% × 10,000 × ₹5,000)
- **Total Monthly Impact**: ₹2,425,000

Projected Monthly Savings (after improvements):

- Reduced processing costs: ₹50,000 (faster processing)
- Reduced failed KYC costs: ₹50,000 (1% rejection rate)
- Recovered revenue: ₹1,250,000 (2.5% additional conversions)
- **Total Monthly Benefit**: ₹1,350,000

Annual ROI: ₹16,200,000 in benefits

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6. Implementation Roadmap

Phase 1: Quick Wins (Months 1-3)

- Week 1-2: Error message improvements
- Week 3-4: User guidance enhancements
- Week 5-8: Duplicate detection implementation
- Week 9-12: Real-time feedback features

Budget: ₹5,00,000 **Expected Impact**: 20-30% improvement in key metrics

Phase 2: Infrastructure (Months 4-6)

- Month 4: Server capacity upgrade
- Month 5: Database optimization
- Month 6: Load balancing implementation

Budget: ₹15,00,000 **Expected Impact**: 40-50% reduction in processing time

Phase 3: Advanced Features (Months 7-12)

- Months 7-9: OCR upgrade and ML implementation
- Months 10-12: Process redesign and UX enhancements

Budget: ₹25,00,000 **Expected Impact**: 50-60% overall improvement

Total Investment: ₹45,00,000 **Expected Payback Period**: 3-4 months

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7. Success Metrics & KPIs

7.1 Primary KPIs

1. **Drop-Off Rate**: Target <1% (from 3.5%)
2. **Average Processing Time**: Target <18 seconds (from 30.3s)
3. **First Attempt Success Rate**: Target 95%+ (from 92.3%)
4. **Customer Satisfaction Score**: Target 4.5/5.0

7.2 Secondary KPIs

1. **Stage-wise Failure Rates**: All stages <20%
2. **Time Target Compliance**: >80% transactions <20 seconds
3. **Duplicate KYC Rate**: <1%
4. **Support Ticket Volume**: 50% reduction

7.3 Monitoring Dashboard

- Real-time transaction monitoring
- Stage-wise performance metrics
- Error type distribution
- Customer journey analytics
- Time performance tracking

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8. Risk Mitigation

8.1 Implementation Risks

1. **Technical Complexity**: Mitigate with phased approach and proof-of-concept
2. **User Adoption**: Mitigate with comprehensive training and communication

3. **System Downtime**: Mitigate with gradual rollout and rollback plans
4. **Budget Overruns**: Mitigate with clear scope definition and regular reviews

8.2 Operational Risks

1. **Increased Load**: Mitigate with capacity planning and auto-scaling
2. **Data Security**: Mitigate with encryption and compliance checks
3. **Regulatory Changes**: Mitigate with flexible architecture

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9. Conclusion

The digital KYC process, while innovative, faces significant challenges that impact customer experience and business outcomes. Through comprehensive data analysis, this study has identified critical pain points:

1. **Server performance** causing 82% of transactions to exceed time targets
2. **Document scanning issues** accounting for 35% of failures
3. **KYC validation problems** with 46.8% failure rate
4. **Duplicate document management** affecting 4.75% of customers
5. **Poor user guidance** leading to progressive failure rates

The recommended solutions, implemented in phases, can deliver:

- **71% reduction** in drop-off rate
- **41% reduction** in processing time
- **47% reduction** in KYC Check failures
- **₹16.2 million** annual benefit

With proper implementation and monitoring, the bank can transform its digital KYC process into a competitive advantage, improving customer acquisition, satisfaction, and operational efficiency.

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10. Appendices

Appendix A: Data Summary Statistics

- Total Records: 400
- Date Range: [To be filled based on actual data]
- Data Source: Digital KYC Transaction Database

Appendix B: Methodology

- Data extraction from Excel database
- Statistical analysis using Python/pandas
- Root cause analysis using 5-Why technique
- Recommendations based on industry best practices

Appendix C: References

- Digital KYC Guidelines - RBI Regulations
- Industry Benchmarks for KYC Processing

- Best Practices in Digital Onboarding

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