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Impact of Digital KYC on Loan Approval Efficiency in Online Lending: A Case Study of Solfin Sustainable Finance

Roshan Sharma[1], Prof. Anita Mathapati[2]

School of Business, Indira University, Tathawade, Pune – 411033, Maharashtra, India

A B S T R A C T :

Digital KYC is widely credited with speeding up online lending, yet how far a smooth verification step explains the final approval outcome is seldom documented from a practitioner's point of view. This paper examines that relationship using primary data from an eight-week on-the-job training assignment (15 May to 16 July 2026) at Solfin Sustainable Finance (XS Finance and Investment Private Limited), a digital solar-finance lender in Pune. The study follows 32 customer cases and 2 dealer or EPC partners through Aadhaar-OTP-based e-KYC, loan processing and final status, using a descriptive mixed-methods design that combines case-level outcomes with oral feedback gathered during onboarding calls. The KYC step was fast and smooth for 28 of 32 customers (87.5%), and 27 of 32 (84%) rated its ease 4 or 5 out of 5. Even so, only 12 cases (37.5%) were carried through to final approval and 20 (62.5%) were rejected. None of the rejections was attributed to KYC or documentation problems: low CIBIL score accounted for 10 cases, existing loan exposure for 6 and overdue instalments (DPD) for 3, and 1 reason was not recorded. Digital KYC therefore improved speed and convenience at the identity stage, whereas credit risk decided the outcome. As the sample is small and drawn from one office, the findings are indicative and not generalisable. The paper recommends early credit-risk pre-screening and separate tracking of KYC smoothness and final approval.

Keywords: Digital KYC; Online lending; Loan approval efficiency; Credit risk; NBFC; Aadhaar e-KYC

1. Introduction

A lending decision answers two separate questions: who the borrower is, and whether the borrower can repay. Know Your Customer (KYC) verification answers the first and credit assessment answers the second. In India, KYC is governed mainly by the RBI Master Direction on KYC, 2016 and the Prevention of Money-Laundering Act, 2002 (RBI, 2016; Government of India, 2002), while digital lending is guided by the RBI's working-group report and guidelines on digital lending (RBI, 2021; RBI, 2022). Digital KYC, often called KYC 2.0, replaces physical documents and branch visits with methods such as Aadhaar e-KYC with one-time password (OTP) authentication, electronic document verification and the Video Customer Identification Process (V-CIP). These methods can reduce paperwork, manual data entry and repeated customer interaction (Montes & Appaya, 2021).

Nomenclature

CIBIL	Credit Information Bureau (India) Limited (credit score)	NBFC	Non-Banking Financial Company
DPD	Days Past Due	OJT	On-the-Job Training
e-KYC	Electronic Know Your Customer	OTP	One-Time Password
EPC	Engineering, Procurement and Construction (dealer partner)	RBI	Reserve Bank of India
FN	Fortnight	TAT	Turnaround Time
KYC	Know Your Customer	V-CIP	Video Customer Identification Process

Digital KYC is usually presented as a driver of faster loan approval. Identity verification, however, is only the first stage of the lending funnel; a loan is approved only if the applicant also passes credit assessment. Reading a lending funnel correctly therefore requires keeping two quantities apart: how smoothly the KYC step runs, and how many applications finally reach approval. This paper uses a practitioner case to show how far apart those two quantities can be.

The case organisation is Solfin Sustainable Finance, a digital solar-finance platform operated by XS Finance and Investment Private Limited, a Gurugram-headquartered NBFC registered with the Reserve Bank of India and backed by Waaree Energies. Solfin finances rooftop solar for residential, commercial and industrial, and group-housing customers, a segment supported by government schemes such as the PM Surya Ghar: Muft Bijli Yojana. Its residential product, as observed during the training, carries a ₹990 token down payment and no processing fee, and clean-document cases are decisioned in about 20 minutes. The first author worked in dealer and customer onboarding at the Shivaji Nagar, Pune office, which gave direct access to the KYC-to-decision workflow.

The paper makes three contributions. First, it gives a process-level account of how digital KYC is carried out in a real NBFC-partner lending workflow. Second, it reports the time and outcome distribution of 32 customer cases and separates KYC smoothness from final approval. Third, it identifies the recurring causes of rejection and derives low-cost recommendations for improving the onboarding process.

The remainder of the paper is organized as follows. Section 2 reviews the theoretical background and literature, Section 3 states the objectives, Section 4 describes the methodology, Section 5 presents the data analysis and results, Section 6 discusses the findings, Section 7 covers challenges and limitations, Section 8 gives recommendations and scope for future work, and Section 9 concludes.

2. Theoretical background and literature review

2.1 KYC, digital KYC and the regulatory framework

KYC is the mandatory process by which banks, NBFCs and other regulated institutions verify a customer's identity and basic details before establishing a financial relationship. Its purpose is to confirm that the customer is genuine and to prevent identity theft, fraud and money laundering (RBI, 2016). Digital KYC applies digital technologies to the same task and allows lenders to verify customers remotely. The RBI's working group on digital lending observed that digital processes can simplify loan applications while stressing the need for regulatory oversight and borrower protection (RBI, 2021). The 2022 guidelines on digital lending address transparency, data privacy and customer protection, which implies that faster approval must rest on secure verification, clear disclosure and responsible lending (RBI, 2022).

2.2 Digital identity and onboarding efficiency

Montes and Appaya (2021) explain that digital identity systems simplify customer verification, reduce physical documentation and in-person visits, and improve access to financial services, which speeds up the early stages of an online loan application while maintaining security and privacy. For this study, loan approval efficiency means the speed, accuracy and convenience with which an application moves from customer onboarding and KYC verification to loan sanction.

2.3 Automation and credit assessment

A second strand of research concerns the credit decision that follows verification. Turiel and Aste (2020) examine how machine learning helps lenders evaluate applications and predict default, and indicate that automated assessment can reduce manual work and improve processing efficiency. Bücker et al. (2022) stress that automated decisions must be transparent and explainable if digital approvals are to be efficient, fair and reliable. Xia et al. (2025) examine advanced analytical techniques for credit scoring in fintech lending, which support faster data-driven decisions alongside digital KYC, and Bahadori and Hassanzadeh (2026) review AI-based credit assessment, noting efficiency gains together with concerns about privacy, fairness, transparency and regulatory compliance.

The two stages address different risks. KYC establishes who the applicant is; credit assessment, based on credit history, income and repayment capacity, establishes whether the lender should lend. Risk management in this study refers to the identification, assessment and control of both kinds of risk. The literature reviewed establishes the benefits of digital identity, the growth of automated credit assessment and the regulatory emphasis on responsible lending. It does not show how a smooth KYC step relates to the final approval outcome at a specific lender. This study examines that relationship in a small practitioner case.

3. Objectives of the study

The study has one primary objective supported by four secondary objectives:

Primary objective: to understand how digital KYC influences loan origination, approval efficiency and risk management at Solfin for residential, commercial and industrial, and group-housing rooftop solar loans.

Secondary objective 1: to study the digital KYC and loan origination process, including customer onboarding, document verification, KYC validation and the movement of applications through the loan process.

Secondary objective 2: to evaluate the impact of digital KYC on turnaround time (TAT) and lending efficiency, as observed in processing time, manual work and customer waiting time.

Secondary objective 3: to identify the major causes of KYC-related delays and loan rejections and examine their implications for risk management, including incomplete or incorrect documents, verification problems, low CIBIL scores, DPD and overdue payments.

Secondary objective 4: to identify operational challenges in the digital KYC-linked lending process and to recommend practical, cost-effective improvements that reduce delays, improve customer experience and strengthen risk controls.

4. Research methodology

4.1 Research design and data sources

The study is descriptive and uses a mixed-methods design that combines quantitative analysis of case-level outcomes with qualitative insight from oral interaction with customers and dealers. The analysis rests on primary data collected first-hand during the training (Solfin, 2026) through three means: unstructured oral interviews during onboarding calls with 32 customers and 2 dealers; participant observation of the Solfin digital loan-origination dashboard as cases moved through the KYC, loan requirement, personal details and loan offer stages, with each case tracked to its final status; and review of the fortnightly learning diary to reconstruct case-level outcomes and the time taken at each stage. Published research and RBI documents were used only to frame and interpret the results. Customer identities are withheld, and the cases are treated as project data for academic analysis, not as personalized advice.

4.2 Sampling and analytical procedure

Table 1 summarizes the sampling design. Cases were selected by convenience or purposive sampling: every case directly handled or observed by the first author during onboarding calls was included. The practical sequence is shown in Fig. 1. Case-level records were organized into common fields (time taken for KYC, final status, reason for rejection, fortnight of contact and customer-reported ease on a 1 to 5 scale), and all counts were checked against the sample size before use.

Table 1 - Sampling plan, technique and sample size.

Parameter	Details
Sampling frame	Customers and dealers spoken to and taken through digital KYC / onboarding via the Solfin Pune (Shivaji Nagar) office during the training period (15 May to 16 July 2026)
Sampling unit	Individual customer loan-application case; individual dealer / EPC for onboarding observations
Sampling technique	Convenience / purposive sampling of cases handled or observed by the first author
Sample size	32 customer cases (12 carried through to final approval, 20 rejected) and 2 dealers / EPCs
Data collection period	Four fortnightly cycles: FN1 (15–31 May), FN2 (1–15 Jun), FN3 (16–30 Jun), FN4 (1–16 Jul 2026)

Four simple measures were derived from the recorded counts. The KYC smoothness rate is the share of the 32 customers whose KYC was verified in under 20 minutes or with only minor additional verification within two hours. The final approval rate is the share of customers carried through to full completion and approval. The rejection-reason share is the share of rejected cases attributed to a given reason. Fortnightly approval and rejection rates divide each fortnight's outcomes by the customers contacted in that fortnight. These measures describe the sample and are not estimates for Solfin's wider customer base.

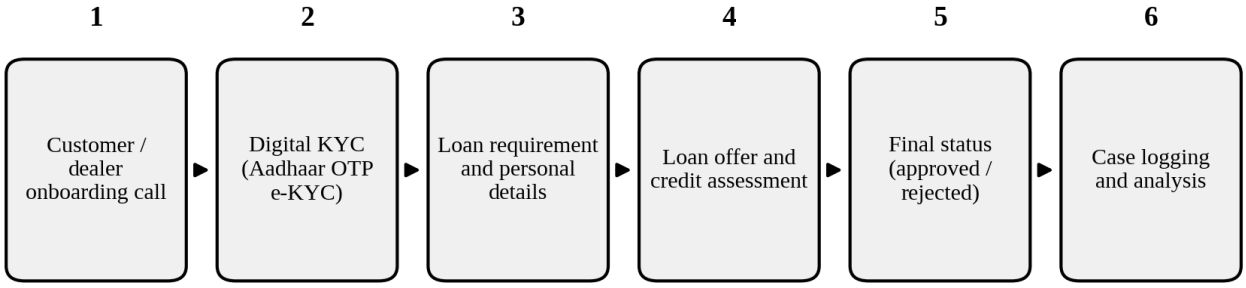


Fig. 1 - Process flow of the study, from the onboarding call to final status and reporting.

5. Data analysis and results

5.1 Documents required for digital KYC

Table 2 lists the documents collected for a residential rooftop loan. Aadhaar is used for OTP-based e-KYC of identity and address, PAN for financial identity and income-tax linkage, and the electricity bill for address confirmation and consumption profile. A dealer quotation validates the loan amount and system size, and bank details are requested only if the system does not fetch them automatically.

Table 2 - Documents required for digital KYC (residential loan).

Sr. No.	Document	Purpose
1	Aadhaar card	Identity and address verification (OTP-based e-KYC)
2	PAN card	Financial identity / income-tax linkage
3	Electricity bill	Address confirmation and consumption profile
4	Dealer quotation	Loan amount / system-size validation
5	Banking details	Only if not auto-fetched through the system

5.2 Speed, smoothness and reported ease of digital KYC

Of the 32 customers taken through digital KYC, 28 (87.5%) had a fast, smooth process, verified in under 20 minutes or with only minor additional verification within 2 hours, and 4 (12.5%) needed a document re-upload or manual escalation lasting more than 2 hours (Fig. 2a). As many as 21 customers (65.6%) were verified in under 20 minutes, and only 1 case took more than a day. Customer feedback matched this experience: 27 of 32 customers (84.4%) rated the ease of the process 4 or 5 out of 5, the mean rating was 4.22, and a single rating fell below 3 (Fig. 2b). The feedback is informal oral feedback gathered during onboarding calls and is not a validated satisfaction measure.

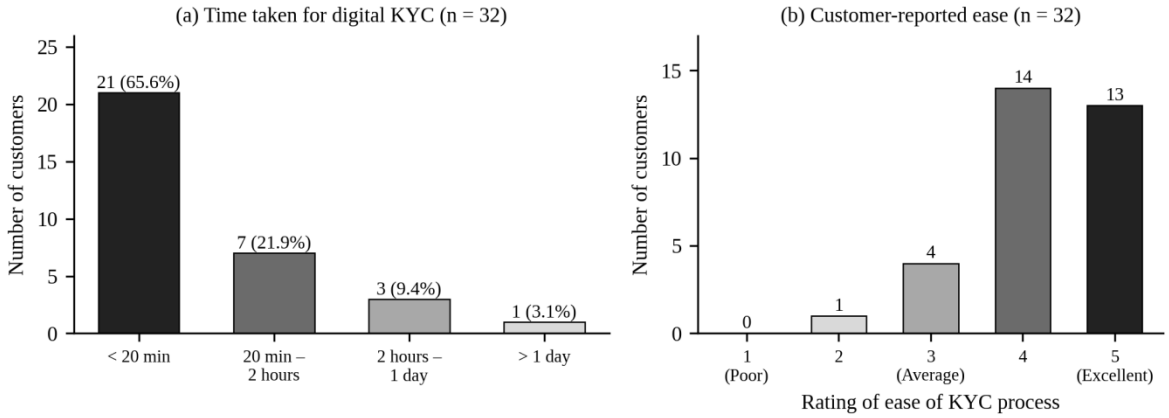


Fig. 2 - (a) Time taken for digital KYC and (b) customer-reported ease of the process.

5.3 Final status of applications and causes of rejection

Despite the smooth KYC step, only 12 of the 32 cases (37.5%) were carried through to full completion and final approval. The remaining 20 (62.5%) were rejected, and every case had reached a definitive outcome by the end of the training period, so none was pending (Fig. 3a, Table 3). This gap between a smooth KYC experience (Fig. 2) and a much lower final approval rate is the central finding of the study: fast digital KYC did not translate into a correspondingly high approval rate, because approval also depends on a separate, downstream credit-risk assessment.

Fig. 3b shows why. None of the 20 rejections was attributed to KYC or documentation problems. Low CIBIL or credit score was the largest cause (10 cases, 50%), followed by existing loan exposure or over-leverage (6 cases, 30%) and overdue instalments (DPD) on an existing loan (3 cases, 15%). For 1 case (5%), the specific reason was not captured in the call notes.

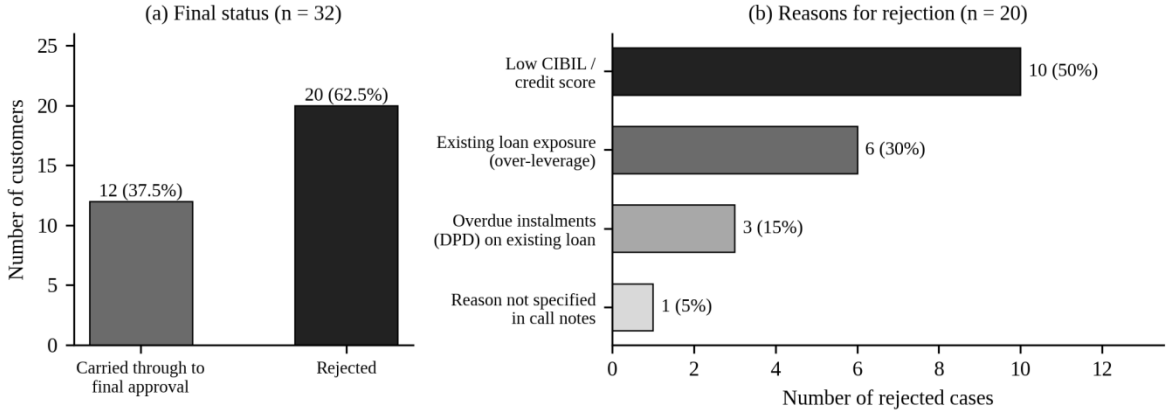


Fig. 3 - (a) Final status of the 32 applications and (b) reasons for the 20 rejections.

Table 3 - Summary of key outcome measures (n = 32).

Measure	Cases	Share of 32 (%)
KYC fast and smooth (under 2 hours)	28	87.5
KYC needing re-upload or escalation (over 2 hours)	4	12.5
Carried through to final approval	12	37.5
Rejected	20	62.5
Pending at end of training	0	0.0
Rated KYC ease 4 or 5 out of 5	27	84.4

5.4 Fortnightly trend of cases and outcomes

Table 4 and Fig. 4 show the cases by fortnight. Customers contacted rose from 5 in FN1 to a peak of 11 in FN3 and fell to 7 in FN4; according to the learning diary, FN3 was the fortnight in which independent login and KYC verification began. Approvals were 2, 3, 4 and 3, and rejections were 3, 6, 7 and 4, across the four fortnights. The approval rate stayed between 33.3% and 42.9%, and the rejection rate between 57.1% and 66.7%, in every fortnight, so the loss of a majority of cases to rejection was a stable pattern and not a feature of one period. Because no case remained pending, the rates reflect final outcomes.

Table 4 - Fortnightly customers contacted, approvals and rejections.

Fortnight	Contacted	Approved	Rejected	Approval rate (%)	Rejection rate (%)
FN1 (15–31 May)	5	2	3	40.0	60.0
FN2 (1–15 Jun)	9	3	6	33.3	66.7
FN3 (16–30 Jun)	11	4	7	36.4	63.6
FN4 (1–16 Jul)	7	3	4	42.9	57.1
Total	**32**	**12**	**20**	**37.5**	**62.5**

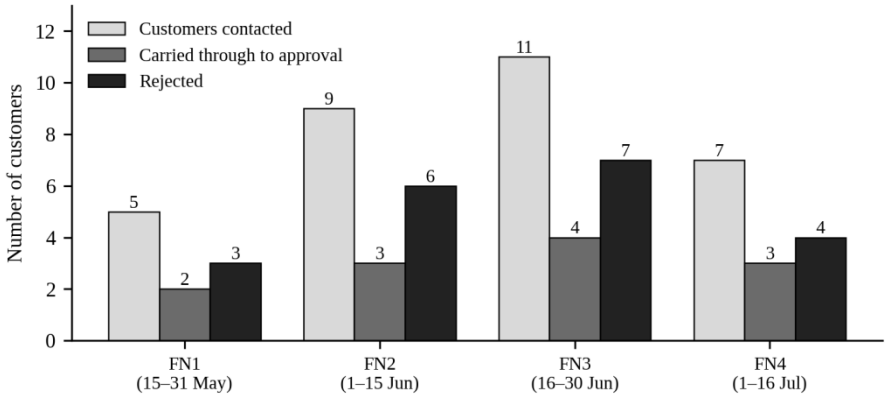


Fig. 4 - Fortnightly trend of customers contacted, approvals and rejections.

5.5 Interpretation against the objectives

The first secondary objective is addressed by the process sequence in Fig. 1 and the document requirements in Table 2. The second is addressed by the time and ease results in Fig. 2. The third is addressed by the final status and rejection reasons in Fig. 3 and Table 3, and the fortnightly pattern in Table 4 shows that the outcomes persisted across the training period. The fourth is addressed in Sections 7 and 8. Together these support the primary objective: digital KYC clearly improved the speed and convenience of onboarding, but its direct effect on final approval was limited in this sample.

6. Discussion of findings

Five findings emerge from the analysis.

Digital KYC was fast and smooth. Of the 32 customers, 87.5% had a smooth and quick process, which suggests that Solfin's Aadhaar-OTP-based e-KYC works effectively at the identity-verification stage and creates little delay for the customer. Because the study has no manual-KYC baseline, this is a statement about the speed observed and not about the improvement over paper-based KYC.

KYC success did not mean loan approval. Only 12 of 32 cases (37.5%) reached final approval, so completing KYC does not guarantee a loan. A customer who assumes otherwise is likely to be disappointed, which makes early communication of eligibility requirements important.

Rejections were driven by credit risk, not by KYC. Of the 20 rejections, 19 had a recorded reason and all 19 were credit related: low CIBIL score (50% of rejections), existing loan exposure (30%) and DPD (15%). No rejection was attributed to KYC or documentation. This does not by itself show that digital KYC prevented identity fraud, which the study design cannot test.

KYC and credit assessment are separate stages. KYC confirms identity, whereas credit assessment decides financial suitability. This separation is consistent with the literature, in which credit scoring is treated as a distinct analytical layer (Turiel & Aste, 2020; Xia et al., 2025), and with the RBI's emphasis that verification, disclosure and responsible lending must work together (RBI, 2022).

Customers rated the KYC experience highly irrespective of the outcome. Twenty-seven of 32 customers rated ease 4 or 5. Because only 12 customers were approved, at least 15 of those who gave a rating of 4 or 5 were rejected, so the positive experience was not limited to customers whose loans were approved.

Taken together, the findings show that two measures that are easily confused, KYC smoothness and final approval, move independently. KYC smoothness describes the quality of identity verification and customer experience, whereas the approval rate describes the combined result of verification and credit assessment. Efficiency at the first stage should not be read as efficiency of the whole lending funnel.

7. Challenges and limitations

Two practical challenges arose. First, case-level data had to be reconstructed from call notes, dashboard observation and the fortnightly learning diary, and for one rejected case the reason was not recorded. Second, customers often assumed that a successful KYC meant an approved loan, so handling rejection after a smooth KYC required careful communication. These were addressed by checking all counts against the sample size, retaining the source categories and reporting the unrecorded reason as such.

The study has the following limitations. It rests on 32 customer cases and 2 dealers from one office, selected by convenience sampling, so it supports no statistical inference about Solfin's wider network or about borrowers in general. Much of the data came from observation and informal discussion and not from a structured, validated questionnaire, so responses may reflect personal opinion or communication limits. "Approved" refers to cases carried through to completion by the first author. No manual-KYC baseline was observed, so speed is reported in absolute terms and not as a measured reduction in turnaround time. The first author had no access to Solfin's internal credit-scoring models, so rejection reasons could be described but not examined technically. The eight-week period may not capture seasonal or long-term trends, and because Solfin is privately held, detailed financial information and ratios were not available. The findings are therefore indicative observations and not conclusions about the performance of digital KYC in general.

8. Recommendations and scope for future work

The main recommendation is early credit-risk pre-screening. Because digital KYC at Solfin is already fast and well received, the main opportunity to improve efficiency lies before it: a quick preliminary check of the customer's CIBIL score, existing loan obligations and DPD or overdue indicators at the first interaction, with the customer's consent and subject to regulatory requirements. Customers with a low probability of approval could then be informed early instead of completing KYC and documentation first. The screen should be treated as an indicator of eligibility and not as the final credit decision; full credit assessment and KYC checks should continue under Solfin's policies and applicable regulation.

Four steps can implement this. First, a soft bureau check with consent can be run during the first interaction, before detailed KYC and document collection. Second, a simple three-factor screen based on CIBIL score range, existing loan exposure and DPD or overdue status can be built into the dealer or agent onboarding application. Third, borderline applicants who are not high-risk can be offered alternatives such as a co-applicant, a lower loan amount or a longer tenure, subject to credit policy. Fourth, KYC smoothness and final approval rate should be tracked as separate performance indicators, so that management can see where delays and rejections arise.

The expected benefit is less unnecessary processing, lower operational effort and better-managed customer expectations, while the fast KYC experience that customers rated highly is preserved. The recommendation targets the bottleneck shown in Fig. 3, which is credit risk and not KYC.

Future work can use a larger and more representative sample from several branches and dealer locations to test whether these findings hold across the business. If access is permitted, internal bureau-check and underwriting data could be used to build a stronger risk scorecard from CIBIL score, existing exposure, DPD and repayment history. A further study could compare early pre-screening with the existing onboarding process across dealers, to measure whether it reduces unnecessary KYC effort and raises the completion-to-approval rate.

9. Conclusion

The 32 cases show a visible gap between the smoothness of digital KYC and the final approval outcome. A total of 87.5% of customers had a fast and smooth KYC and 84% rated it 4 or 5 out of 5, yet only 37.5% of cases reached approval, and every rejection with a recorded reason was credit related. Digital KYC therefore improved the speed and convenience of onboarding, but credit-risk factors, namely CIBIL score, existing loan exposure and DPD, determined whether a loan was approved. Because the sample is small and drawn from one office, these results are indicative. The practical lesson is to screen credit eligibility early and to report KYC smoothness and approval rate separately.

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