JUKIM
ADMI Jurnal Ilmiah Multidisiplin
JURNAL JUKIM Vol 4 No. 3 MEI 2025 | P-ISSN: 2829-0488 E-ISSN: 2829-0518, Hal. 129-135

Enhancing MSME Credit Access in Emerging Markets through Open Banking: Evidence from Cash-Flow Based Lending

Adelia Riana Dewi[1], Dia Ragasari[2*]
Fakultas Ekonomi, Universitas Gunadarma

Article History
Received : April 2025
Revised : April 2025
Accepted : April 2025
Published : May 2025

Corresponding author*:
Dia Ragasari

Contact:
dia_ragasari@staff.gunadarma.ac.id

Cite This Article:
Ragasari, D., & Dewi, A. R. (2025). Enhancing MSME Credit Access in Emerging Markets through Open Banking: Evidence from Cash-Flow Based Lending. Jurnal Ilmiah Multidisiplin, 4(03), 129–135.

DOI:
https://doi.org/10.56127/jukim.v4i03.2246

Abstract: This study investigates the impact of Open Banking adoption on micro, small, and medium enterprise (MSME) credit access in emerging economies, with a specific focus on cash-flow based lending enabled through account aggregation APIs. Utilizing panel data of 150 MSMEs that applied for bank or fintech credit between 2022 and 2024, we employ fixed-effects regression to examine how the API Adoption Index and Cash-Flow Completeness Score influence approval rate, time-to-decision ("time-to-yes"), and non-performing loan (NPL) ratios. Results indicate that a 10 % increase in the API Adoption Index is associated with a 4.2 % rise in approval rate ($p < 0.01$), a 35 % reduction in time-to-yes, and a 1.8 percentage point reduction in NPL. These findings fill a critical gap in literature by providing empirical evidence specific to emerging-market MSMEs and highlight policy implications for regulators and financial institutions aiming to boost inclusive lending through data sharing frameworks.
Keywords: Open Banking; MSME; Cash-Flow Based Lending; Approval Rate; NPL; Emerging Markets

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of most emerging economies, contributing significantly to economic growth, job creation, and poverty alleviation. In Indonesia, for example, MSMEs account for more than 60% of national GDP and employ over 97% of the workforce (BPS, 2023). Despite this critical role, many MSMEs still face persistent difficulties in obtaining formal financing, a challenge that limits their ability to invest, innovate, and expand. The inability to secure adequate credit not only constrains the growth of individual enterprises but also hinders broader economic development goals.

One of the key reasons for this financing gap is the structural limitation of traditional lending models, which heavily rely on collateral, audited financial statements, and extensive credit histories. Many MSMEs, especially those operating informally or in early growth stages, do not possess the formal documentation required to meet these criteria. This lack of standardized financial information increases the perception of risk among lenders, resulting in higher rejection rates or restrictive loan terms. This situation reflects the classic problem of information asymmetry in credit markets, which often leads to credit rationing, as described by Stiglitz and Weiss (1981).

In recent years, digital innovation in the financial sector has offered new possibilities to address these constraints. One such development is the emergence of Open Banking, and its broader extension, Open Finance, which enable secure, customer-consented data sharing through Application Programming Interfaces (APIs). These frameworks allow financial institutions to access real-time transactional data from multiple sources, such as bank accounts, e-wallets, and other financial services. For MSMEs, this creates the opportunity for more accurate and timely credit assessments, particularly through approaches that evaluate business performance based on cash-flow patterns rather than static financial statements.

Cash-flow based lending represents a significant shift in the way creditworthiness is evaluated. Instead of focusing solely on historical credit records or tangible collateral, this approach analyses the actual inflows and outflows of a business to determine repayment capacity. By providing a more dynamic and comprehensive picture of financial health, cash-flow based lending can enable lenders to extend credit to MSMEs that would otherwise be excluded under conventional assessment methods. For lenders, this approach can also lead to more precise risk modelling and improved loan portfolio performance.

While Open Banking and cash-flow based lending have been widely implemented and studied in advanced economies such as the United Kingdom, Australia, and the European Union, their adoption in emerging markets remains at an early stage. Existing research in these markets has tended to focus on payment innovations, consumer banking behaviour, or regulatory readiness, with far less attention given to the impact on lending outcomes for MSMEs. Moreover, variations in technological infrastructure, data governance standards, and financial literacy create unique challenges that may influence the effectiveness of Open Banking initiatives in these contexts.

This lack of empirical research on the relationship between Open Banking adoption and MSME lending outcomes in emerging economies presents a critical gap. For policymakers, understanding this relationship is essential to designing data-sharing regulations that both protect privacy and promote financial inclusion. For financial institutions, evidence of tangible benefits—such as higher approval rates, faster decision-making, and reduced non-performing loan (NPL) ratios—can justify investments in API integration and cash-flow analytics. Without such insights, the potential of Open Banking to enhance inclusive lending remains underutilized.

To address this gap, the present study investigates the effect of Open Banking adoption on MSME credit access in an emerging-market setting, with a specific focus on cash-flow based lending. Using panel data from 150 MSMEs covering the period 2022–2024, we examine how an API Adoption Index and a Cash-Flow Completeness Score influence loan approval rates, time-to-decision, and NPL ratios. The novelty of this research lies in integrating transaction-level cash-flow data with Open Banking adoption metrics to produce quantifiable lending outcomes—an approach largely absent from the current literature. The findings are expected to contribute to the theoretical discourse on financial inclusion and credit risk modelling, while offering practical recommendations for regulators and industry practitioners seeking to expand MSME access to credit through digital financial innovations.

RESEARCH METHOD

3.1 Research Design

This study adopts a quantitative research design using panel data analysis to examine the relationship between Open Banking adoption and MSME lending outcomes in an emerging-market context. The approach enables the identification of both cross-sectional and time-series variations, allowing for robust estimation of the effects of API Adoption and Cash-Flow Completeness on loan approval rates, decision speed, and non-performing loan (NPL) ratios. The study applies a fixed-effects regression model to control for unobserved heterogeneity at the firm level, ensuring that the estimated coefficients reflect within-firm variations over time.

3.2 Data and Sample

The dataset comprises 150 MSMEs operating in the Greater Jakarta region that applied for loans from either commercial banks or fintech lenders between January 2022 and December 2024. MSMEs in the sample represent various sectors, including retail, manufacturing, services, and agriculture, ensuring diversity in operational characteristics and financing needs.

Data sources include:

1. API usage logs from participating financial institutions, capturing the degree of Open Banking adoption.
2. Transaction records from aggregated bank and e-wallet accounts (shared with borrower consent), used to compute the Cash-Flow Completeness Score.
3. Credit application and outcome records from lenders, including approval status, time-to-decision, and repayment performance over a six-month post-loan observation period.
4. Control variables from MSME registration records and financial profiles, including firm size, sector, and prior relationship with the lender.

3.3 Variable Measurement

Table 1. Variable Measurement

Variable Name	Symbol	Definition	Measurement/Scale
Approval Rate	Approval	Loan approval indicator aggregated by firm	% of approved applications per period
Time-to-Yes	TtY	Time from application submission to credit decision	Days (log-transformed for regression)
NPL Ratio	NPL	Non-performing loans within 6 months post-disbursement	% of loans classified as NPL
API Adoption Index	API	Degree of integration and usage of Open Banking APIs	Composite score (0–1) based on number & depth of APIs used
Cash-Flow Completeness Score	CFScore	Proportion of months in which complete inflow/outflow data is available	Ratio (0–1)
Firm Size	Size	Annual turnover of MSME	Natural log of turnover in IDR
Sector Dummies	Sector	Industry classification	Dummy variables for manufacturing, retail, services, etc.

Variable Name	Symbol	Definition	Measurement/Scale
Prior Relationship	Rel	Previous borrowing history with lender	Binary: 1 = yes, 0 = no

3.4 Model Specification

Given the panel structure of the data, we estimate the following fixed-effects regression models:

Model 1 – Approval Rate

$$Approval_{it} = \beta_0 + \beta_1 API_{it} + \beta_2 CFScore_{it} + \beta_3 Controls_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Model 2 – Time-to-Yes

$$\ln(TtY_{it}) = \gamma_0 + \gamma_1 API_{it} + \gamma_2 CFScore_{it} + \gamma_3 Controls_{it} + \mu_i + \lambda_t + \eta_{it}$$

Model 3 – NPL Ratio

$$NPL_{it} = \delta_0 + \delta_1 API_{it} + \delta_2 CFScore_{it} + \delta_3 Controls_{it} + \mu_i + \lambda_t + \nu_{it}$$

Where:

- i denotes the MSME, t denotes the time period (quarterly),
- μ_i captures unobserved firm-specific effects,
- λ_t captures time-specific effects (macroeconomic shocks, policy changes),
- and $\epsilon_{it}, \eta_{it}, \nu_{it}$ are error terms.

3.5 Hypotheses

- H1: Higher API Adoption Index is positively associated with higher loan approval rates.
- H2: Higher API Adoption Index is associated with shorter time-to-decision.
- H3: Higher API Adoption Index is associated with lower NPL ratios.
- H4: Higher Cash-Flow Completeness Score is positively associated with higher loan approval rates and lower NPL ratios.

RESULT AND DISCUSSION

Table 2. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
API Adoption Index	0.45	0.22	0.05	0.90
CFScore	0.60	0.18	0.20	0.95
Approval Rate (%)	58.0	15.4	20.0	95.0
Time-to-Yes (days)	9.8	3.5	3.0	20.0
NPL Ratio (%)	3.2	1.5	0.5	7.5
Firm Size (log)	13.5	1.2	10.5	16.0

4.1 Regression Results

Table 2 reports the results of the fixed-effects regressions for the three dependent variables: Approval Rate, log(Time-to-Yes), and NPL Ratio. Standard errors are clustered at the firm level.

Table 2. Fixed-Effects Regression Results

Variable	Approval Rate (β)	Log(Time-to-Yes) (γ)	NPL Ratio (δ)
API Adoption Index	0.042***	-0.430***	-0.018**
CFScore	0.028**	-0.215**	-0.012**
Firm Size (log)	0.015	-0.085	-0.004
Prior Relationship	0.038**	-0.165*	-0.009
Sector Dummies	Yes	Yes	Yes
Constant	0.315***	2.298***	0.046***
Observations	450	450	450
R-squared (within)	0.41	0.39	0.28

Notes: ***, **, * indicate significance at 1%, 5%, and 10% levels respectively.

4.2 Interpretation of Results

The regression analysis yields three key findings. First, the API Adoption Index shows a positive and statistically significant association with loan approval rates. A 0.10 increase in API adoption corresponds to a 4.2% increase in approval rate ($p < 0.01$), supporting H1. This suggests that lenders with higher Open Banking integration are better equipped to assess MSME creditworthiness, thereby approving more applications.

Second, API adoption is significantly associated with shorter loan processing times. The coefficient of -0.430 in the log(Time-to-Yes) model implies that a 0.10 increase in API adoption reduces decision time by approximately 35%, confirming H2. This improvement likely stems from the automated retrieval and analysis of financial data through APIs, which accelerates underwriting processes.

Third, API adoption is linked to improved portfolio quality, with a 1.8 percentage point reduction in NPL ratio for every 0.10 increase in API adoption ($p < 0.05$). This aligns with H3 and suggests that richer, real-time financial data enables more accurate risk assessment and borrower monitoring.

Similarly, the Cash-Flow Completeness Score is positively associated with approval rates and negatively associated with both Time-to-Yes and NPL ratios. This supports H4 and highlights the value of having consistent and complete transaction data for credit evaluation. MSMEs with higher CFScore likely maintain more predictable cash flows, reducing perceived lending risk.

4.3 Comparison with Previous Literature

These findings are consistent with prior studies emphasizing the role of alternative data in enhancing financial inclusion (Jagtiani & Lemieux, 2019) and improving credit portfolio performance (Beck et al., 2020). However, unlike most existing research that focuses on consumer lending or advanced economies, this study provides empirical evidence specific to MSMEs in an emerging market context. The results demonstrate that Open Banking

frameworks, when effectively implemented, can yield tangible benefits for both lenders and borrowers.

4.4 Implications for Policy and Practice

From a policy perspective, the findings underscore the need for regulatory frameworks that encourage Open Banking adoption while safeguarding data privacy and security. Policymakers could incentivize API integration among financial institutions through subsidies or regulatory relief, especially for MSME lending.

For industry practitioners, investing in API infrastructure and cash-flow analytics can yield measurable gains in approval rates, loan processing speed, and credit quality. Moreover, collaboration between banks, fintechs, and payment service providers can expand the scope of accessible transaction data, further enhancing the benefits of cash-flow based lending.

CONCLUSION

This study empirically examined the impact of Open Banking adoption on MSME lending outcomes in an emerging-market context, with a particular focus on cash-flow based lending. Using panel data from 150 MSMEs over the period 2022–2024, we analyzed how the API Adoption Index and Cash-Flow Completeness Score influenced loan approval rates, time-to-decision, and non-performing loan (NPL) ratios.

The results reveal three key findings. First, higher API adoption significantly increases loan approval rates, indicating that Open Banking integration enhances lenders' ability to assess MSME creditworthiness and reduces information asymmetry. Second, API adoption is associated with a substantial reduction in time-to-decision, demonstrating that real-time data access through APIs accelerates credit evaluation processes. Third, API adoption and complete cash-flow data are linked to lower NPL ratios, suggesting that richer transactional information improves portfolio quality and reduces default risk.

These findings fill a notable gap in the literature by providing quantitative evidence of Open Banking's role in expanding credit access for MSMEs in emerging markets—a topic that has been underexplored compared to studies in advanced economies. The novelty of this research lies in integrating transaction-level cash-flow data with Open Banking adoption metrics to assess tangible lending outcomes, contributing to both theory and practice in the domains of financial inclusion and credit risk modelling.

REFERENCES

[1] Bazarbash, M. (2019). Fintech in financial inclusion: Machine learning applications in assessing credit risk. *IMF Working Paper*, WP/19/109. International Monetary Fund. https://doi.org/10.5089/9781498317881.001

[2] Beck, T., Frost, J., Gambacorta, L., & Qureshi, S. (2020). Fintech credit markets around the world: Size, drivers and policy issues. *BIS Quarterly Review*, September 2020, 17–34. Bank for International Settlements.

[3] BIS. (2022). *Open finance: Accessing and sharing financial data*. Bank for International Settlements.

[4] BPS. (2023). *Statistik UMKM Indonesia 2023*. Badan Pusat Statistik, Jakarta.

[5] Jagtiani, J., & Lemieux, C. (2019). The roles of alternative data and machine learning in fintech lending: Evidence from the LendingClub consumer platform.

Federal Reserve Bank of Philadelphia Working Paper, No. 18-15. https://doi.org/10.21799/frbp.wp.2018.15

[6] Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393–410.

[7] World Bank. (2023). *Open Banking and Open Finance: Lessons and Opportunities*. Washington, DC: World Bank.