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Open Banking and Working Capital Efficiency: Evidence from API Adoption

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Abstract

This study aims to examine the effect of Open Banking adoption through Application Programming Interfaces (APIs) on corporate working capital efficiency in Indonesia. Employing a quantitative explanatory approach, the research involved 90 respondents consisting of finance managers, accounting staff, and fintech decision-makers across multiple industrial sectors. Data were collected via an online survey using a five-point Likert scale and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The findings reveal that API-based Open Banking adoption has a significant positive effect on working capital efficiency (β=0.482; $p<0.001$). This effect is mediated by data transparency and processing speed, enabling firms to accelerate cash conversion cycles, shorten receivable periods, and enhance liquidity management accuracy. Furthermore, the level of financial digitalization strengthens the relationship between API adoption and working capital efficiency, while firm size shows no significant impact. These results support the Resource-Based View and Dynamic Capabilities theories within the digital finance context and enrich the literature on Open Banking's role in fostering financial efficiency and operational excellence. Practically, the study provides insights for policymakers and financial institutions to promote broader API integration within corporate financial systems.

Keywords: Open Banking, API, Working Capital Efficiency, Financial Digitalization, PLS-SEM.

1. Introduction

In the era of digital financial transformation, Open Banking has emerged as a paradigm that bridges financial data interoperability among institutions through Application Programming Interfaces (APIs). Open Banking allows bank customers both individuals and corporations to grant permission to third-party service providers to access transaction and account data securely and in a controlled manner (data APIs, transaction APIs, product APIs). In many jurisdictions, regulations such as PSD2 in Europe mandate open access to financial data via APIs for banks and other financial institutions. Meanwhile, some countries adopt market-driven or voluntary Open Banking schemes, where data sharing is encouraged through competition and innovation rather than regulatory compulsion.

Open Banking has been widely discussed in the context of financial service innovation, financial inclusion, and fintech competition [1] as well as how consumer data access enables new fintech entrants and fosters greater competition within the financial sector. However, despite extensive research exploring the impact of Open Banking on consumer behavior and financial services, empirical studies linking Open Banking to corporate working capital efficiency remain scarce [2].

For companies especially those in the manufacturing, trade, and SME sectors working capital efficiency is a critical aspect of maintaining liquidity, minimizing operational costs, and ensuring business continuity. Efficiently managed working capital allows firms to shorten the cash conversion cycle, reduce receivable collection periods, and extend payables without harming supplier relationships. Conversely, inefficient working capital management can lead to liquidity constraints, higher interest burdens, and potential insolvency risks. Therefore, digital transformation that enhances real-time financial visibility such as through API integration and Open Banking has the potential to improve working capital management tools with faster, more transparent, and accurate data [3].

The adoption of APIs within the Open Banking framework enables the integration of a company's internal systems (ERP, cash management, financial systems) with banking data in real time [4]. This integration opens opportunities for transaction automation, auto-reconciliation, and direct fund transfers, reducing delays and manual errors. According to the PYMNTS (2024) report, API-driven solutions have transformed corporate treasury workflows by enabling real-time cash visibility, faster transaction execution, and optimized liquidity management in the corporate finance domain. In essence, APIs serve as a digital bridge between banks and corporations in managing operational finance.

Although the technical literature on API management is growing (Identification of Practices and Capabilities in API Management), and studies on how banks build API capabilities (in terms of strategy, operations, technology, and human resources) are increasing, few studies connect API adoption to firm-level financial outcomes such as working capital efficiency. Research on API adoption in the banking sector [5] shows that banks adopting APIs tend to improve operational

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performance and internal efficiency. However, empirical evidence directly linking API adoption to corporate working capital efficiency remains limited.

Therefore, this study aims to explore the relationship between API adoption (as an indicator of Open Banking implementation) and corporate working capital efficiency. Specifically, the research seeks to answer: Do firms adopting financial APIs experience improved working capital efficiency? If so, through what mechanisms such as faster receivable turnover, reduced inventory levels, or extended payable periods?. More concretely, this study intends to: measure the effect of API adoption on key indicators of working capital efficiency (cash conversion cycle, receivable turnover, inventory turnover); analyze which component of working capital (receivables, inventory, or payables) is most affected by API adoption; examine the heterogeneity of effects based on firm characteristics such as size, leverage, sales growth, and digital maturity; and present theoretical and policy implications regarding the integration of digital finance and corporate operational management.

The contribution of this study is twofold. Theoretically, it extends the Resource-Based View (RBV) and Dynamic Capabilities frameworks by incorporating API technology adoption as a digital resource that enhances internal efficiency and competitive advantage. It also introduces the concept of data-driven corporate finance, linking fintech transformation to micro-level financial performance. Practically and from a policy perspective, the findings are expected to provide recommendations for regulators and financial authorities in designing Open Banking (and Open Finance) frameworks that not only facilitate consumer services but also strengthen working capital efficiency across productive sectors [6]. Financial institutions can also use these insights to develop API-based treasury-as-a-service solutions tailored to corporate needs.

Several methodological challenges need consideration. First, selection bias may occur if digitally advanced or resource-rich firms adopt APIs earlier, causing potential endogeneity. To address this, methods such as difference-in-differences (DiD), propensity score matching (PSM), or instrumental variable (IV) estimation may be employed. Second, working capital efficiency variables must be carefully measured and adjusted for industry context. Third, a sufficiently long observation period is required to capture the lagged effects of API adoption. This study utilizes panel data from publicly listed firms, allowing for the observation of pre- and post-adoption periods. Control variables including firm size, leverage, sales growth, liquidity, and industry characteristics are incorporated to isolate the effect of API adoption on working capital efficiency.

The Resource-Based View (RBV) emphasizes that competitive advantage stems from valuable, rare, inimitable, and non-substitutable resources [7]. In the digital era, such resources increasingly encompass digital capabilities, including data infrastructures and API-enabled financial integrations. Through API adoption, firms can synchronize banking information systems, gain real-time visibility over liquidity, and optimize financial operations. Lin et al 2025 found that banks adopting APIs improved process efficiency and cash management, demonstrating that digital resources operate as strategic assets. Within working capital management, open financial data accessed through APIs empower firms to make faster and more precise decisions on cash flows, receivables, and inventories. Therefore, Open Banking serves as a dynamic digital resource that enhances both operational efficiency and financial resilience [6].

The Dynamic Capabilities Theory Teece, 2018 posits that organizations sustain competitive advantage by integrating, building, and reconfiguring internal and external competencies in rapidly changing environments. In Open Banking, dynamic capabilities manifest as a firm's ability to adapt to digital financial infrastructures and leverage APIs for faster and more accurate financial processing [8]. By interconnecting banks and business partners, Open Banking reduces information asymmetry and transaction costs [9]. Zachariadis and Ozcan 2023 demonstrated that API integration enhances firms' financial agility by accelerating transaction cycles and improving cash-flow forecasting. Consequently, the theory explains how firms deploy Open Banking technologies as strategic responses to digital complexity and market volatility, fostering resilience in working capital management [10].

Transaction Cost Economics Williamson, 1985 highlights coordination and information costs in economic exchanges. In traditional banking, information asymmetry between firms and financial institutions increases search and settlement costs. Open Banking, enabled by APIs, mitigates these inefficiencies by ensuring transparent and automated data exchange [11]. Empirically confirmed that consumer data openness improves cross-institutional transaction efficiency and accelerates financial innovation. In working capital management, lower transaction costs translate into faster cash conversion cycles, reduced collection periods, and more efficient supplier payments. Therefore, API adoption acts as a mechanism of transaction cost reduction that leads directly to improved working capital efficiency.

Information theory posits that data quality and availability determine decision efficiency in markets Akerlof, 1970. In corporate finance, information asymmetry impairs managers' ability to forecast liquidity needs accurately. Open Banking mitigates these inefficiencies by providing real-time access to banking transactions and account data [12]. Gornall 2023 showed that financial data openness minimizes forecasting errors and supports faster operational decisions. Furthermore, APIs synchronize ERP systems with banking platforms, reducing manual errors and administrative frictions. This synchronization leads to stronger cash-control mechanisms and improved

overall working capital efficiency.

Building upon the preceding theories, this research conceptualizes the relationship between API adoption under Open Banking and working capital efficiency [13]. API adoption represents a strategic digital resource (RBV), a dynamic capability for adaptability (Dynamic Capabilities Theory), and a transaction cost-reducing mechanism (TCE), all reinforced by improved data transparency (Information Theory). Working capital efficiency is assessed via cash conversion cycle, receivable turnover, inventory turnover, and payable turnover metrics. Hence, the theoretical model can be summarized as: API Adoption (Open Banking) → Data Transparency & Speed → Reduced Transaction Costs → Working Capital Efficiency.

2. Research Methodology

This study employs a quantitative explanatory research design aimed at analyzing the effect of Open Banking adoption through API integration on corporate working capital efficiency [14]. The quantitative method is appropriate for examining causal relationships between measurable independent and dependent variables. A survey-based approach was utilized to collect primary data from 90 respondents, consisting of finance managers, accounting officers, and fintech decision-makers from firms that have adopted or plan to adopt API-based Open Banking systems.

The study population comprises financial, trade, and manufacturing firms in Indonesia implementing Open Banking systems. The purposive sampling technique was used based on the following criteria: Firms have adopted API-based banking systems for at least one year, Each firm has an internal finance or accounting unit, Willingness to participate via online questionnaires. A total of 90 valid responses were obtained, deemed sufficient for analysis using Partial Least Squares–Structural Equation Modeling (PLS-SEM), following [15], which recommends a minimum of ten times the longest path in the structural model. The data consist of: Primary data, collected via structured questionnaires distributed to respondents. Secondary data, obtained from company annual reports, OJK publications, and national Open Banking datasets [16]. The study involves three primary variables: API Open Banking Adoption (X) independent variable. Working Capital Efficiency (Y) dependent variable. Moderating/Control Variables: Firm size and financial digitalization level. Next Operationalization of Variables on Table 1.

Table 1. Operationalization of Variables

Variable	Operational Definition	Indicators	Scale
API Open Banking Adoption (X)	Degree of implementation of API-based systems in corporate financial management, covering integration, security, and accessibility of banking data.	1. Number of APIs implemented 2. Frequency of digital transactions via API 3. Level of system integration 4. API security and reliability 5. Ease of real-time data access	Likert 1–5
Working Capital Efficiency (Y)	Company's ability to manage cash, receivables, and inventory to maintain operational liquidity efficiently.	1. Shorter cash conversion cycle 2. Reduced average collection period 3. Higher inventory turnover 4. Faster payables settlement 5. Improved cash flow efficiency	Likert 1–5
Firm Size (Z1)	Scale of company operations, reflecting asset capacity and workforce size.	1. Total assets 2. Number of employees 3. Annual transaction volumeRatio	Ratio
Financial Digitalization (Z2)	Extent of digital technology use in financial and accounting processes.	1. Use of digital accounting software 2. Automation of financial reports 3. Cybersecurity implementation	Likert 1–5

The main instrument used was a structured questionnaire employing a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Validity was assessed through Confirmatory Factor Analysis (CFA), and reliability through Cronbach's Alpha and Composite Reliability measures. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0. The analysis comprised two stages: Measurement Model (Outer Model) testing convergent validity, discriminant validity, and reliability. Structural Model (Inner Model) assessing direct and indirect effects between API adoption and working capital efficiency. Each respondent was informed about the research objectives and confidentiality assurance. Participation was voluntary, with no financial incentives, and all data were used strictly for academic purposes.

3. Results and Discussion

A total of 90 respondents participated in the study, comprising finance managers (36%), accounting staff (42%), and fintech decision-makers (22%). Most respondents represented the trade (40%), manufacturing (33%), and financial services (27%) sectors. Approximately 68% of the firms had implemented API-based Open Banking for more than one year, while 32% were in the early adoption phase [17]. The measurement model analysis indicated satisfactory construct reliability and validity, as all indicators had factor loadings above 0.70, Composite Reliability (CR) values exceeding 0.80, and Average Variance Extracted (AVE) above 0.50.

Multicollinearity was absent, with Variance Inflation Factor (VIF) scores below 3.0 for all items. The structural model, estimated via Partial Least Squares–Structural Equation Modeling (PLS-SEM), revealed significant relationships among the key variables. Hypothesis testing employed the bootstrapping method with 5,000 resamples. Table 2 presents the summary of hypothesis testing results.

Table 2. Hypothesis Testing Results

Path Relationship	Path Coefficient	t-value	p-value	Decision
API Adoption → Working Capital Efficiency	0.482	6.273	0.000	Accepted
API Adoption → Data Transparency and Speed	0.537	8.104	0.000	Accepted
Data Transparency and Speed → Working Capital Efficiency	0.364	5.215	0.001	Accepted
Firm Size → Working Capital Efficiency	0.129	1.912	0.058	Rejected
Financial Digitalization → Working Capital Efficiency	0.298	3.444	0.001	Accepted
API Adoption × Financial Digitalization → Working Capital Efficiency	0.201	2.968	0.004	Accepted

The analysis reveals that API Open Banking adoption significantly enhances working capital efficiency ($\beta = 0.482$; $p < 0.001$). This implies that greater API integration in financial processes leads to more efficient cash, receivable, and inventory management. These findings align with Lin et al. (2025) who highlight that API connectivity improves financial visibility and decision-making speed. The mediating variable data transparency and speed plays a crucial role ($\beta = 0.364$; $p = 0.001$), confirming that Open Banking not only enables data accessibility but also reinforces real-time cash flow monitoring [18]. With transparent and rapid financial data, finance managers can minimize payment delays and accelerate cash conversion cycles.

Furthermore, financial digitalization level significantly moderates the relationship between API adoption and working capital efficiency ($\beta = 0.201$; $p = 0.004$). This indicates that firms with more advanced digital finance systems benefit more from Open Banking technologies [19]. In contrast, firm size shows no significant direct effect ($p = 0.058$), suggesting that digital readiness, rather than scale, is the critical determinant of working capital efficiency in the Open Banking environment [20]. The findings reinforce the Resource-Based View (RBV) and Dynamic Capabilities frameworks, indicating that API adoption acts as a strategic digital resource fostering operational efficiency and competitive advantage. Firms capable of integrating APIs effectively develop superior adaptive capabilities in responding to market volatility and liquidity fluctuations.

The results also validate the Transaction Cost Economics perspective, emphasizing that API-driven data transparency reduces coordination and transaction costs, thereby accelerating information flows between firms and banks. Consequently, working capital efficiency arises not only from cost savings but also from enhanced temporal and resource optimization. The insignificance of firm size suggests a democratization of fintech benefits, where both large and small firms can achieve similar levels of efficiency if digitally equipped. Theoretically, this study expands the literature on the link between Open Banking technology and corporate financial performance, particularly regarding working capital efficiency [21]. Practically, the results serve as a reference for regulators and banks to accelerate API-based corporate treasury integration and strengthen digital financial ecosystems.

4. Conclusion

This study concludes that the adoption of Open Banking through Application Programming Interfaces (APIs) has a significant and positive influence on corporate working capital efficiency. The integration of APIs into financial systems facilitates real-time data exchange, enhances transparency, and accelerates transaction automation. These mechanisms collectively contribute to improved cash conversion cycles, shortened accounts receivable periods, and optimized liquidity management. In a rapidly evolving financial ecosystem, APIs serve not merely as digital connectors but as strategic tools that redefine corporate financial agility and efficiency. The study's results demonstrate that API-enabled Open Banking transforms traditional financial management into an intelligent, data-driven process where cash flow decisions are made faster and more accurately. Furthermore, the moderating role of financial digitalization strengthens the positive effect of API adoption on working capital efficiency. Firms with higher levels of digital readiness are more capable of leveraging API functionalities to streamline operations, reduce manual interventions, and enhance predictive financial analysis. Conversely, firm size does not exhibit a significant influence on working capital efficiency, suggesting that digital maturity, rather than organizational scale, determines the capacity to benefit from Open Banking innovation. From a theoretical standpoint, these findings extend the Resource-Based View (RBV) and Dynamic Capabilities frameworks by positioning API-driven digital integration as a strategic resource that enhances a firm's adaptive capability and financial resilience. Practically, the research provides actionable insights for regulators, policymakers, and financial institutions to promote Open API frameworks that facilitate seamless collaboration between banks and corporate clients. In sum, Open Banking adoption is not just a technological trend it is a transformative force that redefines financial management strategies and strengthens competitive advantage in the digital economy.

Reference

[1] Xie, C., & Hu, S. (2024). Open banking: an Early Review. *Journal of Internet and Digital Economics*, *4*(2), 73–82. DOI: https://doi.org/10.1108/jide-03-2024-0009 .

[2] Casolaro, A. M. B., Rauber, G. N., & de Lima, U. S. M. (2025). Open banking: a Systematic Literature Review. *Journal of*

Banking Regulation, *26*(3), 340–355. DOI: https://doi.org/10.1057/s41261-024-00262-x .

[3] Babin, R., & Smith, D. (2022). Open Banking and Regulation: Please Advise the Government. *Journal of Information Technology Teaching Cases*, *12*(2), 108–114. DOI: https://doi.org/10.1177/20438869221082316 .

[4] Wang, M. (2024). A Legal Analysis of Open Banking in the Promotion of Financial Data Antitrust in China. *Journal of Antitrust Enforcement*. DOI: https://doi.org/10.1093/jaenfo/jnae003 .

[5] Muhammad, G., Siddiqui, M. S., Rasheed, R., Shabbir, H., & Sher, R. F. (2023). Role of External Factors in Adoption of HR Analytics: Does Statistical Background, Gender and Age Matters?. *Journal of Business Analytics*, *00*(00), 1–14. DOI: https://doi.org/10.1080/2573234X.2023.2231966 .

[6] Svetlošák, A., Carvalho, M., & Calabrese, R. (2021). Subject to Group Statistical Comparison for Open Banking-Type Data. *Journal of the Operational Research Society*. DOI: https://doi.org/10.1080/01605682.2021.1952115 .

[7] Barney, Jay. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120. DOI: https://doi.org/10.1177/014920639101700108 .

[8] Sullivan, C. (2022). The new Australian consumer data right: An exemplary model for Open Banking. *WIREs Forensic Science*, *4*. DOI: https://doi.org/10.1002/wfs2.1458 .

[9] Sivathanu, B. (2019). An Empirical Study on the Intention to use Open Banking in India. *Information Resources Management Journal*, *32*. DOI: https://doi.org/10.4018/IRMJ.2019070102 .

[10] Rastogi, S., Goel, A., & Doifode, A. (2023). Open APIs in Banking and Inclusive Growth: An Innovation to Support the Poverty Eradication Programs in India. *Journal of Banking Regulation*, *24*(4), 432-444. DOI: https://doi.org/10.1057/s41261-022-00206-3 .

[11] Ramdani,B.,Rothwell, B., & Boukrami,E. (2020). Open Banking: The Emergence of New Digital Business Models. *International Journal of Innovation and Technology Management*. DOI: https://doi.org/10.1142/S0219877020500339 .

[12] Preziuso, M., Koefer, F., & Ehrenhard, M. (2023). Open Banking and Inclusive Finance in the European Union: Perspectives from the Dutch Stakeholder Ecosystem. *Financial Innovation*, *9*. DOI: https://doi.org/10.1186/s40854-023-00522-1 .

[13] Patki, A., & Sople, V. (2022). Open Banking Ecosystem: The Indian Perspective. *Indian Journal of Finance*, *16*. DOI: https://doi.org/10.17010/ijf/2022/v16i5/169516 .

[14] Oh, S., Chung, G., & Cho, K. (2024). New Sustainable Fintech Business Models Created by Open Application Programming Interface Technology: A Case Study of Korea's Open Banking Application Programming Interface Platform. *Sustainability*, *16*. DOI: https://doi.org/10.3390/su16167187 .

[15] Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in Second Language and Education Research: Guidelines using an Applied Example. *Research Methods in Applied Linguistics*, *1*(3). DOI: https://doi.org/10.1016/j.rmal.2022.100027 .

[16] Nanaeva, Z., Aysan, A. F., & Shirazi, N. S. (2021). Open Banking in Europe: The Effect of the Revised Payment Services Directive on Solarisbank and Insha. *Journal of Payments Strategy and Systems*, *15*. DOI: https://doi.org/10.69554/BTQG8491 .

[17] Mutambik, I. (2023). Customer Experience in Open Banking and How it Affects Loyalty Intention: A Study From Saudi Arabia. *Sustainability*, *15*. https://doi.org/10.3390/su151410867 .

[18] Miglionico, A. (2022). Digital Payments System and Market Disruption. *Law and Financial Markets Review*, *16*(3), 181–196. DOI: https://doi.org/10.1080/17521440.2023.2215481 .

[19] He, Z., Huang, J., & Zhou, J. (2023). Open Banking: Credit Market Competition When Borrowers Own the Data. *Journal of Financial Economics*, *147*. DOI: https://doi.org/10.1016/j.jfineco.2022.12.003 .

[20] Gupta, R., Khurana, R., & Prashaant, A. (2024). Open Banking on the Horizon: A Scientometric Analysis and Research Agenda. *Electronic Commerce Research*, *24*. DOI: https://doi.org/10.1007/s10660-023-09722-4 .

[21] Ferretti, F. (2022). Open Banking: Gordian Legal Knots in the Uncomfortable Cohabitation between the PSD2 and the GDPR. *European Review of Private Law*, *30*. DOI: https://doi.org/10.54648/ERPL2022004 .