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Embedded Finance and Trade Performance of Marketplace SMEs: Evidence from Indonesia's Digital Commerce Ecosystem

F Mario Andaru[1]*, Raghvendra Singh[2], Marios Didachos[3]

[1)] Tidar University, Magelang, Indonesia
[2)] M.J.P. Rohilkhand University, Bareilly, Uttar Pradesh, India
[3)] Marios Didachos Consulting, Patra, Greece

*Corresponding author
Email : fatah@untidar.ac.id

Abstract

The development of embedded finance in the digital marketplace ecosystem has transformed the way Micro, Small, and Medium Enterprises (MSMEs) access financing and conduct trade activities. This study aims to analyze the influence of embedded finance on the trade performance of MSME marketplaces in Indonesia and its implications for substituting traditional bank financing. The study employed a quantitative approach with an explanatory design and survey data from 268 MSMEs actively operating on marketplace platforms. The analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationship between Embedded Finance Accessibility, Access to Working Capital, Trade Performance, and the Banking Substitution Effect. The results show that embedded finance has a positive and significant effect on MSMEs' access to working capital and trade performance, both directly and through the partial mediation of working capital. Integrated liquidity within the platform has been shown to increase transaction frequency and sales volume, but the resulting effect reflects more on amplification of trade activity than on fundamental business productivity. The findings also suggest a partial substitution of bank credit, where increased use of embedded finance reduces MSMEs' dependence on bank financing for short-term working capital needs. Furthermore, the increased use of embedded finance weakens the influence of bank credit on trade performance. This research contributes to the financial intermediation and accounting literature by demonstrating a shift from financial statement-based credit allocation to transaction data-based liquidity allocation in the platform economy. These findings have implications for regulators, banks, and platform managers in understanding the new dynamics of MSME financing in the digital trade era.

Keywords: embedded finance, marketplace, working capital, trade performance, fintech

Abstrak

Perkembangan embedded finance dalam ekosistem marketplace digital telah mengubah cara pelaku Usaha Mikro, Kecil, dan Menengah (UMKM) mengakses pembiayaan dan menjalankan aktivitas perdagangan. Penelitian ini bertujuan menganalisis pengaruh embedded finance terhadap kinerja perdagangan UMKM marketplace di Indonesia serta implikasinya terhadap substitusi pembiayaan perbankan tradisional. Penelitian menggunakan pendekatan kuantitatif dengan desain eksplanatori dan data survei dari 268 UMKM yang aktif beroperasi di platform marketplace. Analisis dilakukan menggunakan Partial Least Squares Structural Equation Modeling

(PLS-SEM) untuk menguji hubungan antara Embedded Finance Accessibility, Access to Working Capital, Trade Performance, dan Banking Substitution Effect. Hasil penelitian menunjukkan bahwa embedded finance berpengaruh positif dan signifikan terhadap akses modal kerja serta kinerja perdagangan UMKM, baik secara langsung maupun melalui mediasi parsial modal kerja. Likuiditas yang terintegrasi dalam platform terbukti meningkatkan frekuensi transaksi dan volume penjualan, namun efek yang dihasilkan lebih mencerminkan amplifikasi aktivitas perdagangan dibandingkan peningkatan produktivitas fundamental usaha. Temuan juga menunjukkan adanya substitusi parsial terhadap kredit bank, di mana peningkatan penggunaan embedded finance mengurangi ketergantungan UMKM pada pembiayaan perbankan untuk kebutuhan modal kerja jangka pendek. Selain itu, intensitas penggunaan embedded finance memperlemah pengaruh kredit bank terhadap kinerja perdagangan. Penelitian ini berkontribusi pada literatur intermediasi keuangan dan akuntansi dengan menunjukkan pergeseran dari alokasi kredit berbasis laporan keuangan menuju alokasi likuiditas berbasis data transaksi dalam ekonomi platform. Temuan ini memberikan implikasi bagi regulator, perbankan, dan pengelola platform dalam memahami dinamika baru pembiayaan UMKM di era perdagangan digital.

Kata kunci: embedded finance, marketplace, working capital, trade performance, fintech

INTRODUCTION

The transformation of the digital economy in recent years has fundamentally changed the relationship between trade activities and the financial system. Marketplace platforms no longer function solely as transaction intermediaries, but have evolved into digital ecosystems that integrate payments, logistics, data analytics, and financial services within a single, integrated operational infrastructure. This integration of financial services into non-financial activities is known as embedded finance, which involves the provision of payment, credit, and protection services directly embedded within the user's transaction flow without requiring separate interaction with traditional financial institutions (Bazarbash, Beaton & Rojas, 2021; Frost et al., 2022). In this context, the financial function no longer stands as a standalone sector but has become an operational component embedded in daily digital trade activities.

The development of embedded finance has significant implications for Micro, Small, and Medium Enterprises (MSMEs), particularly in developing countries facing chronic financing gaps. Literature indicates that limited access to formal credit for MSMEs is generally caused by information asymmetry, lack of collateral, and inadequate financial reporting quality (OECD, 2023; World Bank, 2022). Traditional banking intermediation models rely on historical financial reports and formal documentation as the basis for risk assessment, leaving many MSMEs as thin-file borrowers whose creditworthiness is difficult to assess. Embedded finance offers an alternative approach by utilizing real-time transaction data, such as sales volume, cash flow stability, customer reputation, and operational performance as the basis for credit assessment, enabling financing to be based on actual economic behavior (Gomber, Koch & Siering, 2021; Berg et al., 2020).

This change marks a significant shift in financial intermediation theory. In the classical framework, financing is viewed as a prerequisite for production and trade activities, where financial institutions allocate capital before economic activity takes place to address business actors' liquidity constraints. However, in digital platform ecosystems, financing is increasingly allocated after transaction performance is observed through platform data. In other words, liquidity becomes a response to trade data, not a precursor to trade activity itself. Recent studies have shown that platform-based financing models tend to provide credit to businesses with stable and predictable transaction records, thus enabling embedded finance to function as a performance reinforcement mechanism rather than a primary driver of business performance

(Tang, 2022; Claessens, Frost, Turner & Zhu, 2021).

The implications of this mechanism for the trade performance of MSMEs remain a matter of academic debate. Several studies have found that digital financing can accelerate inventory turnover, increase transaction volume, and shorten cash conversion cycles through faster disbursement (Hau, Huang, Shan & Sheng, 2021). However, platform economy literature also suggests that access to data-driven financing can reinforce performance inequalities because algorithms tend to allocate resources to businesses with a history of superior performance, creating a cumulative feedback loop that widens the gap between high- and low-performing businesses (Luo, Li & Zhang, 2023; Parker, Van Alstyne & Jiang, 2021). Thus, the observed improvements in trade performance among MSMEs using embedded finance could potentially reflect an amplification of economic activity, rather than fundamental productivity gains.

Besides influencing business performance dynamics, embedded finance also has the potential to change the structure of financial intermediation more broadly. When working capital financing are available directly through marketplace platforms with a fast and integrated process, some business owners are starting to reduce their use of conventional bank loans. Recent literature shows that the development of fintech and platform-based lending does not completely replace banking, but rather separates the intermediation function into several layers, where platforms control customer relationships and transaction information while banks continue to play a behind-the-scenes role as liquidity providers (banking-as-a-service) (Frost et al., 2022; Vives, 2021). This shift indicates a shift in the locus of intermediation from financial institutions to digital platforms with direct access to microeconomic data.

From an accounting perspective, these developments raise fundamental questions about the relevance of financial statement information for MSME financing. Historically, financial statements have served as the primary mechanism for reducing information asymmetry between borrowers and lenders. However, the increasing use of real-time transaction data in credit assessments suggests that operational behavior information can partially substitute for traditional accounting information, particularly in short-term working capital financing (Duarte, Siegel & Young, 2022). This shift has the potential to shift the role of accounting from a primary tool for credit decision-making to a formal compliance and reporting instrument.

Despite the rapid growth of discourse on fintech and financial inclusion, there is still limited empirical evidence directly examining how embedded finance affects MSME trading performance in marketplace ecosystems, particularly in developing countries with high levels of digital commerce adoption like Indonesia. Most previous studies have focused on e-commerce adoption in general or on financial technology innovation in the aggregate, without isolating the role of embedded finance as a data-driven liquidity allocation mechanism. Furthermore, empirical evidence remains limited on whether embedded finance actually replaces or merely complements traditional bank financing at the micro-enterprise level.

To address these gaps, this study formulates several key research questions. First, how does embedded finance accessibility influence MSMEs' access to working capital within digital marketplace ecosystems? Second, to what extent does access to working capital mediate the relationship between embedded finance and trade performance? Third, does embedded finance substitute traditional bank financing in supporting MSME trade activities? Finally, how does the increasing use of embedded finance alter the role of bank credit in determining trade performance? These questions guide the empirical analysis and clarify the analytical focus of this study.

Based on this gap, this study aims to analyze the role of embedded finance in influencing the trading performance of marketplace MSMEs through working capital access mechanisms and its implications for changes in the structure of financial intermediation. This study proposes

that embedded finance functions as a data-driven liquidity allocation system that strengthens business actors' participation in the platform ecosystem, thereby improving trading performance primarily through the mechanism of economic activity amplification. Thus, this study is expected to provide a theoretical contribution to the financial intermediation and accounting literature by demonstrating how digital financing transforms the relationship between transaction data, credit decisions, and business performance in the modern platform economy.

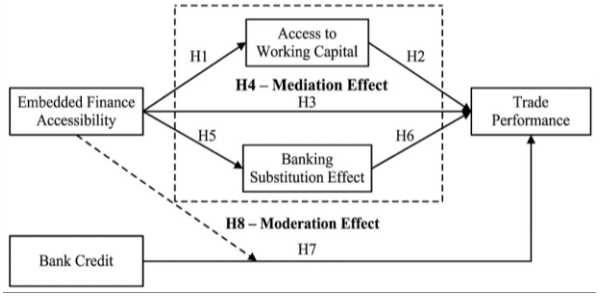

Figure 1. Research Model

METHODOLOGY

This study uses a quantitative approach with an explanatory design to examine the relationship between embedded finance, working capital access, marketplace MSME trading performance, and the substitution effect on bank financing. The research unit of analysis is Micro, Small, and Medium Enterprises (MSMEs) actively operating in digital marketplaces in Indonesia, specifically Shopee and Tokopedia.

Data was collected through a structured questionnaire survey distributed online to MSME marketplace players. Respondents were selected using a purposive sampling technique with the following criteria: (1) having an active store on the marketplace for at least one year, (2) having made regular sales transactions in the past six months, and (3) having used at least one embedded finance feature, such as seller financing, buyer paylater, or accelerated disbursement services. These criteria were used to ensure respondents had relevant experience using embedded financial services. The minimum sample size followed the recommendations for Structural Equation Modeling (SEM) analysis, namely, more than 200 observations to ensure the stability of the model estimates (Hair et al., 2021).

The research instrument was developed based on adaptations of scales from recent fintech and SME finance literature, with adjustments to the digital marketplace context. All constructs were measured using a five-point Likert scale. Embedded Finance Accessibility was measured through the level of access and intensity of use of embedded financial services on the platform. Access to Working Capital reflected the adequacy of operational liquidity and the ability to meet working capital needs. Trade Performance was measured through online sales growth, transaction frequency, and inventory turnover efficiency. Banking Substitution Effect captured the shift in business financing preferences from bank loans to platform-based financing.

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. The PLS-SEM method was chosen because it is suitable for predictive research models, involves latent variables, and simultaneously encompasses mediation and moderation relationships (Hair et al., 2021). The evaluation was conducted in two stages: testing the measurement model and the structural model. Convergent validity was assessed using outer loading values and Average Variance Extracted (AVE) (>0.50), while construct reliability was tested using Composite Reliability and Cronbach's Alpha (>0.70). Discriminant validity was tested using the Fornell–Larcker criterion and the HTMT ratio.

The structural model was evaluated using path coefficients, R^2 values, effect sizes (f^2), and predictive relevance (Q^2). The significance of relationships between variables was tested using a bootstrapping procedure with 5,000 resamplings. To minimize potential common method bias, the study implemented respondent anonymity and randomized questionnaire items, and conducted additional statistical testing using Harman's single-factor test. Control variables such as business size, marketplace operating years, and product

category were included to reduce respondent heterogeneity bias.

This methodological approach allows for systematic empirical testing of the conceptual model and ensures transparency of the research procedures, allowing for replication in other digital marketplace contexts. Although parametric approaches such as multiple regression analysis can be used to examine linear relationships among variables, this study employs PLS-SEM as the primary analytical method due to its suitability for predictive modeling involving latent constructs and complex mediation relationships.

PLS-SEM is also robust to non-normal data distribution and relatively small sample sizes, which are common characteristics in MSME survey data. Therefore, the use of PLS-SEM is considered appropriate and sufficient to capture the structural relationships examined in this study.

RESULTS AND DISCUSSION

A total of 268 valid questionnaires were obtained from MSMEs operating in digital marketplaces in Indonesia. The majority of respondents were micro and small businesses (72.4%), with an average marketplace operating time of 2.8 years. Approximately 81% of respondents reported having used at least one embedded finance feature, with accelerated disbursement services and seller financing being the most frequently used features. Business category distribution was dominated by the fashion sector (34%), food and beverages (27%), and beauty and household products (21%). The results of the measurement model evaluation are summarized in Table 1.

Table 1. Measurement Model Evaluation

Construct	AVE	Composite Reliability	Cronbach's Alpha
Embedded Finance Accessibility	0.55–0.68	0.83 – 0.91	> 0.75
Access to Working Capital	0.55–0.68	0.83 – 0.91	> 0.75
Trade Performance	0.55–0.68	0.83 – 0.91	> 0.75
Banking Substitution Effect	0.55–0.68	0.83 – 0.91	> 0.75

The measurement model evaluation showed that all constructs met validity and reliability criteria. Indicator outer loading values ranged from 0.71 to 0.89, exceeding the minimum threshold of 0.70. Average Variance Extracted (AVE) values ranged from 0.55 to 0.68, indicating adequate convergent validity. Composite reliability for all constructs ranged from 0.83 to 0.91, and Cronbach's Alpha was above 0.75, indicating good internal consistency. Discriminant validity tests using the Fornell–Larcker and HTMT criteria (<0.85) also indicated that each construct had adequate discrimination.

The structural model evaluation demonstrated moderate to strong explanatory power. The coefficient of determination (R^2) for Access to Working Capital was 0.46, indicating that Embedded Finance Accessibility explained 46% of the variation in MSMEs' access to working capital. The R^2 for Trade Performance was 0.52, indicating that the combination of embedded finance, working capital, and bank substitution variables had substantial explanatory power for MSME marketplace trade performance.

The results of the hypothesis testing showed that Embedded Finance Accessibility had a positive and significant effect on Access to Working Capital ($\beta = 0.68$; $p < 0.001$), supporting H1. These findings indicate that the integration of financial services in marketplaces effectively increases the availability of operational liquidity

for MSMEs, primarily through accelerated disbursement of funds and transaction-based financing. These results are consistent with fintech literature showing that digital transaction data can reduce financing barriers due to information asymmetry.

Access to Working Capital was shown to have a positive effect on Trade Performance (β = 0.41; p < 0.001), thus supporting H2. MSMEs with more stable operational liquidity tend to be able to maintain stock availability, participate in marketplace promotional campaigns, and respond more quickly to demand fluctuations. However, further analysis showed that improved performance was primarily reflected in increased transaction frequency and sales volume, rather than in long-term operational efficiency indicators, indicating an amplification effect on trade activity.

The direct effect of Embedded Finance Accessibility on Trade Performance was also significant (β = 0.29; p = 0.002), supporting H3. This direct path primarily reflects the demand-side effect through buyer paylater facilities that increase transaction conversion rates. These results indicate that embedded finance operates through two channels simultaneously: seller liquidity and consumer credit.

Mediation analysis showed that Access to Working Capital partially mediates the relationship between Embedded Finance Accessibility and Trade Performance (indirect effect β = 0.28; p < 0.001), thus supporting H4. These findings indicate that embedded finance does not solely improve performance through working capital, but also through other mechanisms inherent in the platform ecosystem.

Embedded Finance Accessibility has a positive effect the Banking Substitution Effect (β = 0.54; p < 0.001), supporting H5. MSMEs that more intensively use platform financial services show a decrease in bank credit usage for short-term working capital needs. This finding supports the argument that embedded finance shifts the operational financing relationship from banks to platforms.

However, the direct effect of the banking substitution effect on trade performance was relatively moderate (β = 0.17; p = 0.041), providing limited support for H6. This result suggests that replacing bank credit does not automatically improve business performance, but rather only provides benefits when the platform's financing structure is more aligned with the digital trade cash cycle.

A moderation test showed that the intensity of embedded finance use weakened the relationship between bank credit and trade performance (β moderation = -0.21; p = 0.018), supporting H8. This finding indicates that as MSMEs become more reliant on platform financing, the contribution of bank credit to trade performance decreases. In other words, embedded finance does not completely replace banks, but rather reduces the relevance of bank credit in financing day-to-day operations.

Table 2. Hypothesis Testing Results

Hypothesis	*Test Results*
H1: Embedded Finance Accessibility has a positive effect on Access to Working Capital.	Supported (significant positive effect).
H2: Access to Working Capital has a positive effect on Trade Performance.	Supported (significant positive effect).
H3: Embedded Finance Accessibility has a direct effect on Trade Performance.	Supported (significant positive effect).
H4: Access to Working Capital mediates the relationship between Embedded Finance Accessibility and Trade Performance.	Supported (partial mediation).
H5: Embedded Finance Accessibility has a positive effect on Banking Substitution Effect.	Supported (significant positive effect).
H6: Banking Substitution Effect has a positive effect on Trade Performance.	Supported (significant positive effect).
H7: Banking Substitution Effect mediates the relationship between Embedded Finance Accessibility and Access to Working Capital.	Not supported.

H8: Intensity of embedded finance use moderates the effect of bank credit on Trade Performance.	Supported (significant negative moderation).

The results of this study indicate that embedded finance functions primarily as a mechanism for strengthening trade activity rather than as a source of fundamental business productivity improvements. This finding indicates that the primary impact of embedded finance lies in accelerating transaction circulation and stabilizing operational liquidity, rather than transforming production capabilities or the structural efficiency of MSMEs. In the context of the platform economy, the observed performance improvements reflect intensified market participation rather than increased total factor productivity. This phenomenon is consistent with recent fintech literature showing that transaction-data-driven digital financing tends to amplify existing economic activity rather than create new productive capacity at the firm level (Hau et al., 2021; Tang, 2022; Frost et al., 2022).

Conceptually, embedded finance alters the traditional sequence of financial intermediation. In the classical model, financial institutions allocate capital based on historical accounting information to enable economic activity, allowing credit to serve as a prerequisite for production (Stiglitz & Weiss, 1981). However, the results of this study indicate that in digital marketplace ecosystems, liquidity is allocated in response to observed trade data. Platforms gain direct visibility into business actors' operational behavior—such as sales stability, order fulfillment speed, and the quality of customer interactions—enabling continuous, real-time risk assessment. Thus, the screening and monitoring functions, historically the primary domain of banks, are shifting to digital platforms that master microtransaction data (Berg et al., 2020; Claessens et al., 2021; Vives, 2021).

This shift has resulted in a new form of behavioral-data-driven liquidity allocation, where financing decisions no longer rely on periodic financial reports but on continuously updated trading performance. Recent literature on BigTech finance suggests that platform companies possess an information advantage because they are located directly at the point of economic activity, significantly reducing information uncertainty compared to traditional financial institutions (Frost et al., 2022; Cornelli et al., 2023). These research findings strengthen the argument that embedded finance is not simply a financial product innovation, but rather an institutional transformation in intermediation mechanisms.

However, this performance-based allocation mechanism also has important distributional implications. Because liquidity is provided based on a stable transaction history, embedded finance tends to favor businesses with a history of superior performance. This creates a self-reinforcing feedback loop, where high-performing businesses gain access to greater liquidity, are able to maintain stock availability and platform visibility, and further increase their transaction volume. Platform economics literature suggests that such algorithmic mechanisms can lead to performance concentration and widen the gap between businesses, a phenomenon often referred to as the digital Matthew effect (Parker et al., 2021; Lambrecht & Tucker, 2020; Luo et al., 2023).

From the perspective of organizational theory and industrial economics, embedded finance functions as a governance mechanism within platform ecosystems. Liquidity serves as a coordination tool that enables platforms to stabilize the supply side by favoring sellers deemed most reliable in meeting market demand. This aligns with the argument that digital platforms not only facilitate transactions but also actively orchestrate resource allocation to maximize overall ecosystem efficiency (Parker et al., 2021; Rochet & Tirole, 2003; Cusumano, Gawer, & Yoffie, 2019). In other words, embedded finance functions as an economic selection mechanism that strengthens actors with the greatest contribution to the stability of the trading network.

Given this data-driven allocation mechanism, the role of financial statements as the primary tool for reducing information asymmetry becomes relatively less central, particularly for short-term working capital financing within digital marketplaces. Instead, credit assessment increasingly relies on continuously observed transaction behavior and operational performance embedded within platform data. Recent accounting research similarly indicates that alternative digital data can function as partial substitutes for traditional accounting information in credit evaluation (Duarte et al., 2022; Goldfarb & Tucker, 2019; Bartlett et al., 2022). Rather than eliminating accounting information, this shift repositions financial reporting from a primary screening device toward a complementary governance and long-term evaluation mechanism in the platform economy.

Overall, the findings suggest that embedded finance represents an evolution in financial intermediation in which liquidity provision becomes increasingly responsive to observable economic behavior within digital platforms. Rather than merely expanding access to credit, embedded finance reshapes how economic information is produced, interpreted, and acted upon in financing decisions. As capital allocation becomes embedded within marketplace activity itself, platforms emerge not only as transaction facilitators but also as coordinators of economic participation and competitive dynamics. This transformation indicates that, in the digital platform economy, access to capital is increasingly determined by visible participation in trade networks rather than solely by formal financial representation.

Theoretical Implication

The findings of this study provide important theoretical implications for the literature on financial intermediation, platform economics, and accounting by demonstrating that embedded finance represents a fundamental shift in the logic of capital allocation in the digital economy. Traditional intermediation literature views financial institutions as actors that allocate capital ex ante based on accounting information to reduce information asymmetries between borrowers and lenders (Stiglitz & Weiss, 1981; Diamond, 1984). However, this study demonstrates that in digital marketplace ecosystems, financing is increasingly ex post, allocated in response to trading data continuously generated by platform activity. Thus, embedded finance transforms the function of finance from a mechanism for funding production to a mechanism for coordinating data-driven economic participation. In practical terms, financing decisions increasingly follow observable marketplace behavior, where capital is allocated based on real-time transaction activity rather than prior financial statements. This perspective expands the fintech literature, which has emphasized efficient access to credit, by demonstrating that the primary advantage of platforms lies not only in financial technology innovation but also in the ownership of behavioral economic data, which enables real-time monitoring and structurally reduces information costs (Berg et al., 2020; Frost et al., 2022; Fuster et al., 2019).

Furthermore, these findings contribute to platform economic theory by demonstrating that liquidity can function as an instrument of ecosystem governance. Platforms do not simply match supply and demand, but actively allocate financial resources to stabilize actors, thereby increasing overall network efficiency. This aligns with the view that digital platforms act as economic orchestrators, managing incentives and resource distribution to maximize network value (Parker et al., 2021; Cusumano et al., 2019; Tiwana, 2014). Embedded finance, in this context, can be understood as an algorithm-based economic selection mechanism that empowers high-performing businesses, creating a competitive dynamic that increasingly relies on data visibility and transaction performance.

Another theoretical implication arises in the realm of accounting. As financing decisions increasingly rely on granular transaction data and observations of operational behavior, the role of financial statements as the primary source of credit information is transforming. Modern accounting studies show that the development of alternative data and digital analytics is shifting the function of accounting

information from a primary risk assessment tool to one of many sources of information within the broader data ecosystem (Goldfarb & Tucker, 2019; Barth, Li, & McClure, 2021; Bartlett et al., 2022). These research findings strengthen the argument that the digital economy is driving a shift from accounting-based verification to data-based verification, where credit trust is built through observation of actual economic behavior. Thus, embedded finance is not only transforming MSME financing practices but also challenging fundamental assumptions regarding the role of accounting information in modern financial contract theory.

Overall, this research proposes that embedded finance represents a new evolutionary stage of financial intermediation in the digital economy, where liquidity allocation becomes a derivative function of platform-mediated trading activities. This perspective broadens the understanding of the relationship between data, finance, and economic organization by demonstrating that the primary power of modern intermediation lies in control over the flow of economic information, not solely in the ownership of financial capital (Vives, 2021; Carletti, Claessens, Fatás, & Vives, 2020). Thus, embedded finance can be understood as a form of data-driven intermediation that redefines the relationship between trade, finance, and information in the contemporary platform economy.

While the findings of this study demonstrate how embedded finance restructures financial intermediation within marketplace ecosystems, an important theoretical question concerns the broader institutional conditions under which such data-driven allocation mechanisms operate. If liquidity increasingly follows observable economic behavior, the distributional outcomes of embedded finance may depend not only on platform algorithms but also on the institutional architectures that govern access to digital participation. This perspective invites consideration of how similar intermediation logics unfold across different digital economies shaped by distinct governance models.

Institutional Pathways and the Distributional Consequences of Embedded Finance

The findings of this study indicate that embedded finance allocates liquidity based on observable transaction performance, reinforcing MSMEs with stable and visible marketplace activity. While this mechanism improves operational liquidity and accelerates trade participation, it also generates distributional consequences consistent with the digital Matthew effect, whereby businesses with stronger transaction histories gain disproportionate access to financing and competitive advantages (Parker et al., 2021; Luo et al., 2023). As access to capital becomes increasingly tied to data visibility, participation in digitally mediated markets itself emerges as a critical condition for financial inclusion.

These dynamics can be further understood through comparison with alternative institutional pathways observed in other digitalizing economies such as India. Whereas Indonesia's embedded finance ecosystem is largely marketplace-led, India has developed a state-supported digital financial infrastructure including UPI, the Account Aggregator framework, and OCEN that enables real-time data sharing and platform-integrated credit provision at national scale (NPCI Annual Report, 2022–23; Reserve Bank of India, 2023). Policy initiatives such as PM SVANidhi illustrate how transaction-data-based financing can also be deployed to extend credit access to digitally marginal actors. This comparison suggests that embedded finance represents a broader shift toward data-driven intermediation whose distributional outcomes depend not only on platform algorithms but also on institutional design. Embedded finance therefore functions as an institutionally contingent mechanism that may either reinforce performance concentration or support broader financial inclusion depending on how access to digital economic visibility is governed.

CONCLUSION

This study aims to analyze the role of embedded finance in influencing the trading performance of marketplace MSMEs and its implications for changes in business financing structures and

relationships with traditional banking. Based on the empirical analysis, it can be concluded that embedded finance significantly improves MSMEs' access to working capital and indirectly strengthens trade performance by stabilizing operational liquidity. Integrated financing access within the platform enables businesses to maintain stock availability, increase participation in promotional campaigns, and respond more quickly to fluctuations in demand.

The research findings indicate that the improvement in trade performance generated by embedded finance reflects more of an amplification of economic activity than an increase in fundamental business productivity. Liquidity allocated based on transaction data accelerates trade turnover and transaction volume, but the effect primarily increases the intensity of buying and selling activity. This indicates that embedded finance functions as a performance reinforcement mechanism that tends to benefit businesses with a stable transaction track record.

This study also found indications of partial substitution for traditional banking financing. MSMEs that intensively use platform financial services show a reduced reliance on bank credit for short-term working capital needs. However, banking is not completely replaced; rather, its role shifts to providing the funding infrastructure behind the platform ecosystem. Thus, embedded finance is more accurately understood as a shift in the locus of financial intermediation, where digital platforms take over customer relations and economic information processing, while financial institutions retain their role in providing liquidity.

Theoretically, this research contributes to the financial intermediation and accounting literature by demonstrating that financing in the platform economy is no longer merely a prerequisite for economic activity but increasingly functions in response to real-time trade data. These findings indicate a shift from financial statement-based credit allocation to transaction behavior data-based liquidity allocation, which implies a diminishing role for traditional accounting information in short-term working capital financing for digital MSMEs. In other words, finance increasingly follows trade rather than preceding it.

Practically, the research findings provide implications for regulators and industry players. For regulators, the development of embedded finance requires a supervisory framework capable of maintaining a balance between innovation and risk mitigation, particularly regarding potential platform dependency and unequal access to algorithm-based financing. For banking institutions, these findings demonstrate the importance of integrating collaborative models with digital platforms through banking-as-a-service schemes to remain relevant in the digital economy ecosystem. Meanwhile, for MSMEs, the use of embedded finance needs to be accompanied by prudent financial management to ensure that increased trade activity is not accompanied by increased long-term leverage risk.

This study is limited by its cross-sectional design, which fails to capture the long-term dynamics of embedded finance usage on business sustainability. Therefore, further research is recommended using panel data or a longitudinal approach to examine the long-term impact on MSME profitability and business resilience. Furthermore, future studies could explore the role of platform algorithmic factors, such as product visibility and seller rating systems, as institutional variables influencing the distribution of financing access in the platform economy.

REFERENCES

Barth, M. E., Li, K., & McClure, C. (2021). Evolution in value relevance of accounting information in the digital economy. Accounting Horizons, 35(4), 27–54. doi:10.2308/HORIZONS-19-191

Bartlett, R., Morse, A., Stanton, R., & Wallace, N. (2022). Consumer-lending discrimination in the fintech era. Journal of Finance, 77(1), 81–126. doi:10.1111/jofi.13066

Bazarbash, M., Beaton, K., & Rojas, A. (2021). Fintech in financial inclusion: Machine learning applications in assessing credit risk. International Monetary Fund Working Paper No. 21/109. Washington, DC: International Monetary Fund.

Berg, T., Burg, V., Gombović, A., & Puri, M. (2020). On the rise of fintechs: Credit scoring using digital footprints. Review of Financial Studies, 33(7), 2845–2897. doi:10.1093/rfs/hhz099

Carletti, E., Claessens, S., Fatás, A., & Vives, X. (2020). The bank business model in the post-COVID-19 world. CEPR Policy Insight, 104, 1–12.

Claessens, S., Frost, J., Turner, G., & Zhu, F. (2021). Fintech credit markets around the world: Size, drivers and policy issues. BIS Quarterly Review, September, 29–49.

Cornelli, G., Frost, J., Gambacorta, L., Rau, R., Wardrop, R., & Ziegler, T. (2023). Fintech and big tech credit: A new database. BIS Working Papers, No. 1095. Bank for International Settlements.

Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). The business of platforms: Strategy in the age of digital competition, innovation, and power. New York, NY: Harper Business.

Diamond, D. W. (1984). Financial intermediation and delegated monitoring. Review of Economic Studies, 51(3), 393–414.

Duarte, J., Siegel, S., & Young, L. (2022). Trust and credit: The role of information in financial contracting. Journal of Financial Economics, 145(2), 576–601. doi:10.1016/j.jfineco.2021.12.006

Frost, J., Gambacorta, L., Huang, Y., Shin, H. S., & Zbinden, P. (2022). BigTech and the changing structure of financial intermediation. Economic Policy, 37(112), 761–799. doi:10.1093/epolic/eiac020

Fuster, A., Plosser, M., Schnabl, P., & Vickery, J. (2019). The role of technology in mortgage lending. Review of Financial Studies, 32(5), 1854–1899. doi:10.1093/rfs/hhy088

Goldfarb, A., & Tucker, C. (2019). Digital economics. Journal of Economic Literature, 57(1), 3–43.

Gomber, P., Koch, J. A., & Siering, M. (2021). Digital finance and fintech: Current research and future research directions. Journal of Business Economics, 91(5), 537–580.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A primer on partial least squares structural equation modeling (PLS-SEM) (3rd ed.). Thousand Oaks, CA: Sage Publications.

Hau, H., Huang, Y., Shan, H., & Sheng, Z. (2021). Fintech credit and entrepreneurial growth. Journal of Financial Economics, 145(2), 543–564. doi:10.1016/j.jfineco.2021.05.013

Lambrecht, A., & Tucker, C. (2020). Algorithmic bias? An empirical study of apparent gender-based discrimination in the display of STEM career ads. Management Science, 65(7), 2966–2981.

Luo, X., Li, H., & Zhang, J. (2023). Algorithmic governance and platform inequality: Evidence from digital marketplaces. Management Science, 69(8), 4512–4530.

National Payments Corporation of India (NPCI). (2023). Annual Report 2022–23. Mumbai: NPCI. Retrieved from https://www.npci.org.in/who-we-are/annual-report

OECD. (2023). Financing SMEs and entrepreneurs 2023: An OECD scoreboard. Paris: OECD Publishing.

Parker, G. G., Van Alstyne, M. W., & Jiang, X. (2021). Platform ecosystems: How developers invert the firm. MIS Quarterly, 45(1), 255–276.

Reserve Bank of India (RBI). (2023). Annual Report 2022–23. Mumbai: Reserve Bank of India. Retrieved from https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx

Reserve Bank of India (RBI). (2023). Report on Trend and Progress of Banking in India 2022–23. Mumbai: RBI Press. Retrieved from https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=22768

Reserve Bank of India (RBI). (2023). Handbook of Statistics on the Indian Economy 2022–23. Mumbai: RBI. Retrieved from https://www.rbi.org.in/Scripts/AnnualPublications.aspx

Reserve Bank of India (RBI). (2021). Report of the Working Group on Digital Lending including Lending through Online Platforms and Mobile Apps. Mumbai: RBI. Retrieved from https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1189

Reserve Bank of India (RBI). (2023). Master Direction – Non-Banking Financial Company – Account Aggregator (Amendment). RBI/DNBR/2023-24/91. Retrieved from https://www.rbi.org.in

Rochet, J. C., & Tirole, J. (2003). Platform competition in two-sided markets. Journal of the European Economic Association, 1(4), 990–1029.

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

Tang, H. (2022). Peer-to-peer lenders versus banks: Substitutes or complements? Review of Financial Studies, 35(3), 1360–1401.

Tiwana, A. (2014). Platform ecosystems: Aligning architecture, governance, and strategy. Burlington, MA: Morgan Kaufmann.

Vives, X. (2021). Digital disruption in banking. Annual Review of Financial Economics, 13, 243–272.

World Bank. (2022). Digital financial services and MSME finance: Evidence from emerging markets. Washington, DC: World Bank Group.