Is P2P Lending a Complement or Substitute? Insights from an Entrant's Disruptive Trajectory

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ABSTRACT
This study aims to examine whether peer-to-peer (P2P) lending functions as a complement or a substitute for the low-end market)- represented by traditional MSME bank credit in Indonesia- in alignment with an entrant's disruptive trajectory, using the theoretical frameworks of disruptive innovation and consumer theory. Utilizing panel data from 33 provinces between January and December 2024, the analysis explores the impact of P2P lending on bank credit for MSMEs, controlling for third-party funds and the number of bank branches. The regression results indicate that P2P lending has a positive and significant effect on MSME credit both overall and in Java, suggesting a complementary role alongside the conventional banking sector. In contrast, the effect is statistically insignificant outside Java. These findings underscore the potential for P2P lending to enhance financial inclusion in areas with strong banking systems, while highlighting the need for improved digital access and education to maximize fintech's reach in underserved areas.

Keywords: *P2P lending, MSME Credit, Bank, Complementary.*

1. INTRODUCTION

Theory of disruptive innovation posits that new entrants typically penetrate the market by initially targeting low-end or underserved segments-a process known as entrant's disruptive trajectory, and subsequently move upmarket to challenge established incumbents (Christensen et al., 2015, 2016; Das, 2017). According to consumer theory, the researcher argues that new entrants may enter the market-particularly the low-end segment-either as complements or substitutes (Levin & Milgrom, 2004). Therefore, it is of particular interest to explore whether newcomers position themselves in the low-end market as complementary offerings or as substitutes for existing products.

Peer-to-peer (P2P) lending represents one of the most prominent newcomers in the financial market landscape, experiencing rapid growth in recent years. Figure 1 illustrates the trend in loan disbursement through P2P lending platforms from December 2021 to December 2024. The amount of disbursed loans has shown a consistent upward trajectory, rising from Rp 13,609.36 billion in December 2021 to Rp 28,005,80 billion in December 2024. This significant growth reflects the increasing adoption of P2P lending as an alternative financing source in Indonesia.

A key question arises regarding whether the emergence of P2P lending as a newcomer serves as a complement to, or a substitute for, the traditional banking sector in the low-end market segment. The researcher considers micro, small, and medium enterprises (MSME) credit as part of the low-end market segment in the banking sector. This perspective is supported by data from the Financial Services Authority of Indonesia (Otoritas Jasa Keuangan /OJK), which show that the average ratio of MSME loans to total commercial bank loans from 202 to 2024 was only 20.26% (Otoritas Jasa Keuangan, 2024). This figure remains significantly below OJK's target of 30%, indicating that the proportion of credit disbursed to MSMEs is still relatively low. These conditions underscore the importance of exploring whether P2P lending can effectively support the banking sector in reducing the financing gap within the MSME segment and contribute to broader financial inclusion, or whether it may instead emerge as a substitute for traditional banking services in this market.

To gain a deeper understanding of whether P2P lending acts as complement or substitute in the low-end market (MSME credit)- or in relation to the entrant's disruptive trajectory- the researcher distinguishes observations between regions outside Java Island and those within Java. This distinction is because Indonesia's economic structure remains heavily concentrated in Java (Kohardinata et al., 2020), while FinTech Platforms, including P2P lending, have shown the potential to grow in regions with less developed local economies.

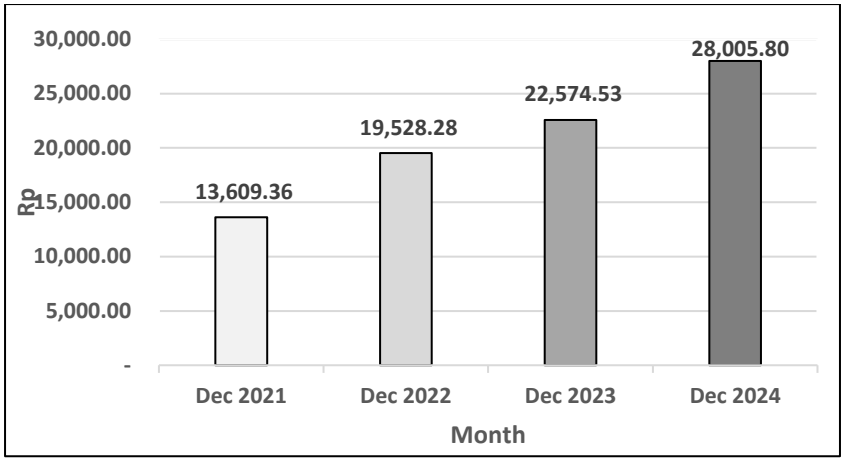

Figure 1. Amount of Loan Disbursement (billion rupiah - Rp)
Source: Otoritas Jasa Keuangan Indonesia (2022, 2023, 2024, 2025)

Previous research examining the effects of P2P lending in Java and outside Java Island found that the growth of P2P lending had a negative impact on the growth of MSME bank lending (Kohardinata et al., 2020). However, a post-COVID-19 study presents a different finding: P2P lending was found to have a significant positive effect on overall MSME bank credit, no significant effect on MSME bank credit in Java, and a significant positive effect outside Java (Kohardinata et al., 2024). These contrasting findings, when compared to earlier research, suggest potential inconsistencies in the relationship, thereby highlighting the need for continued investigation to obtain more robust and conclusive results.

In conclusion, this study draws on disruptive innovation and consumer theory to examine whether P2P lending serves as a complement or substitute for traditional banking in MSME credit segment (low end market). The analysis highlights the importance of regional differences, particularly between Java and non-Java areas, given the uneven economic distribution. By addressing the role of P2P lending in narrowing the MSME financing gap, this study contributes to the discourse on financial disruption and inclusion.

2. RESEARCH METHODS

This study employs a combination of cross sectional and time series data, covering 33 provinces in Indonesia from January to December 2024. Accordingly, a data regression approach is utilized. The research model applied in this study, as specified in Equation (1), defines MSME bank credit as the dependent variable and P2P lending as the independent variable. The model also includes savings and the number of bank offices as control variable, and is specified as follows:

$$\text{MSME}_{it} = \alpha + \beta 1\ \text{P2P}_{it} + \beta 2\text{SAV}_{it} + \beta 3\ \text{BO}_{it} + \mathcal{E}_{it} \quad (1)$$

Where: MSME$_{it}$ represents the MSME bank credit in province i at time t.

P2P$_{it}$ denotes the P2P lending disbursement in province i at time t.

SAV$_{it}$ refers to third-party funds (savings) in province i at time t.

BO$_{it}$ indicates the number of bank offices in province i at time t.

$\mathcal{E}_{it}$ is the error term.

Panel data regression comprises three main models: the common effect model (also known as pooled ordinary least squares), the fixed effect, and the random effect model. To determine the most appropriate model between the fixed and random effects, researchers typically apply the Hausman test and the F-test (Dang, 2019). Lagrange Multiplier test is used to decide between the common effect and random effect models (Pillai, 2016; Shawtari, 2018).

3. RESULTS AND DISCUSSIONS

3.1. Descriptive Statistics

Table 1 presents the descriptive statistics for the overall, as well as for Java and outside Java regions separately. The full dataset consists of 396 observations, covering 33 provinces in Indonesia from January to December 2024. Specifically, the Java region comprises 72 observations from 6 provinces, while the outside Java region comprises 324 observations from 27 provinces.

For the overall sample, the average value of MSME credit is Rp 44,765.94 billion with a standard deviation of Rp 56,458.66 billion. P2P lending has an average of Rp 758.06 billion, while third-party funds (SAV) average Rp 261,649.2 billion. The number of bank offices (BO) averages 102.89 units.

Table 1. Descriptive Statistics

Overall					
Variable	Obs	Mean	Std. Dev.	Min	Max
MSME	396	44,765.94	56,458.66	4,349.66	225,662.4
P2P		758.0573	1,418.02	26.5	7,186.92
SAV		261,649.2	780,870.3	5,749.58	4,639,765
BO		102.8889	109.3471	17	448
Java					
Variable	Obs	Mean	Std. Dev.	Min	Max
MSME	72	138,435.50	73,291.95	22,761.42	225,662.40
P2P		3,138.07	2,003.53	326.26	7,186.92
SAV		1,129,025.00	1,561,626.00	81,428.21	4,639,765.00
BO		278.26	148.32	58.00	448.00
Outside Java					
Variable	Obs	Mean	Std. Dev.	Min	Max
MSME	324	23,950.49	18,080.68	4,349.66	81,047.61
P2P		229.1651	182.7042	26.5	917.37
SAV		68,899.08	68,207.67	5,749.58	328,371.6
BO		63.91667	37.50792	17	193

When disaggregated, the Java region (72 observations) shows significantly higher average values: MSME credit at Rp 138,435.50 billion, P2P lending at Rp 3,138.07 billion, SAV at Rp 1,129,025.00 billion, and BO at 278.26 units. In contrast, the outside Java region (324 observations) records much lower averages: MSME credit at Rp 23,950.49 billion, P2P lending at Rp 229.17 billion, SAV at Rp 68,899.09 billion, and BO at 63.92 units.

3.2. Research Model Testing Result

Table 2 presents the results of several model diagnostic tests to determine the appropriate panel data estimation technique. The Chow and Hausman Tests across all model specifications-overall, Java, and outside Java (both with multicollinearity present and after eliminating the BO variable-yield p-values below the 0.05 significance level. These results indicate that the Fixed Effects Model is appropriate for all conditions. The Breusch-Pagan Lagrangian Multiplier test is not reported, as the Fixed Effects Model has already been confirmed as appropriate based on Chow and Hausman results.

Table 2. Research Model Testing Result

	Overall	Java	Outside Java	
			Multicollinearity Exist	Eliminate BO
Chow Test (Prob>F)	0.0000	0.0000	0.0000	0.0000
Hausman Test	0.0000	0.0000	0.0000	0.0001
Appropriate Model	Fixed Effect			
Variance Inflation Factor (VIF)	4.28	7.05	13.60	9.36
Modified Wald Test (Heteroscedasticity test)	0.0000	0.0000	0.0000	0.0000
Wooldridge test (Autocorrelation test)	0.0000	0.0006	0.0000	0.0000

The Variance Inflation Factor (VIF) values indicate potential multicollinearity, particularly in the outside Java model. A VIF value exceeding 10 is generally interpreted as indicative of severe multicollinearity, whereas values below this threshold are considered acceptable. In the outside Java specification, the VIF was recorded at 13.60, signaling potential multicollinearity concerns. However, after excluding the BO variable, the VIF was reduced to 9.36, which is within the acceptable range.

3.3. Hypothesis Testing Results and Discussion

Table 3 presents the regression results examining the effect of P2P lending on MSME bank credit across different regional classifications in Indonesia. All models are statistically significant (Prob>F=0.0000), with R-squared values ranging from 0.495 to 0.587. The results for the overall model show that P2P lending has a positive and statistically significant effect on MSME credit (coefficient = 1.803, $p<0.01$), SAV also shows a significant positive effect (coefficient = 0.0304, $p<0.01$), while BO has a significant negative effect (-703.4, $p<0.01$). In the Java model, P2P lending maintains a positive and significant effect (1.794, $p<0.05$), as does SAV (0.0303, $p<0.01$). BO again exhibits a significant negative coefficient (-824.0, $p<0.05$). For the outside Java model, under the multicollinearity condition, the P2P variable is not statistically significant (0.981), while SAV remains positive and significant (0.0907, $p<0.01$), BO still shows a significant negative effect (-376.9, $p<0.01$). However, when BO is eliminated to address multicollinearity, the effect of both P2P and SAV remains consistent with those observed under the multicollinearity condition.

The findings are interpreted through the lens of disruptive innovation theory and consumer theory, particularly in relation to complementarity and substitution along the entrant trajectory within the disruptive innovation framework. P2P lending has a significant and positive effect on banking MSME credit overall and in Java, suggesting that P2P platforms may function as complementary financial channels in regions with well-established banking infrastructure. This indicates a synergistic relationship, where P2P lending supplements conventional banking, possibly by offering more flexible credit access, simplified procedures, or reaching underserved borrowers who remain outside formal banking mechanisms. New insight emerges that P2P platforms can enter the entrant's trajectory in collaboration with traditional institutions, to serve the low-end market segment.

In the outside Java region, the adoption and effectiveness of Fintech-based financial services, particularly P2P lending, remains constrained in these areas. The researcher argues that a key contributing factor is the limited penetration of internet access and smartphone ownership across many provinces outside Java. Since P2P lending platforms operate digitally, both borrowers and lenders require reliable internet connectivity and digital devices to access and interact with the platforms. In the absence of such infrastructure, potential MSME borrowers may be unable to benefit from the alternative financing opportunities offered by fintech providers. Moreover, low levels of digital literacy in certain regions furter exacerbate the challenge, as users may lack the knowledge or confidence to engage with online financial services.

Table 3. Hypothesis Testing Results

VARIABLES	MSME			
	Overall	Java	Outside Java	
			Multicollinearity Exist	BO Eliminated
P2P	1.803*** (0.420)	1.794** (0.485)	0.981 (1.324)	1.992 (1.605)
SAV	0.0304*** (0.00455)	0.0303*** (0.00469)	0.0907*** (0.0237)	0.123*** (0.0235)
BO	-703.4*** (139.3)	-824.0** (224.6)	-376.9*** (79.96)	- -
Constant	107,808*** (13,414)	327,936*** (58,203)	41,563*** (6,027)	14,999*** (1,415)
Prob>F	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***
Observations	396	72	324	324
Number of Provinces	33	6	27	27
R-squared	0.561	0.587	0.564	0.495

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results for saving and bank offices are consistent across ala model specifications. Savings accumulation plays a pivotal role in supporting local financial intermediation and liquidity. Meanwhile, the negative effect of bank offices suggests that banks may rely on alternative channels or prioritize other segments over MSMEs when allocating credit.

4. CONSLUSION

This study investigates whether P2P lending acts as a complement or substitute for traditional MSME bank credit in Indonesia using lens of disruptive innovation and consumer theory. By utilizing panel data across 33 provinces in 2024, the research reveals that P2P lending has a significant and positive impact on MSME credit overall and in Java, indicating its complementary role in areas with established infrastructure. In contrast, the insignificant effect of P2P lending outside Java suggests that digital financial inclusion remains limited due to infrastructural and digital literacy constraints. Additionally, savings consistently support MSME credit across all regions, while the negative effect of the number of bank offices implies that banks may rely on alternative channels or prioritize other segments over MSMEs when allocating credit.

These findings highlight the potential of P2P lending to work in synergy with conventional banking, particularly in financially inclusive environments, while underscoring the need for digital infrastructure development and literacy programs in underserved regions. This study contributes to the broader discourse on financial innovation and inclusion, emphasizing that the impact of fintech entrants is context-dependent and shaped by regional economic disparities and technological readiness.

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