

Peer-to-peer Lending's Customer Profile: Empirical Research on Indonesia's Financial Technology Market

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Abstract

The peer-to-peer lending industry has grown very rapidly in Indonesia over the last three years, offering loans to customers by leveraging technology. This study analyzes four factors associated with customers applying for loans through this channel: banking access, financial technology awareness, regulatory trust, and demographic characteristics. Using a logit regression over a total sample of 298 survey respondents in Indonesia, the empirical results show that customers with access to bank loans, financial technology awareness, and trust of regulators are those who are most likely to borrow from peer-to-peer lending platforms. Given the rapid growth of the industry and regulatory trust is associated with applying for loans, regulators should consider licensing or registering peer-to-peer lending platforms on a regular basis.

Keywords: financial technology, Indonesia, peer-to-peer lending

JEL Classification: G20, G21, M13.

1. Introduction

Indonesia has a total population of 268.2 million, of which around 66% are financially excluded, where financial inclusion is defined as owning a bank account (Nugroho and Samudera, 2018). Based upon a survey previously run by Hootsuite in January 2019, the number of mobile subscriptions in Indonesia surpassed the number of people in the population, recording as many as 355.5 million single mobile subscriptions. As many as 150 million Indonesian residents (equal to 56% of the population) are defined as active internet users. This scale of internet usage on smartphones encourages people to turn away from conventional transactions and bring their business to digital platforms. Hence, Indonesia has potential for the growth of financial technology businesses, including financial aggregators, crowdfunding, e-money, and peer-to-peer lending. A common Indonesian perception regarding banking services is one of arduous administrative processes and uncompromising requirements (Himawan and Kusumo, 2017). Therefore, the growth of financial technology and, in particular, peer-to-peer (P2P) lending—defined by Otoritas Jasa Keuangan (OJK) Regulation No. 77 / 2016 as information technology-based lending and borrowing services—is seen to potentially be in competition with traditional banking services. The advantages of natural and flexible processes and accessible services that can be completed through smartphones are highly appealing to a significant portion of the population as a bank lending alternative.

The P2P system can be considered as a way to eliminate some intermediary processes in the traditional banking system due to the benefit of internet-based information processing (Yusgiantoro, 2018). Milne and Parboteeah (2016) argue that P2P lending is fundamentally complementary and not competitive with conventional banking, and that full development of the sector requires much further work addressing risks, business, and regulatory issues. Thus, in a broader view, this new online lending services industry can complement banking services by increasing financial inclusion. New financial technology is expected to reach the remaining population that is yet unexposed

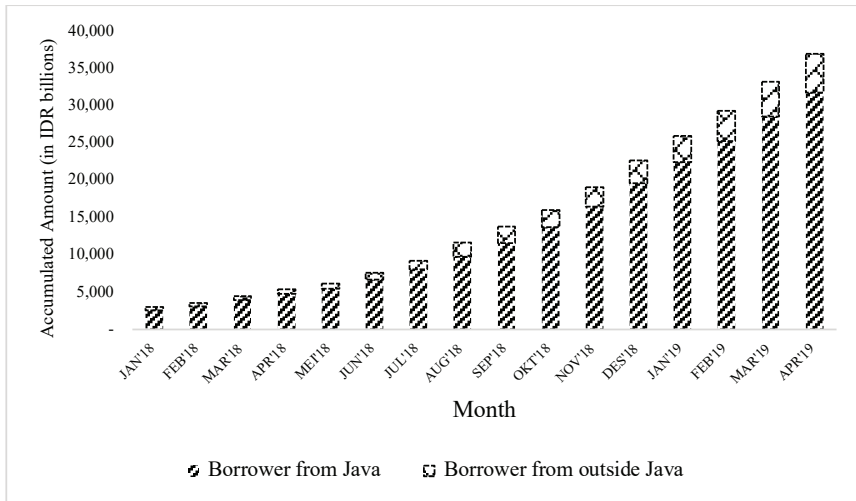
to banking services and directly help improve access to financing for micro and small enterprises. Iman (2018) attempts to capture the dynamics of financial technology in Indonesia with an aim to help researchers and academics interested in studying the phenomenon of fintech more broadly. The study results show that fintech cannot be compared to other start-ups and has the potential to fundamentally change the business and economic landscape in Indonesia.

Otoritas Jasa Keuangan (OJK) (Financial Services Authority of Indonesia) is a regulatory authority that regulates officially listed P2P applications. Currently, there is only one regulation that has been put into force (Regulation 77/POJK.01.2016) concerning information technology-based money lending services since the rise of peer-to-peer lending applications in Indonesia starting around 2014 to 2016. However, the existing pre-emptive measure is deemed incapable of effectively protecting consumers from the reach of illegal lending services. For unregistered (so-called “illegal”) fintech applications, OJK cannot enforce any sanctions or fines if they do irregular activities within their standard operating procedures. This regulation limitation can only be solved with legal reforms at the constitutional level (CNN, 2019). By the end of 2018, Indonesia was buffeted by recurring news media reports related to loan collection originating from peer-to-peer lending applications. Borderline unethical loan collection methods, including threats and aggressive treatment, have been experienced by users (Ananta, 2019).

Despite concerns regarding peer-to-peer lending regulations, the online lending industry's growth has not slowed and has steadily increased in size. This growth can be monitored from OJK published data on cumulative online lending that has extended from 3 trillion Indonesian rupiahs (IDR) in January 2018 to IDR 37 trillion in April 2019. Within one year (April 2018 to April 2019), the accumulated amount of loans within this industry has grown by 583% (as presented in Figure 1). This value reflects profound interest by consumers in using peer-to-peer lending online services. This is also reflected by a significant increase in the number of borrower accounts from 330,154 in January 2018 to 7,771,026 accounts in April 2019. Despite this increase, the

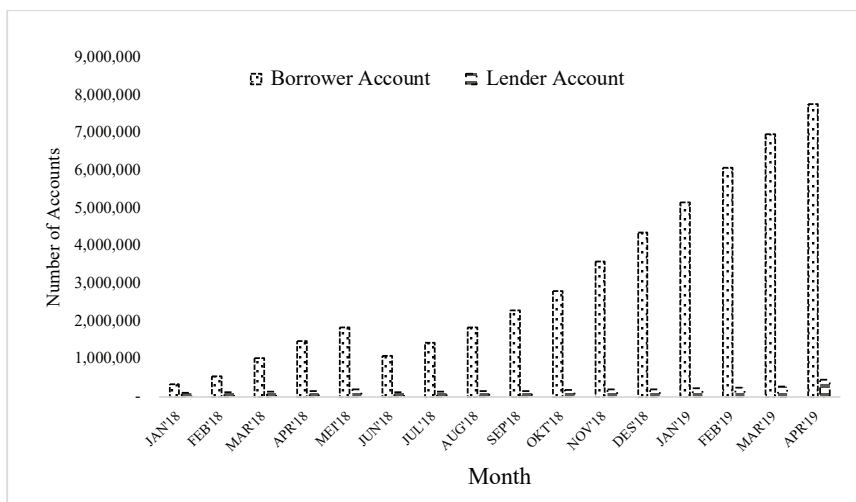
increase in the number of lender accounts has grown more slowly over the same period, from 115,939 accounts in January 2018 to 456,352 accounts in April 2019 (as presented in Figure 2).

Figure 1. Online lending accumulated loan amount



Source: Otoritas Jasa Keuangan (2019).

Figure 2. Comparison of borrower and lender accounts



Source: Otoritas Jasa Keuangan (2019).

The rapid increase in borrowing through P2P channels and reports of coercive loan payment collections is concerning. Research on financial technology utilization, especially P2P lending, is needed to support the development of P2P lending regulations and financial literacy. This study aims to examine the profile of the customers in Indonesia who utilize financial technology to apply for P2P lending. The primary research purpose is to determine the main factors that influence customers to apply for peer-to-peer lending in emerging markets, using Indonesia as a case study. The determinants investigated in this article fall into four categories: banking literacy, financial technology awareness, trust of regulators, and demographic characteristics. If trust in financial regulators is an essential factor associated with P2P lending utilization, mandatory registration of financial technology under OJK's supervision could provide additional added value. Also, knowledge of the determinants of customer P2P lending utilization can be used to target appropriate financial literacy content to customers. If P2P lending customers are largely found to be social media users or existing bank customers, financial literacy can be disseminated through social media platforms and existing banking channels.

The rest of the study is organized as follows. Section 2 reviews the literature on P2P utilization. Section 3 presents the methodology and data, followed by a discussion of the results in section 4. The final section provides the study's conclusions and recommendations.

2. Literature Review

Research on financial technology, especially on P2P lending, is still uncommon, especially in developing countries such as Indonesia. Much of the existing research focuses on lender decision-making (for example, see Kumar (2007), Berger and Glesiner (2009), Luo (2012), and Gao and Feng (2014)). This section considers literature on borrower characteristics in a developing country context, particularly along the dimensions of access to banking

services, financial technology awareness, trust in the regulatory environment, and demographic characteristics.

2.1 Access to Banking Services

Previous work on P2P lending and access to banking services suggests that P2P loans may be a substitute for bank loans for high-risk borrowers. Roure et al. (2016) shows that loans channeled via P2P platforms involve higher interest rates than loans channeled via the traditional banking sector. Moreover, analysis of different segments of the bank credit market and P2P lending shows that, after having controlled for interest rate and risk differences, the bank lending volumes are negatively correlated with the P2P lending volumes. Their finding suggests that high-risk borrowers substitute P2P loans for bank loans for since banks are unwilling or unable to supply this slice of the market.

2.2 Financial Technology Awareness

Financial technology awareness has been found to be related to P2P lending as well. For example, Lee (2017) discusses user acceptance of the mobile P2P lending apps, guided by a technology acceptance model, concluding that the users' acceptance of mobile P2P lending apps was significantly influenced by user satisfaction. This, in turn, influenced their attitudes towards using mobile P2P lending apps and intention to use them. Furthermore, Saksonova and Kuzmina-Merlino (2017) evaluated financial technology's level of development in Latvia compared to Europe. The survey results provide some evidence in favor of the hypothesis that respondents are generally unaware about fintech services in Latvia and their associated innovations and new financial products.

2.3 Trust of Regulators

Bomil (2003) investigated the impact of customer perceptions of security control on e-commerce acceptance. Trust—which is related to regulation—was examined as the mediating factor of the relationship, using Internet banking as the research domain because bank customers are generally

concerned about processing sensitive information like financial information. Using an online survey of 502 Internet banking users and structural equation modeling, Bomil (2003) shows that perceptions of non-repudiation, privacy protection, and data integrity have a significant impact on trust in e-commerce. Trust also has a significant impact on e-commerce acceptance.

2.4 Demographic Characteristics

Several studies have found that personal characteristics are associated with P2P loan utilization. Based on previous research by Tjahjadi and Amalia (2018), several factors drive the decision to borrow money in ASEAN countries. Men who are young and fall in the lowest income quintile group have a higher tendency to borrow money. Meanwhile, Chen et al. (2017) investigate potential gender discrimination in China's online P2P credit lending market. The results illustrate that female borrowers are more likely to be funded than male borrowers. However, in exchange for higher funding success, female borrowers are found to pay higher interest rates, even though the default rates of loans from female borrowers are significantly lower than those from male borrowers.

Tao et al. (2017) explore how borrowers' financial and personal information, loan characteristics, and lending models affect P2P loan funding outcomes. They found that those borrowers earning higher income or who own a car are more likely to receive a loan, pay lower interest rates, and are less likely to default. Gavurova et al. (2018) similarly examined the role of borrower characteristics on the decision-making process by investors using data from the peer-to-peer lending website Bondora, managed by the Estonian company Isepankur. Using multinomial logistic regression, the results show that the debt to income rate was the most important variable, and homeownership had a significant negative impact.

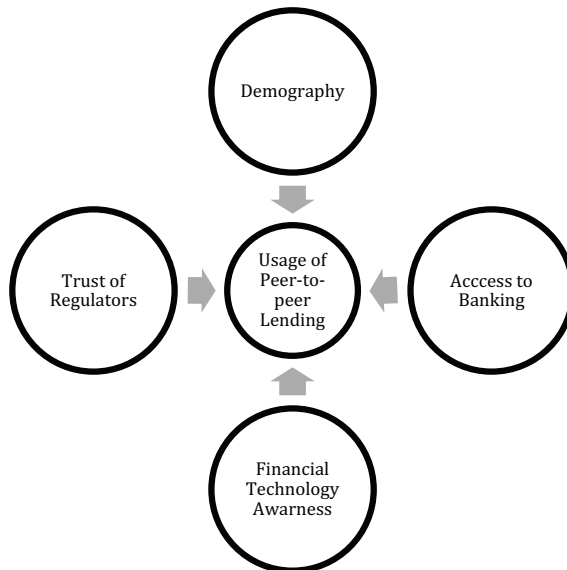
Finally, Li et al. (2015) studied the effects of multidimensional friendship networks on economic outcomes in the domain of online people-to-people (P2P) lending markets. The results indicate that a structural friendship network measured in terms of the number of friendship ties is a

significant factor in funding performance. Additionally, borrowers who are involved in higher-quality friendship networks are more likely to be funded and pay lower interest rates on funded loans.

2.5 Contribution

The previous literature can be summarized succinctly in Figure 3. Utilization of peer-to-peer lending in other studies has been influenced by demographic characteristics, access to banking services, financial technology awareness, and trust of regulators.

Figure 3. Research framework



Although there are several existing studies concerning peer-to-peer lending, most are focused on lenders or the demographic characteristics of the borrowers. This paper adds to the P2P lending literature by analyzing the determinants of applying for peer-to-peer loans in Indonesia, a representative emerging market. This paper particularly focuses on the roles of financial technology awareness, access to banking services, and trust in regulators on the decision to borrow through P2P platforms.

3. Methodology and Data

3.1 Methodology

This paper analyzes the decision to apply for P2P lending. The choice that a customer will apply or not apply for P2P lending is represented by a dummy variable, which takes the value 1 for those who apply and 0 otherwise. Applying for P2P lending is related to a set of explanatory variables, X . To predict the likelihood that a person will apply for P2P lending based on their observable characteristics, the study proposes to estimate a logit model. Assume Y to be the log of the odds of applying for a P2P loan, $P(Y=1)$ the probability that an individual applies for a loan, and the relationship between Y and the X variables to be linear.

$$Y = \ln \left(\frac{P(Y=1)}{1-P(Y=1)} \right) = X' \beta + \varepsilon \quad (1)$$

Solving for the probability of applying for a loan we arrive at the following expression:

$$P(Y = 1) = \frac{1}{1 + e^{-(X' \beta + \varepsilon)}} \quad (2)$$

The coefficients are estimated using a maximum likelihood estimation. Such a model has also been used by Misra (2009) and Johan (2012) in their studies on predicting merger and acquisitions targets.

3.2 Data and Measurement

The dependent Y and independent X variables and their measurements are described in Table 1. The hypothesized association of each independent variables on the probability of applying for a P2P loan is also reported based on previous literature.

Table 1. Variables & Hypothesis

Variable Type	Variable	Probability of Applying	Measurement
Dependent Variable	Apply for Peer-to-peer Lending		0 = No; 1 = Yes
Banking Access	Bank Account	+	0 = No; 1 = Yes
	Credit Card	+	0 = No; 1 = Yes
	Loan from financial institution	+	0 = No; 1 = Yes
Financial Technology Awareness	Aware of fintech	+	0 = No; 1 = Yes
	Usage of fintech	+	0 = No; 1 = Yes
	Loan from financial institution	+	0 = No; 1 = Yes
Trust of Regulators	Trust of financial technology	+	0 = No; 1 = Yes
	Aware of Regulator Registration	+	0 = No; 1 = Yes
Demographic Variables	Gender	+	0 = Female; 1 = Male
	Age		0 = Generation Z (under 22 years old), 1 = Millennial generation (23-28 years old) 2 = generation X (39-54 years old) 3 = baby boomers generation (> 55 years old).
	Education Background	+	0 = up to high school, 1 = diploma and 2 = undergraduate
	Marital Status	+	0 = Single; 1 = Married
	Income Level	+	0 = income less than IDR 3,000,000/month 1 = income IDR 3,000,000-5,000,000/month 2 = income IDR 5,000,000 - 10,000,000/month 3 = income above IDR 10,000,000

Home Ownership	+	0 = No; 1 = Owned
Mobile Phone Ownership	+	0 = 1 Device; 1 = 2 Devices; 2 = 3 Devices

Note: 15,000 Indonesian rupiah (IDR) is equivalent to 1 US dollar.

This research uses primary data that was collected from a survey that was distributed randomly in Jakarta, Indonesia's capital, and other provincial capitals in Indonesia, such as Makassar, Manado, Surabaya, Balikpapan, Bandung, Medan, and others, using an online survey application. Questionnaires were distributed in 2019 before the COVID-19 crisis occurred. The sample consists of 298 respondents. The survey had 350 initial responses, however, only 298 responses were complete and could be used for the analysis. The descriptive statistics are reported in Table 2.

Table 2. Descriptive statistics

Variable	N	Mean	Std. Dev.	Min	Max
Apply for Peer-to-peer Lending	298	0.21	0.41	0	1
Bank Account	298	0.95	0.21	0	1
Credit Card	298	0.62	0.49	0	1
Loan from FI	298	0.46	0.50	0	1
Awareness of Fintech	298	0.72	0.45	0	1
Usage of Fintech	298	0.10	0.31	0	1
Trust of Regulator	298	0.47	0.50	0	1
Aware of OJK Control	298	0.27	0.45	0	1
Gender	298	0.56	0.50	0	1
Age	298	1.44	0.76	0	1
Education	298	1.53	0.77	0	1
Marital Status	298	0.60	0.49	0	1
Income Level	298	1.93	1.03	0	1
House Ownership	298	0.60	0.49	0	1
Mobile Phone Ownership	298	0.48	0.58	0	1

Source: Author's calculations.

Out of a total of 298 respondents, 56% are male and 44% are female.

The age of respondents who were millennials (23-28 years old) was 56.4%. Most of the respondents at 69.2% are graduates from university. On the fixed asset ownership, 60.4% owned fixed property and 100% own a mobile phone. From the 298 respondents, bank account owners accounted for 95.3%. The majority of the respondents are aware of financial technology at 72%. However, only 27% are aware that OJK is the government body that regulates the financial technology industry. Only 10.3% are considering using peer-to-peer lending as their source of borrowing. From 298 respondent, 63 respondents, or 21%, have applied for a loan through a peer-to-peer lending application.

4. Results

4.1 Empirical Results

Diagnostics for the logistic regression indicate the model is appropriate for the analysis. Based on an omnibus test, the result was 0.00, which indicates that the model has explanatory power. The Nagelkerke R^2 is 0.413, which means that a significant amount of variation in the decision to apply for a P2P loan can be explained by the model. The classification table indicates that correct classification is 82.6%, which is more than the 50% threshold. Table 3 reports the results.

Table 3. Research results

Variable Type	Variable	Estimated Log-odds	Odds Ratio
Banking Access	Bank Account	-1.395 (0.859)	0.248
	Credit Card	0.567 (0.462)	1.762
	Loan from financial institution	0.916** (0.404)	2.499

Financial Technology Awareness	Aware of fintech	-0.797* (0.433)	0.451
	Usage of fintech	2.576*** (0.539)	13.140
Trust of Regulators	Trust of financial technology	2.472*** (0.446)	11.846
	Aware of OJK regulation	0.615 (0.406)	1.851
Demographic Characteristics	Gender	0.043 (0.382)	1.044
	Age	0.118 (0.289)	1.125
	Education Background	0.055 (0.265)	1.056
	Marital Status	0.240 (0.467)	1.271
	Income Level	-0.429 (0.253)	0.651
	House Ownership	-0.440 (0.469)	0.644
	Mobile Phone Ownership	-0.001 (0.308)	0.999
Omnibus Test	0.00		
Nagelkerke R2	0.413		
Classification Table	82.6		

Notes: *** p<0.01 ** p<0.05 * p<0.1; estimated standard errors in parentheses.

Source: Author's calculations.

4.1.1 Access to Banking Services

One of three banking access variables are relevant to applying for peer-to-peer lending. Individuals who are current borrowers from financial institutions are more likely to apply for P2P lending as well. The result is in line with the result of Wan et al. (2016). Further supporting this result, the odds ratio for credit cards is greater than one, indicating that those with existing debt

through credit cards are more likely to apply for P2P loans, although this result is not statistically significant. Furthermore, bank customers who have savings in the form of bank accounts appear to be less likely to apply for P2P lending, although the result is also not statistically significant. Overall the results point to the fact that people who already have borrowing experience through official channels are more likely to apply to borrow funds from P2P lending

4.1.2 Financial Technology Awareness

Both variables capturing financial technology awareness are related to the probability of applying for P2P loans. The variables are awareness of financial technology applications and experience in using financial technology applications. The financial technology awareness variable is statistically significant and suggests that awareness is negatively associated with applying for a P2P loan. However, prior experience in using financial technology is positively associated with a person applying for P2P loans. The result is in line with the results of Lee (2017).

4.1.3 Trust of Regulators

In addition to awareness, trust of financial technology is essential and is one of the critical determinants of customers using financial technology. The results show that trust in financial technology is positively associated with applying for loans through P2P applications. The result is in line with the findings in Bomil (2003). In addition, government regulators assure borrowers that financial technology companies have complied with all existing regulations and is fair in determining interest rates, fees, and other requirements. The results suggest that awareness of financial technology regulation is positive, but the result is not statistically significant. Overall, the results suggest that confidence in financial technology is important to the borrowing decision and may be an important consideration for the development of the financial technology industry.

4.1.4 Demographic Factors

The analysis finds that the demographic variables have no impact on a consumer's decision to borrow funds through a financial technology company. The results are different from previous research by Bachmann et al. (2011), Chen et al. (2017), Tao et al. (2017), and Gavurova et al. (2018). The results might be explained by the relatively homogenous composition of the sample where the majority of respondents are of productive aged between 23-54 years, consistent with the age distribution of the Indonesian population. The respondents are active social media users and generally have higher education than the average population of Indonesia, namely diplomas and degrees. Their income is classified as high, namely above IDR 5,000,000 (more than USD 500 / month). All respondents have mobile phones, and most even have more than one mobile phone. The insignificant results for the demographic variables are likely due to the selection of the sample.

5. Conclusions and Discussion

This research explores factors associated with customers applying to borrow money through peer-to-peer lending in Indonesia. This peer-to-peer lending industry has grown very rapidly during the last three years, offering loans to customers through technology platforms. This study analyzes four factors: banking access, financial technology awareness, regulatory trust, and demographic characteristics. Binary logit regression results show that the customers with access to traditional banking services, technology awareness, and trust in financial technology are the customers most likely to apply to borrow from peer-to-peer lending. It also shows that customers who have borrowed previously through official channels are more likely to borrow through P2P applications.

Based on the research results, the peer-to-peer lending companies are most likely to serve customers who have access to loans through financial institutions. Since financial technology and P2P lending has the ability

to reach a wider group of people, regulators could do more to encourage financial inclusion through this platform. The Financial Services Authority (OJK) also needs to encourage financial technology companies to provide financial technology literacy to potential customers. Moreover, regulators need to disseminate information regarding the OJK's functions, as well as their supervisory and regulatory roles in the financial technology industry. Given the rapid growth of the industry, it is suggested that each financial technology company obtain approval from the OJK in order to run its business in Indonesia, with announcements of licensed or registered P2P lenders on regular basis. Any financial technology that has been approved by the OJK can be labeled, "under the supervision of OJK," allowing consumers to distinguish between official financial technology firms and illegal financial technology firms, and building more trust in the market.

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