Do Socio-economic Factors Drive Peer to Peer Lending? Analysis in Indonesia

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Keywords: Fintech Lending, Peer to Peer Lending, Loan, Borrowers, Social, Economic.

Abstract: This study aims to analyse the determinant of p2p lending by examine the social and economic factors to accumulated loan disbursement. Since the increasing number of lender and borrower indicates the higher potential to grow, this study examines the factor affected significantly in p2p lending transactions. The data extracted from Financial Service Authority (OJK) report from 2019-2020 and The National Socioeconomic Survey (Susenas) from Central Bureau of Statistics (BPS). The analysis method uses OLS regression to test each of hypothesis. This study verified that there is relationship between social and economic factor especially formal labour and high education with accumulated loan of borrower. The result leads the regulation and fintech platform to make analysis of social-economic matter regards financial technology-based service. The result of this study has significant implication to p2p lending theoretically since it analyses the social and economic determinant factors by using the secondary data. Practically, the findings of the study could give additional information to reach and engage the user by identify social and economic factors. Few studies identified the determinant by using empirical analysis. Previous study mainly identified the determinant from qualitative reviews and the majority of the studies employ interview to address the determinant factor.

1 INTRODUCTION

Financial technology is an application of digital technology to solve financial intermediary problem (Aaron, Rivadeneyra, & Sohal, 2017). As intermediary for society around the world, it impacted the new era of financial services (Milian, Spinola, & de Carvalho, 2019). The use of technology in financial services has significant growth since it could increase the efficiency, reduce opportunity cost, and encourage customer satisfaction by enabling them to operate it flexibly as long as internet connected (Thaker, Amin, Thaker, & Pitchay, 2019).

According to The Global Findex database (2017), 515 million adults worldwide opened an account through mobile money provider between 2014-2017. In developed economies about 94 percent have account and developing economies about 63 percent. It indicates that developing countries have quiet significant number of people who have not account. For those who have account, majority at bank, microfinance institution, and another type of regulated financial institution.

Globally, about 1.7 billion adults remain unbanked-without an account at a financial institution or through a mobile money provider (Asli Demirgu-Kunt, 2017). Due to account ownership is nearly universal in high-income economies, virtually all these unbanked adults live in the developing economies. Indeed, according to World Bank (2017) nearly half live in just seven developing economies: Bangladesh, China, India, Indonesia, Mexico, Nigeria, and Pakistan.

Indonesia is developing countries which fintech is growing rapidly (OJK, 2019). Besides, it has a significant potential in strengthening economic growth through the optimization the role of financial technology as an intermediary between investors and companies (Hendratmi, Ryandono, & Sukmaningrum, 2019). Currently fintech business models has funding, payments, wealth management, capital markets, and services for insurance (Lee & Shin, 2018). The popular one is funding business

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models since the online lending platform provide and facilitate loans for small and medium enterprises (SMEs) across the nation as archipelago country (Suryono, Budi, & Purwandari, 2021).

Online lending platform or peer-to-peer (p2p) lending is a platform that allowed the individual investors provide microloans directly to individual borrowers without the intermediation of financial institutions (Lin, 2009). The regulation about p2p lending referred to Financial Services Authority (OJK) Regulation Number 77 / POJK.01 /2016 about Information Technology-Based Lending Service which regulates p2p lending services for all business services. The main objective of the Law is to require p2p lending providers to apply for OJK licenses to operate p2p lending platforms. At the end of 2020, the Financial Services Authority recorded 149 registered and licensed fintech companies (OJK, 2020). As of December 2020, the Investment Alert Task Force (SWI) and Kemenkominfo (the Ministry of Communication and Information Technology, also known as the Ministry of ICT) have blocked 1.026 illegal fintech p2p platforms. This number decreasing from 2019 about 1.493, but increasing from 2018 about 404 (Kontan, 2021). It indicates that the number of illegal platforms still existed since the lack of understanding particular of people about this platform.

Borrowers come from various backgrounds and most borrowers come from micro and SME *(Small Middle Enterprises)* businesses which allows local governments to believe that market mechanisms can improve the economy. However, due to the development of the business model and no previous business configuration regarding p2p lending platform owners, this has become a challenge for regulators to consider existing regulations (Adriana & Dhewantoa, 2018). Additionally, borrowers could possibly use multiple platforms without consideration of ability to pay. Therefore, the majority of borrowers of p2p lending are unbanked and un-bankable (Suryono et al., 2021).

According to that problem, it showed various characteristics of user p2p lending that impacted to the transactions issues. Hence, current study aims to examine the social and economic determinant of p2p lending. The determinants are reviewed based on social and economic characteristics. In addition, this study could lead as material for regulators and the parties involved enable to determine the policy directions and protect the rights of parties. Previous study majority used a qualitative approach to explain the determinant of funding in Indonesia by discussing the issues, cases, and responsibility of p2p lending (Sundjaja & Tina, 2019; Suryono et al., 2021). Then study of Sitompul (2018) provides an analytical description of the urgency of fintech legality, especially peer to peer lending in Indonesia.

Another study identified and focus on behavioural intentions in term of use p2p lending that diversified characteristics such as gender, education background, profession, job position, income, and expenditure through purposive sampling by using questionnaires (Darmansyah, Fianto, Hendratmi, & Aziz, 2020). In addition, study Santoso, Trinugroho, and Risfandy (2020) investigated the determinants of platform interest rate and borrowers' default status by identified three sample of three samples of p2p lending platform. In order to sum up everything that has been stated, it indicates that previous studies still focused on discussion from a legal perspective, determinants factors by identified behavioural intentions that using questionnaires, and representative sample.

Therefore, to fill the gap this study provides empirical method by using social and economic data from National Socioeconomic Survey (Susenas) from Central Bureau of Statistics (BPS) to demonstrate the relationship between social and economic factor to the number of loans in p2p lending. Since National Socioeconomic Survey origin from BPS, it could lead the comprehensive multiple determinant analysis that affected to the number of loan disbursement in fintech lending. According to the research objective, the research question is: how the social and economic determinants affected p2p lending according to the accumulated loan of borrower.

1.1 Literature Review

Practically, p2p lending contains information asymmetry between the parties involved. Information asymmetry is a fundamental problem in online p2p lending. The challenge is to overcome the principal-agent problem (Jensen & Meckling, 1976). On the other hand, lenders want to get as much valid information as possible about the borrower. The borrower is potentially interested in hiding some of his characteristics in order to get the lowest possible interest rate. In order to enable the lender's decisions based on valid information, p2p lending platforms encourage borrowers to provide financial information that has been validated by external institutions. In addition, many platforms require users to provide demographic information, such as gender, race or age. Borrowers are also often given the opportunity to provide social information, which cannot be

validated, such as hobbies, family backgrounds or photographs. This is a characteristic that determines p2p lending because the determinant has a big influence on the success of funding the list of borrowers and the interest rate requested (Bachmann et al., 2011).

1.1.1 Planned Behaviour Theory

Planned behaviour theory (TPB) emerged since it proved to be efficient model to describe the intentions, manage and control of perceived behaviour and to predict behaviour (Hamzah & Mustafa, 2019). Planned behaviour theory is extension of reason action theory (TRA) that taking degree of control over behaviour into account. Both of them considered the determinant of intentions and behaviour (Darmansyah et al., 2020). In the context of this study, TPB could explained that characteristics of borrowers such as education, gender, profession, and other social conditions, drives their consideration and intentions to use p2p lending.

1.1.2 Theory of Acceptance Model

Acceptance model theory (TAM) familiar model to describe and predict of the system used (Chuttur, 2009). Then the development of acceptance model theory frequently involved in behavioural intentions as proxy that directly influenced by the benefit recipients. As the study of Huei, Cheng, Seong, Khin, and Bin (2018) who use TAM to identify the essential factors that influence the intentions of costumer in adoption of fintech products and service in Malaysia. The result show that the perceptions ease the borrower to adopt fintech. It also gives significant positive effect of intentions towards product.

In term of social and economic factors such the level of education and type of professions, TAM could allow the borrower to have perceptions in order to use p2p lending.

1.1.3 Hypothesis Development

Bachmann et al. (2011) emphasize the social capital dimension such as structural, rational, and cognitive that enable to the existence of entity or individual has connected each other. Bachmann et al. (2011) diversified the determinant in p2p lending by financial, demographic, social capital and soft factors. It showed the importance of characteristics dimension of borrower. Besides, Darmansyah et al. (2020) also demonstrated the behavioural intentions to use fintech by diversified characteristics of borrower such as gender, education background, profession, job position, income, expenditure.

According to that research, this study demonstrated social and economic factors by diversified to Job, Gender according to Human Development Index and Expenditure per capita, Number of Non-bank institution, and Education that might affected to the accumulated loan of borrower in p2p lending.

a. Job Characteristic

Job characteristics explain the type of (1) micro and small labour or (2) formal labour. Both type of labour showed the differences of background which could strongly associated to p2p lending (Darmansyah et al., 2020). Possibly, micro and small labour are un-bankable hence this situation leads them to use fintech lending as the alternative. Due to the situation, according to Theory of accepting model, it could possibly that micro and small labour has positive relationship to accumulated loan borrower in fintech lending. Hence, the hypothesis:

H1a: Micro and small labour has positive relationship to accumulated loan of borrowers

Then, formal labour also could possibly access fintech lending since the requirement not complicated as conventional institutions. Hence, this opportunity allows them to have more intentions to easily utilize the platform to fulfil consumptive behaviour for example. According to theory of acceptance model, this situation could lead borrower to have behavioural intentions since they could receive benefits easily. Hence the hypothesis:

H1b: Formal labour has positive relationship to accumulated loan of borrowers

b. Gender

According to report of Global Financial Index (2017), about 56 percent of all unbanked adults are women. Women are overrepresented among the unbanked in economies where only a small share of adults are unbanked, such as China and India, as well as in those where half or more are, such as Bangladesh and Colombia (Asli Demirgu-Kunt, 2017).

In another side, according to Pope and Sydnor (2011) and Barasinska (2009), women has less interest and motives rather than men about lending and borrowing money.

According to that problem, gender in term of this study examined by identify human development index and expenditure since it could reflect the knowledge, empowerment, behaviour, and the roles. Therefore, supported by planned behaviour theory

they could directed the intentional behaviour towards the woman and man, the hypothesis:

H2a: Human development index woman has positive relationship to accumulated loan of borrowers

H2b: Human development index man has positive relationship to accumulated loan of borrowers

H2c: Expenditure woman has positive relationship to accumulated loan of borrowers

H2d: Expenditure man has positive relationship to accumulated loan of borrowers

c. Number of Non-bank Institutions

Non-bank institutions in this study using the number of cooperatives. Before the significant growth of fintech, we know that Indonesia has cooperative as non-bank to ease the society based on populist economic. Unfortunately, 30 percent of cooperative in Indonesia have been inactive for various reason (Azhari, Syechalad, Hasad, & Shabri, 2017). Therefore, this study attempt to examine of the existence of cooperative in era of fintech lending. Hence the hypothesis is:

H3: The lower of total cooperative has positive relationship to accumulated loan of borrowers

d. Education

According to Darmansyah et al. (2020), the user of fintech lending is dominated by bachelor degree level users. It means that, the high education people have more access and knowledge about fintech lending. It also supported by planned behaviour theory that high education people lead them to have perception towards fintech lending. Hence the hypothesis:

H4: High education has positive relationship to accumulated loan of borrowers

2 METHODS

This study demonstrated the relationship of social and economic factors to accumulated loan of borrowers of fintech lending in Indonesia. Therefore, the sample is all of fintech lending in Indonesia in 34 province that captured and extracted from statistic fintech lending from Financial Authority Services (OJK) from 2019-2020. Since the year of 2018 does not have complete data, we excluded the year of 2018. Additionally, the data of accumulated loan of borrowers (Billion IDR) as dependent variable are available in monthly and annually report. Then, the independent variable are social and economic factors extracted from Central Bureau of Statistics (BPS). Therefore, the final observations of this study consist of 34 provinces in 2 year resulted 68 province-year observations with balance panel data.

This research analysis adopted to Stern, Makinen, and Qian (2017) that using three angles of p2p lending platform, that are number of p2p platforms, lenders' average yield of p2p loans, and outstanding balance of p2p. Consequently, this study developed from one of them by using the accumulated loan disbursement (borrowers). Then, this study also consider the model of Darmansyah et al. (2020) and Bachmann et al. (2011) in order to identified the determinant of p2p lending from social and economic aspects such as demographic, gender, education background, profession, job position, income, and expenditure. Therefore, the independent variables in this analysis are social and economic factors that diversified into 4 characteristics:

(1) Job Characteristics

Job characteristics identified by two type of labour that are total micro and small labour each province and formal labour each province;

(2) Gender

Gender diversified into woman and man according two proxies that are human development index (in percentage) and expenditure (in thousands IDR);

(3) Number of Non-bank Institutions

The number of total cooperatives in each province (in unit);

(4) Education

Education proxy use the number of high education enrolment each province (in percentage).

Then as control variable, this study uses the gross domestic regional product since it reflected the gross additional value in economic sectors each province. GDRP calculated by distribution of GRDP each province to total GDRP in 34 provinces at current price. GDRP shows the capability from various economic resources that produced in each province.

In order to demonstrate the hypothesis development, the equations model of this study:

$$AccumLoan_{it} = \beta_0 + \beta_1 MicroLabour + \beta_2 FormLabour + \beta_3 Hdpwoman + \beta_4 Hdpman + \beta_5 Expwoman + \beta_6 Expman + \beta_7 Tcoop + \beta_8 HighEdu + \beta_9 Gdrp + \varepsilon_{it} \quad (1)$$

Descriptions:

AccumLoan : Accumulated Loan (Borrower)
MicroLabour : Micro and Small Labour
FormLabour : Formal Labour
Hdpwoman : Human Development Index (Woman)

Hdpman : Human Development Index (Man)
Expwoman : Expenditure per Capita (Woman)
Expman : Expenditure per Capita (Man)
Tcoop : Total Cooperatives
HighEdu : High Education
Gdrp : Gross Domestic Regional Product

3 RESULT AND DISCUSSIONS

According to descriptive statistics in Table 1, the average of accumulated loan of borrower is 3.491,178 Billion with maximum loan is 45.768 billion Rupiah during two years. Then total micro and small labour show 279.554 people in average and 41,20% of average formal labour from all around province. For second characteristics, human development index and expenditure show that men have higher average than woman with value 75,24% for human development index and 15.207,19 thousand Rupiah for expenditure respectively. The number of high education participation show the average percentage is 44,55 while GDRP show 2,94% average from all around province in Indonesia. It showed that about 44,55% people each province has access and participation to high educations, then about 2,94% the average distribution of each province in Indonesia to GDRP in 34 provinces.

In order to ensure this analysis is best linear unbiased estimation and prediction, we demonstrated several statistical tests. According to thhe result of Pair-wise Correlation Matrix in the Table 2 show there is no correlation above 0,8. It indicates that no multicollinearity problem. This model also does not have autocorrelation problem since the value is 1,000. In another side, according to Breusch-Pagan/ Cook-Weisberg test, it detected had heteroskedasticity problem, hence to solve this problem we use robust standard error. Additionally, we have stages of test to seek the appropriate model. We demonstrated Hausman test, Chow test, and Lagrange Multiplier test before demonstrated main test. The result indicated to use common effect.

First, the result of main test in the table 3 show that job characteristic especially formal labour has positive significant with t value 0,039 in 5%. This result indicates that formal labour has positive relationship to accumulated loan of borrower in fintech lending. In another side, micro and small labour show negative coefficient. The result emphasize that **H1a not supported** to hypothesis and **H1b supported** to hypothesis. according to the result, it might formal labour have more access and knowledge toward fintech lending that enable their behavioural intension to use the platform. Formal labour has guarantee explicitly that allow them to borrow money in fintech lending.

Second, as gender characteristics has 2 proxies in the table 3, both human development index and expenditure show the result not supported the hypothesis. The result indicates there is not positive significant relationship both woman and man with great human development index and high expenditure to accumulated loan of borrower in fintech lending. This result inconsistent with the previous researches (Bachmann et al., 2011; Barasinska, 2009). According to the result **H2a, H2b, H2c, H2d not supported** the hypothesis.

Third, according to number of non-bank institutions in the table 3 show that the lower number of total cooperatives in province has positive relationship to accumulated loan of borrower in fintech lending but not significant. It could indicate that the role of cooperative still existed especially in particular province since not all populations familiar to use platform fintech lending. This result means **not supported the H3**.

Fourth, education characters show that people who has high education has positive relationship to accumulated loan of borrower in fintech lending. It could be supported the planned behaviour theory since the educated people allow them to have perception that could drive their intentions include financial propensity. This result means **H4 supported** the hypothesis.

The last, result of control variable show that GDRP has positive significant to accumulated loan of borrower in fintech lending. GDRP reflected the consumption and production in the province, hence it impacted to the accumulated loan. It also emphasized that, in order to funding the various production in economic sectors or household consumption, fintech lending is an alternative of funding in each province. Besides, the household with fewer assets and lower income facilitating for using fintech lending especially in consumption (Li, Wu, & Xiao, 2020).

Additionally, to check the robustness of the result, this study attempt to use another measurement of dependent variable from accumulated loan disbursements to accumulated transaction according to number of account (borrower). The result show consistent with the main test that only formal labour and high education has positive significant relationship to accumulated transaction account of borrower.

Table 1: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Accumloan	68	3491,178	8660,987	36,680	4,58e+07
Microlabor	68	279554,5	504299,4	11953	2380673
Formlabor	68	41,204,26	10,3767	20,080	70,430
Hdpwoman	68	67,95706	4,799316	52,520	79,170
Hdpman	68	75,235	3,472995	65,990	83,660
Expwoman	68	8670,353	2531,631	3999	17087
Expman	68	15207,19	2644,217	10455	22912
Tcoop	68	-3679	4308,265	-2464	-476
Highedu	68	44,545	0,0353	44,51	44,580
Gdrp	68	2,941029	4,230104	0,250	17,560

Source: Data processed, 2021

Table 2: Pair-wise Correlation Matrix.

Variable	Accum loan	Micro labor	Form labor	Hdp woman	Hdpman	Tcoop	Capex woman	Capex man	Highedu	Reg Gdp
Accumloan	1.000									
Microlabor	0,2335	1.000								
Formlabor	0,1717	-0, 0161	1.000							
Hdpwoman	0,1744	0,0736	0,2969	1.000						
Hdpman	0,1893	0,0531	0,3835	0,4480	1.000					
Tcoop	-0,2616	-0,4766	-0,001	-0,0083	-0,0712	1.000				
Expwoman	0,2211	-0,0875	0,269	0,4401	0,3722	-0,0932	1.000			
Expman	0,2108	0,0511	0,3834	0,3564	0,4023	-0,0692	0,3784	1.000		
Highedu	0,0637	0,0020	-0,1074	0,0016	0,0045	-0,0070	-0,0188	-0,0313	1.000	
Gdrp	0,4272	0,3446	0,1762	0,1880	0,2127	-0,3734	0,2296	0,2427	-0,0000	1.000

1-tailed result, Source: Data processed, 2021

Table 3: Relationship of Social-Economic Factors to Accumulated Loan Disbursement 2019-2020.

Variables	Accumulated Loan		
	Coef,	t	P> |t|
Microlabor	-1,863619	-0,71	0,239
Formlabor	141,2326	1,79	0,039**
Hdpwoman	147,8934	0,59	0,277
Hdpman	-483,7818	-1,51	0,068*
Expwoman	417,6715	0,81	0,209
Expman	-590,0066	-2,20	0,016**
Tcoop	323,8104	0,64	0,262
Highedu	39597,33	2,38	0,010***
Gdrp	2196,662	4,88	0,000***
Cons	-1,74e+09	-2,36	0,011**

1-tailed result, Source: Data processed, 2021

Table 4: Robustness Test.

Variables	Accumulated Transaction		
	Coef,	t	P> |t|
Microlabor	-1,50959		0,370
Formlabor	176,781		0,093**
Hdpwoman	272,000		0,269
Hdpman	-651,008		0,108
Expwoman	412,874		0,337
Expman	-773,158		0,059*
Tcoop	556,069		0,285
Highedu	80156,4		0,005***
Gdrp	3022,88		0,003***
Cons	-3,54e+09		0,005***

1-tailed result, Source: Data processed, 2021

4 CONCLUSIONS

This study aimed to examine the social and economic determinant of p2p lending. The determinants are reviewed based on social and economic characteristics diversified into 4. That are job, gender, number of non-bank institutions (cooperatives), and high education.

According to the test, it shows that only H1b and H4 supported the hypothesis. This result manifested that formal labour has positive significant to accumulated loan, so does high education. Both formal labour and high education indicates the similar value of information since it reflected the level of populations. Hence, according to planned behaviour and acceptance model theory, it possibly reason of action that leads them have intentional and perception to use the platform of fintech lending. Besides, in order to access financial technology-based activity, it requires them to have advance knowledge to operate and understand the platform as well. This result consistent with Najaf, Subramaniam, and Atayah (2021) that found most of borrowers of p2p lending affected by their background such as the higher level of annual income and employment rate. It emphasized that the formal labour which has higher level income than micro and small labour. Additionally, high educated borrower possibly dominated the loan to funding their enterprise or fulfil the consumptive behaviour without any complicated requirement in traditional institutions for instance.

The findings of this study have several implications. Theoretically, this study contributes to further expand study that identify of determinant of fintech lending especially by using secondary data that available from BPS. Since this data origin from national survey, we could match them to the trend of fintech lending platform and attempt to demonstrate multiple factors that could be impact to the loan disbursement. Practically, this study could useful for regulator and stakeholder since it provides additional information and analysis especially formal labour and high education people that affected to the number of transactions. The phenomena could lead the further development of platform to reach the non-high education people and micro and small labour.

This study has several limitations that could lead the future research. First, the gender factor needs to explore comprehensively since it only uses two proxy (human development index and expenditure), hence future research could explore another variable to describe gender such as the proportion of man and woman labour in each province. Second, the non-bank institutions only use the numbers of cooperation in each province, therefore future study could examine another non-bank institution such as microloan organizations and venture capitalists. Third, since this study only employ empirical method, future study could demonstrate additional analysis by using interview to stakeholders.

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