

PERFORMANCE MAPPING OF FINTECH PEER TO PEER LENDING (P2PL) IN INDONESIA

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Abstract: The development of Peer-to-Peer Lending (P2PL) fintech in Indonesia was growing fast. In the midst of this rapid growth, a volatile pattern shows the dynamics of the P2PL in terms of its performance. This study aims to map the performance of fintech P2PL. The data used are the total disbursement of loans and non-performing loans obtained from each company's website and aggregate data published by the Financial Services Authority (OJK). In this study, a website scraping from 102 fintech companies was obtained from each platform to obtain Non-Performing Loan (NPL) value and accumulated loan distribution. This study also uses the hierarchical clustering method to group each P2PL based on NPL and accumulated loan disbursement. Based on the hierarchical clustering analysis, three clusters distinguish the characteristics of grouping P2PL companies. In first cluster, there are 3 companies with high distribution and low NPL, while in the second cluster consists of 13 companies categorized as poor performance because they related to the low disbursement and high NPL value. In the third cluster there are 71 companies with moderate disbursement and NPL. Based on this mapping several things need to be improved, starting from developing a risk management and monitoring system, lending and operating supervision.

Keywords: Fintech, peer to peer lending, clustering, hierarchical clustering, NPL

Abstrak: Fintech Peer-to-Peer Lending (P2PL) di Indonesia berkembang sangat pesat. Di tengah pertumbuhan yang pesat tersebut, kinerja P2PL memiliki dinamika yang cukup fluktuatif. Sehingga melalui kajian ini bertujuan memetakan kinerja fintech P2PL di Indonesia. Data yang digunakan adalah total penyaluran pinjaman dan non performing loan yang diperoleh dari masing-masing website perusahaan serta agregat data yang dupublikasi oleh Otoritas Jasa Keuangan (OJK). Pada penelitian ini dilakukan scraping website dari 102 perusahaan fintech pada masing-masing platform untuk mendapatkan nilai Non Performing Loan (NPL) dan total penyaluran pinjaman. Penelitian ini juga menggunakan metode hierarchichal clustering untuk mengelompokkan masing-masing P2PL berdasarkan NPL dan total penyaluran kredit. Berdasarkan analisis klaster hirarki, terdapat tiga cluster yang memiliki karakteristik berbeda. Pada klaster pertama terdapat 3 perusahaan dengan distribusi tinggi dan NPL rendah. Pada klaster kedua terdapat 13 perusahaan yang dikategorikan memiliki kinerja buruk karena memiliki nilai penyaluran yang rendah dan nilai NPL yang tinggi. Sedangkan pada klaster ketiga terdapat 71 perusahaan dengan disbursement dan NPL sedang. Pada studi ini beberapa hal perlu ditingkatkan, mulai dari pengembangan sistem pengawasan dan manajemen resiko, pengawasan penyaluran pinjaman, dan pengawasan terhadap operasional P2PL.

Kata kunci: Fintech, peer to peer lending, clustering, klaster hirarki, NPL

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INTRODUCTION

The development of digital technology is currently overgrowing, such as payment technology and financial technology services, which are transforming the current system of financial service schemes (Yang and Wang, 2022). In addition, the COVID-19 pandemic has changed the way people live and interact. During the Covid-19 pandemic, fintech has positively increased efficiency, especially online consumption. The rise of fintech impacts online payments, which dramatically increase its existence (CCAF, World Bank and World Economic Forum, 2020; Huang, 2022; Liu et al. 2020). This phenomenon drive global fintech continued to increase in 2020, fintech investment reached USD 48.8 billion, and in the third quarter of 2021, it will double to USD 94.7 billion (Bellardini et al. 2022) where each company received investment from at least one financial institution, we investigate how banks react to digital transformation through the direct investment channel. Each round is treated as an independent event; hence, we examine 1.078 bank-FTC observations. Employing OLS regressions, we explore the determinants of deal size, both in absolute (i.e., monetary flows).

Indonesia's Fintech industry has experienced three waves. In the first wave occurred in 2014, several fintech companies had good productivity. In the era of the second wave starting in early 2017, there was highly significant growth where the total investment in that year reached Rp. 256 billion. The amount of this investment increased drastically to Rp. 1.126 billion in 2018. In the third wave at the beginning of 2019, there was an increase in the number of companies entering the fintech industry and already having licenses (PWC Indonesia, 2019).

Fintech contributes quite a lot to the Indonesian GDP. Based on Indonesian Statistics, the financial services sector contributed 17% of Indonesia's total GDP (Indonesian Statistics, 2021). There are several types of fintech companies ranging from money-based financing, joint-venture-based financing, peer-to-peer (P2P)-based financing, and instalments without credit cards (Hidayat et al. 2020). One type of fintech in great demand by the public is P2P lending. Peer to Peer lending can potentially arise because of its convenience and fast disbursement time. However, the P2P lending scheme has several problems, such as electronic signatures, digital Know Your Customer (KYC), data security, legal certainty, and payments (Risna Kartika,

2020a; Rizal et al. 2019). In addition, P2P loans can provide financing without using collateral because data and information have replaced the form of collateral used in conventional banks (Gambacorta et al. 2020; OECD, 2020).

Another problem faced by the performance of P2P fintech companies shows that during the pandemic (see Figure 1 and Figure 2), the Non-Performing Loan (NPL) value of P2P fintech reached the highest value in 2020, with NPL value 8,8%. In 2021, the NPL was quite good, but there was a trend of increasing NPL. From the profitability aspect, P2PL profitability increased from -7,36% in early 2021 to the highest at 10.85% after the pandemic. This high level of profitability significantly affects the growth of fintech from 2018 to 2021 (OJK, 2021a). Therefore, the dynamics and developments in the P2PL fintech industry are attractive for a deeper analysis. Several previous studies (A. Basha et al. 2021; Mudjahidin et al. 2022; Risna Kartika, 2020b; Suryono et al. 2021, 2019; Suryono and Budi, 2020) conducted research on P2PL fintech in assessing the obstacles that exist in the P2PL fintech industry. Research on P2PL fintech is relatively low, this can be a research gap from previous studies through fintech mapping studies in Indonesia. This study also examines the latest research on P2PL fintech. This study focuses on mapping the performance of P2PL fintech in Indonesia and obtaining the outlook for the Indonesia P2PL industry. This information aims to map the condition of the fintech industry in Indonesia from the largest to minor industries.

METHODS

The data is secondary data provided in each P2PL fintech platform in 2022. In addition, OJK aggregate could be downloaded in the fintech statistic platform. The data obtained from the platform is total loan disbursement and non-performing loans (NPL). These data will be a single unit of information that will be used to obtain information about the P2PL fintech outlook and in-depth analysis of P2PL performance mapping. On the other hand, web scrapping was also conducted to provide specific information about 102 P2PL in Indonesia. The web scrapping aimed to find disbursement, NPL, and success rate of loan return (TKB 90). The study was conducted in Jakarta, Indonesia from April 2022 to September 2022. The high dynamics of P2PL performance is our basis

analysis to do fintech performance mapping. We see that P2PL in Indonesia is infant industry so mapping study of their performance is needed to give overview about P2PL business in Indonesia. Figure 1 shows the research framework of this study.

One hundred two companies carried out by web scraping. Only 88 companies had complete data for NPL, TKB 90, and loan disbursement. This data was processed using the hierarchical clustering method to

obtain the P2PL industry classification. Hierarchical clustering is used to see groups of P2PL companies based on their performance because this method uses similarity in grouping (Yu and Hou, 2022; Darányi et al. 2023). Data processing was carried out by using SPSS software. First, normalization of the data must be done because there is a difference in the values that are far enough to obtain the Zscore. The normalized data was used for hierarchical clustering analysis.

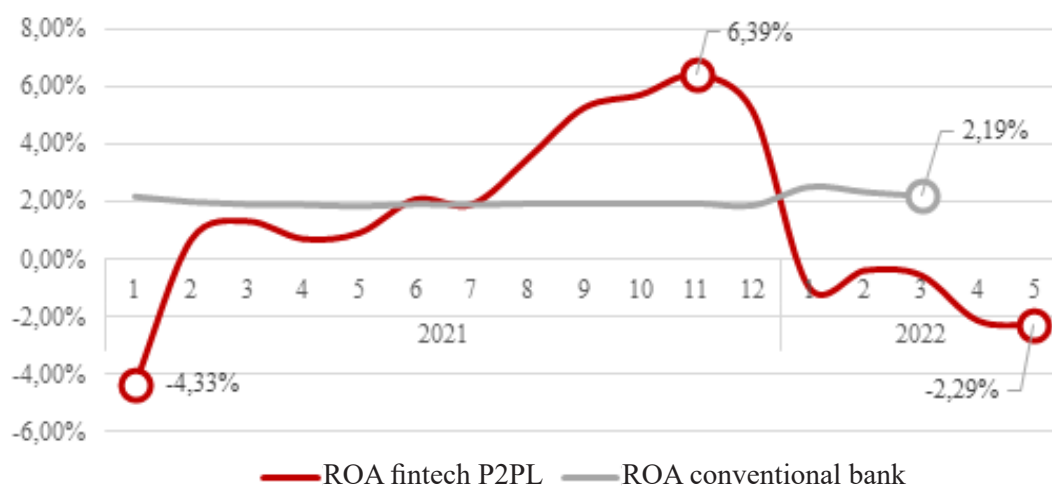


Figure 1. ROA comparison between P2PL and conventional bank

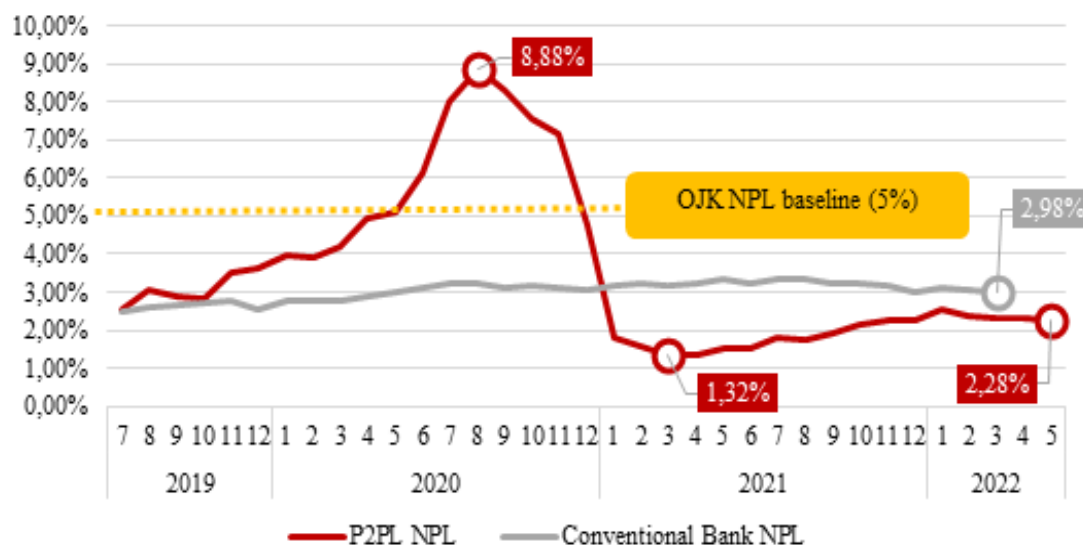


Figure 2. NPL comparison between P2PL and conventional bank

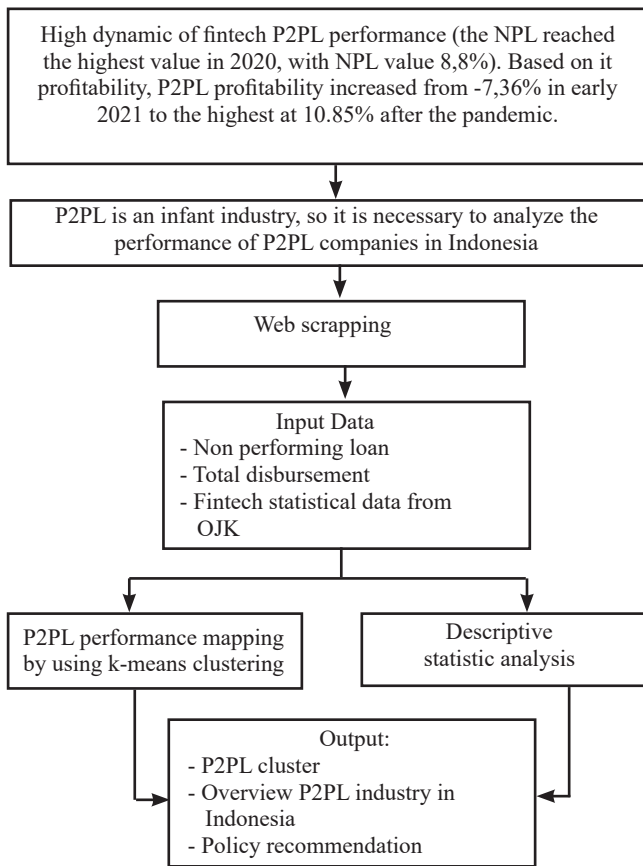


Figure 3. Research framework

RESULTS

Indonesia's P2PL Growth Overview

The accumulated accounts for borrowers grow rapidly. In 2018, there were only 330,000 borrower accounts at P2PL. However, as of May 2022, the number is 83,152,000 borrower accounts (CAGR +4%). The growth of lender accounts also increases to 2022. The number becomes 888,000 lender accounts. Based on data spreading, most of the accounts for both borrowers and lenders are concentrated in Java Island, with both total accounts 79% and 85%. This shows that Java Island, with the highest population in Indonesia, is the axis of infrastructure development and the centre of the national economy (Hidajat, 2019). Besides domestic lending, abroad lending also contributes to the national P2PL lender account, with total accounts in 2022 running at 3.391 or 0,5% of the total lender accounts. The lenders market share is primarily national companies, with a market share controlling 99% of the P2PL fintech industry market share.

Based on Figure 4 total outstanding P2PL loans were experiencing rapid growth. There was a stagnation of outstanding loans in 2020 due to the Covid 19 pandemic. This pandemic impacted Indonesia's economic growth, slumping to -2.07% (Indonesian Statistics, 2021). However, entering 2021, along with improving economic conditions with economic growth reaching 3.69%, the P2PL fintech industry continues to grow. P2PL has become very attractive in the post-covid-19 era because of its ease in providing loans. On the other hand, when many people need online loans and many people do not have the opportunity to obtain conventional bank loans, P2PL is to be a complement in providing access to loans (Nigmonov et al. 2022; Tang, 2019; Woo and Sohn, 2022). P2PL also contributes to productive financing sectors. The sector that uses the most P2PL services is wholesale and retail trade, with a total loan disbursement in 2022 (as of May) of Rp10.8 trillion.

The total outstanding loan in May 2022 was Rp40.1 trillion, where 84.3% of outstanding loans were from individuals and 15.7% were from business entities. As much as 65% of the total outstanding individual loans were individuals aged 19-34. This composition indicates that the P2PL fintech business is very suitable for millennials. It is because to access credit using an application-based platform, and digital technology-based knowledge is needed to access the application. Based on (Hidajat, 2019; Khan and Xuan, 2022; Stern et al. 2017), respondents of this age have easy access to mobile phones and the internet, so that information about credit facilities can be quickly accessed. Based on a survey (Asosiasi Penyelenggara Jasa Internet Indonesia, 2021), in Indonesia, around 73% or 196 million Indonesians have access to the internet. Based on previous research (Budiman et al. 2020; Elsaid, 2021; Thakor, 2012; Yudaruddin, 2022) other than Fintech in sector of payment such as the GoPay, threat is also come out of Fintech and Startup in sector of loan such as the UangTeman. Revolution in digital technology produced by the Fintech and the Startup changes people's behavior to access financial services, from coming to bank office to be an access in using smart phone. Objectives and research methods use qualitative and quantitative approaches as follows: to identify existing core competencies of the Bank ABC using the VRIO (Valuable, Rare, Inimitable, Organized to Capture Value, P2PL can threaten conventional banks and complement the financial system. In addition, theoretically, innovation in financial start-

ups such as P2PL fintech can increase financial risk and instability. Although Fintech P2PL is classified as a new industry by utilizing technological innovation, technological innovation applied in the financial industry is certainly faced with several things such as technological uncertainty, high investment costs, embryonic companies, and first-time users (Utami and Ekaputra, 2021).

In 2018, there were only 88 P2PL companies. However, in 2019 the number of P2PL companies almost doubled to 164. To maintain the quality of P2PL companies, in 2020, OJK conducted a moratorium on P2PL companies so that in 2020 the companies diminished to 107 (OJK, 2021b). In addition, this moratorium is carried out to improve the P2PL fintech industrial system because illegal online loans are very large compared to online loans registered with the OJK. Furthermore, the OJK tightens the issuance of permits for P2PL fintech businesses. Therefore, the Indonesia P2PL industry is certainly different compared to the P2PL business climate in Malaysia. Although the growth of P2PL in Malaysia is also very rapid, among 50 companies that have already proposed P2P business licenses, the Malaysian government only issues business licenses for 6 P2PL companies. These companies are B2BfinPal, Fundaztic, Funding Societies, Funded By Me, Nusa Kapital, and ManagePay Services (Khan and Xuan, 2022).

Hierarchical Clustering Analysis

The mapping of P2PL fintech performance clusters is carried out using a hierarchical method. This method is a clustering method that forms certain levels like a tree structure. The results of this classification are displayed in the form of a dendrogram. The hierarchical method used in this study is agglomerative, in which several methods form clusters. The grouping uses the average linkage method, where the distance is calculated from the average distance of each cluster.

The results of the hierarchical cluster analysis are shown in Figure 4, where there are three clusters. Each cluster has different characteristics. On the Y axis is the lifetime value, where the maximum lifetime value is 25. There are several distributions of lifetime values which are indications of clusters. The most optimal cluster is the cluster with the highest lifetime distance. In the results of this hierarchical clustering, the furthest lifetime distance is between the values 11-24. Within this lifetime value range, there are three clusters. In cluster 1, there are three companies. The cluster analysis results show that cluster 1 is a company with good NPL characteristics and high disbursement. Cluster 3 is characterized by companies that have good NPL values and not too high disbursements.

Meanwhile, cluster 2 has a bad NPL and a low disbursement rate. In cluster 1, there are 3 P2PL fintech companies: Asetku, Kredifazz, and Pinter Credit. These three companies have a market share of 34% of the total P2PL fintech distribution. Cluster 3 consists of 71 companies. Most P2PL fintech falls into cluster 3 because the gap between cluster 1 and cluster 3 is relatively high. The three giant fintech companies have a significant role in channeling P2PL fintech loans. In cluster 2, there are 13 companies related to bad performance. The vulnerable NPL value in this cluster is 5-11%. SAMIR has the highest NPL value, with an NPL value of 11%.

This analysis gives us an overview that the P2PL performance of as many as 15.9% of the 87 companies had poor performance marked by a high NPL value and entered into the third cluster. In the second cluster, the highest total disbursement was Rupiah Cepat, with a total disbursement of Rp14.7 trillion. In the first cluster, the lowest distribution was in the Kredit Pintar, with a total disbursement of Rp28 billion. In the second cluster, no companies with an NPL above 5% exist. The highest NPL is 3.5% from the Komunal.

Table 1. Descriptive statistics

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
NPL	88	0.00%	15.08%	2.1019%	2.91099%
Disburse	88	950780000	42119060275909	3382021185191	6745679571399
Valid N (listwise)	88				

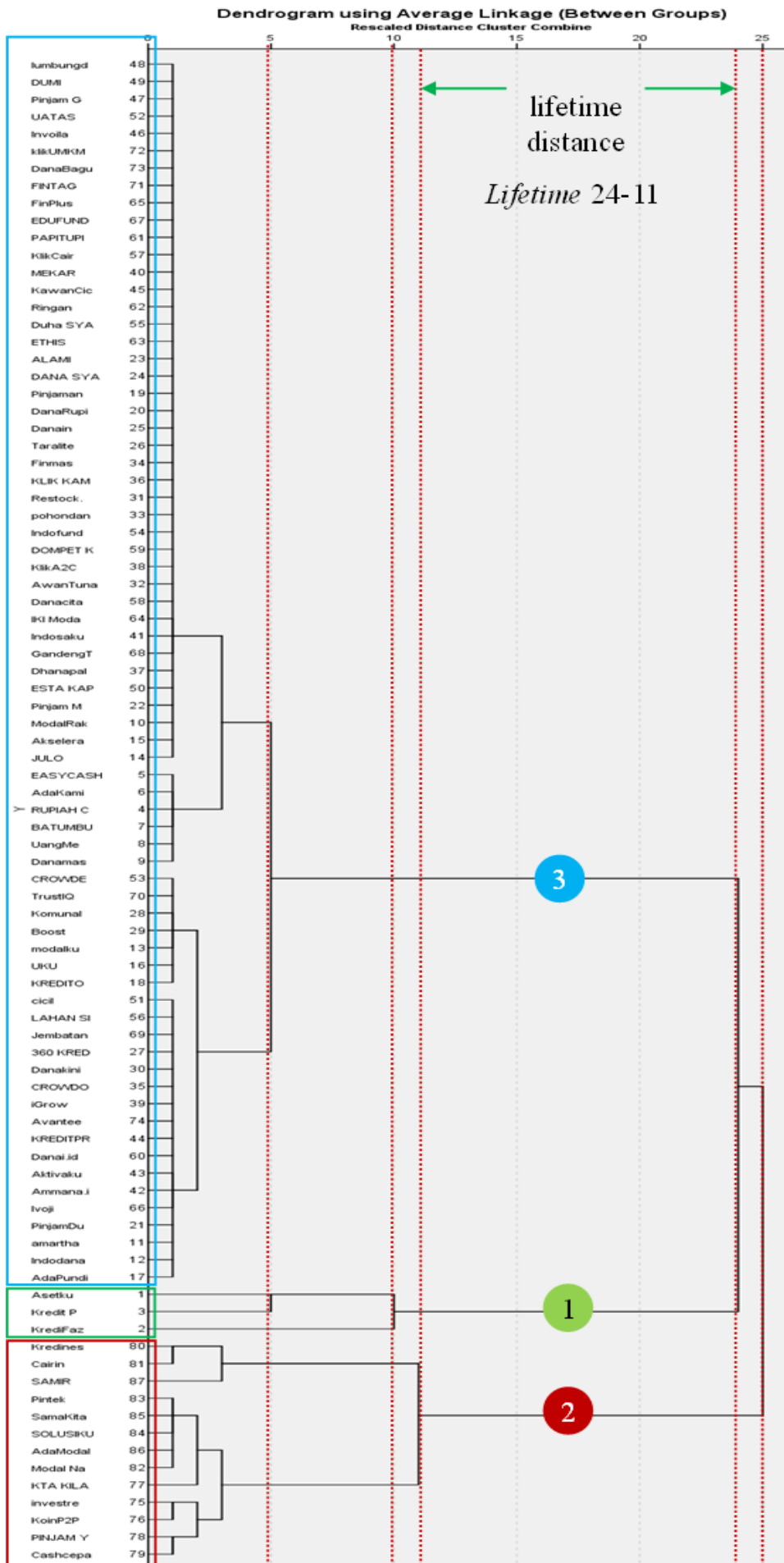


Figure 4. P2PL performance mapping

P2PL Performance Analysis

The ratio of operating expenses and operating income (BOPO) is shown in Figure 6, which explains that the BOPO value of P2PL is higher than the BOPO of commercial banks. BOPO value is an indicator of a bank's efficiency as measured by the ratio between operating expenses and operating income. This ratio is the fastest way to measure the efficiency level of a bank. The lower ratio indicates that the institution has a good financial condition (50% efficiency is generally the most optimum efficiency). Meanwhile, the increasing efficiency ratio shows increased operational costs and decreased revenue (Arafat et al. 2013). In theory, P2PL should be more efficient than conventional banks because most of their operational utilize digital technology, have more efficient processing times, and reduced transaction costs (Anil and Misra, 2022; Elsaid, 2021).

In early to mid-2022, the BOPO value of P2PL is above 100%. This situation shows that operating costs are greater than revenue. It is also related to the negative ROA value in that period. Based on the P2PL cost

structure in Q1 2022, the total operating expenses in that period were 31% general and administrative expenses, 28% salary expenses, 26% marketing expenses, 5,9% finance expenses, 5,2% IT development and maintenance expenses, and 2,8% other expenses (OJK. 2022). Based in this cost structure, general and administrative expenses, salary, and marketing expenses are the highest expense components in the operational expense structure. Therefore, P2PL companies must be efficient in their operational. The P2PL business scheme is the most efficient financial business scheme because operations can be run through digital technology (Le et al. 2021).

The impact of the high operating expenses in Q1 2022 is a negative revenue with an aggregate company loss of Rp103.4 billion. Following its role as a digital-based loan service provider, P2PL companies in Indonesia should be able to operate more efficiently. For example, P2PL companies can use virtual work systems because most of their operations are platform-based. By using a system like this, the operational costs of P2PL fintech companies should be reduced so that they can get optimum revenue.

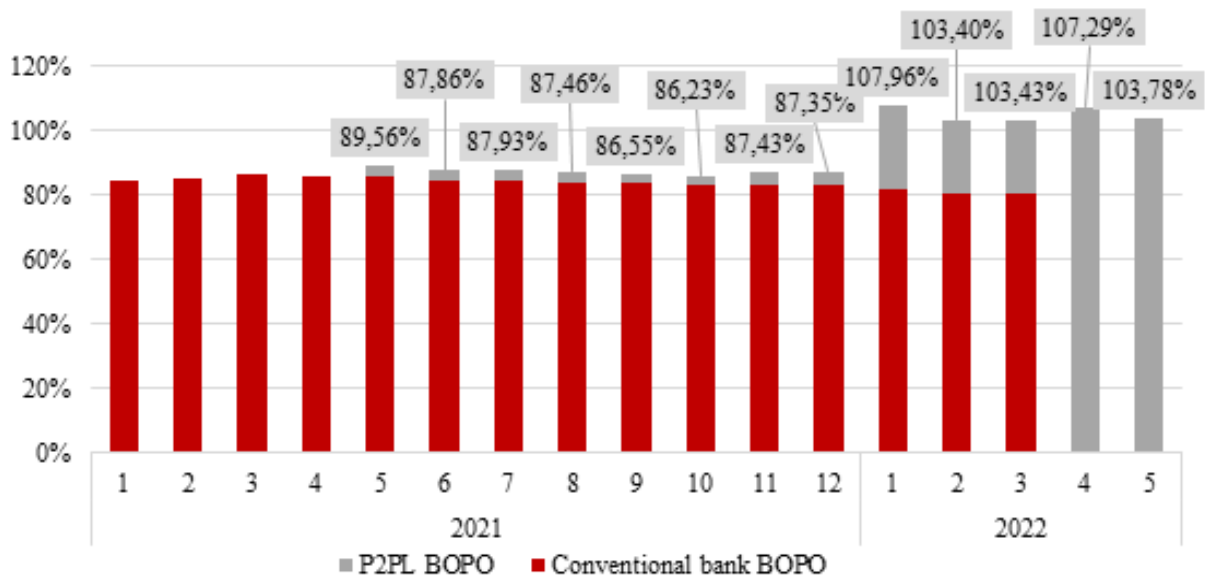


Figure 6. BOPO comparison between P2PL and conventional bank (OJK, 2021a)

A different phenomenon during the covid 19 pandemic occurred in the P2PL industry. Entering the middle of 2020, when the covid 19 pandemic outbreak began to spread, the government was limited to traveling, so many economic activities had to stop. Due to this mobility restriction, many companies have reduced their production activities, disrupting their performance (Khoirunurrofik et al. 2022; Malahayati et al. 2021)we examine the impact of non-pharmaceutical interventions (NPIs. This event also has an impact on the performance of P2PL fintech. During the COVID-19 pandemic, the highest NPL was obtained in mid-2020, with an NPL value of 8.8%. The NPL of P2PL is certainly different from the NPL of commercial banks, which is stable below the OJK safe threshold of 5%. Therefore, the P2PL industry has a fairly high dynamic. It can be seen from the NPL data at the beginning of 2021 that the NPL value is quite low until 2022. However, compared to ROA in that period, it tends to be negative in early 2021, and this phenomenon also occurs from early 2022 to mid-2022. Therefore, P2PL ROA has not shown a positive value. Based on (Ari et al. 2021) study, the COVID-19 pandemic outbreak impacted the economic crisis and increased the value of banking NPL. The crisis during the pandemic caused many debtors to default and weakened bank balance sheets.

P2PL is an infant industry, so its development experiences many uncertain dynamics and still requires additional investment to develop P2PL start-ups (Bugrov et al. 2017; Pejkovska, 2018). Several studies (Melitz, 2005; Qiu et al. 2019)tariffs, or quotas in order to maximize domestic welfare over time. As protection is not always optimal (although the domestic industry experiences a learning externality have studied the infant industry. The infant industry has a high risk of operational costs. Thus, the study requires several policies to support the new industry. The infant industry also often faces cost problems, requiring cost protection. This principle is a learning process that relates to the learning process curve (Kowalewski and Pisany, 2020). The unit costs will continue to decrease with increasing output and the learning process.

Based on Indonesia P2PL industry characteristics (see Figure 7), there are three groupings, most of them finance for consumptive needs. It can be seen

in OJK's outstanding monthly loan data that there is a shift in the pattern of loan distribution. In 2021, most of the loans were disbursed to the productive sector. However, entering 2022, there was a significant change in the distribution pattern, 61% of the distribution was channelled to the consumptive sector or household consumption. It is also supported by the distribution for the consumptive sector in March, which reached Rp. 14,4 trillion, the highest throughout 2021-2022. The high economic turnover in the consumptive sector certainly impacts Indonesia's economic growth. Based on BPS data, the household consumption sector contributed 51% in the second quarter of 2022 (Statistic of Indonesia, 2022). The change in funding pattern is also because P2PL companies can no longer finance loans to the productive sector because most of the productive sector has been given loans by banks. On the other hand, productive sector loans tend to be large. So that the P2PL industry shifts to the household consumption sector, which returns faster, and the loan amounts tend to be manageable. This phenomenon shows that the household loan market characteristics which relatively large with small loan amounts (Le, 2022).

Managerial Implications

This study shows that several companies need to display loan disbursement and NPL data on the platform because only 88 companies were analysed in this study. Three big players dominate the fintech business with the highest loan disbursement. Most of the companies are in the middle class. The rest are companies with low distribution and high NPL. There needs to be a policy regulating the P2PL ecosystem so there is no gap between P2PL companies. Several things need to be improved to reduce P2PL NPL, such as the loan disbursement process must be more selective through a standardized credit scoring system. It is essential to develop a monitoring and risk management system. Distribution to the consumer sector needs to be monitored because the potential for loan default is more significant than in the productive sector. Lastly, P2PL operations also need to be supervised so that the company can run efficiently. The ratio of operational costs to income is still high, indicating that fintech P2PL companies still need to operate efficiently.

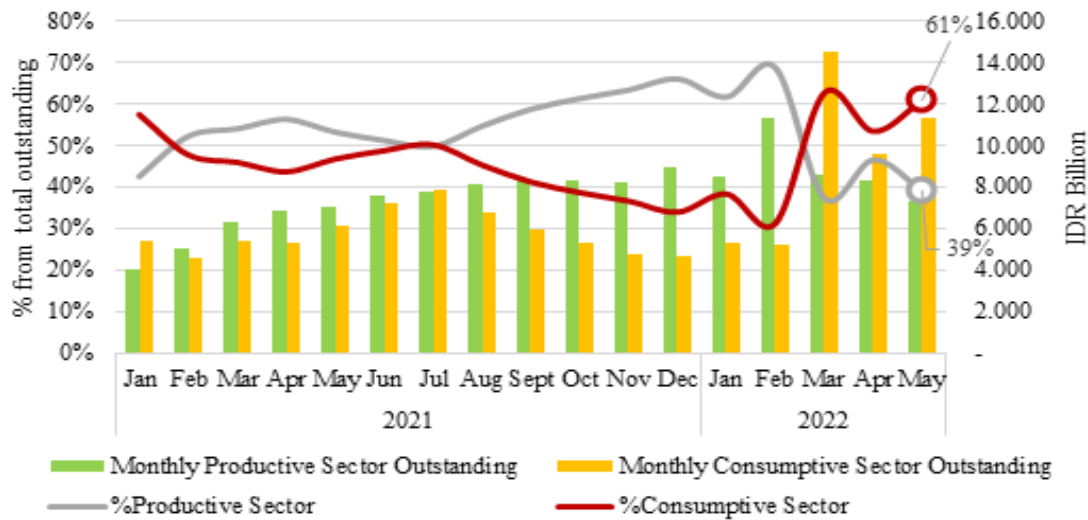


Figure 7. Historical loan distribution (OJK, 2021a)

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the P2PL fintech mapping analysis results, P2PL in Indonesia is growing quite rapidly. When viewed from the number of borrower accounts in 2018, there were only 330,000 accounts. In 2022 the number of borrower accounts reached 83 million borrower accounts. In addition, the loan outstanding has also always increased from 2020-2022. After moratorium process, there are only 102 registered P2PL companies in OJK. Three companies are the main players in P2PL fintech with the highest total loan distribution: Assetku with a total distribution of Rp42,1 trillion (14%), KrediFazz Rp29.9 trillion (10%), and Smart Credit with a total disbursement of Rp 28 trillion (9,4%). The results of fintech mapping show that most P2PL fintech companies have TKB 90 above 96%, and only 11 companies have TKB 90 below 95%. As a comparison, OJK applies a safe limit for conventional bank NPL below 5%. Based on the hierarchical clustering analysis, three clusters distinguish the characteristics of grouping P2PL companies. In first cluster, there are 3 companies with high distribution and low NPL, while in the second cluster consists of 71 caregorized as poor performance because they related to the low disbursement and high NPL value. In the third cluster there are 13 companies with moderate dusbursement and NPL.

Recommendations

There are limitations in this study, first in the use of limited data. P2P lending data is relatively small, and not much is published. In further research, several variables can be included, such as the value of return on equity, the ratio of operating expenses and operating income. This data can be obtained through a survey of P2P lending companies. The use of more varied data will provide better characteristics between company groups.

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