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Analyzing the Covid-19 Pandemic Effect on Forecasting of Loan Disbursement in Financial Technology

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ABSTRACT

Financial technology service particularly peer-to-peer lending (P2P lending) disrupts the financial service industry and stimulates economic growth in the world. This study aims to forecast the amount of loan disbursement in Indonesia's P2P lending amid the Covid-19 pandemic. This is a quantitative study that applied the Moving Average Method to examine a time-series data. The secondary data is obtained from Indonesia's Financial Services Authority beginning from January 2018 until October 2021, accumulating 46-months of data. This study's results indicate that the Covid-19 pandemic affected the amount of P2P lending's loan disbursement that causing declining the amount of loan disbursement from April 2020 until July 2020. It was followed by an increasing trend starting August 2020 that exponentially rose until July 2021 before it is predicted to fluctuate in the next months. This study provides explanations of the Covid-19 pandemic effect on forecasting of loan disbursement in Indonesia's financial technology and suggests the policymaker and business practitioners to adapt this situation with new strategies.

KEYWORDS: *financial technology; forecasting; loan disbursement; Covid-19; pandemic*

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INTRODUCTION

Financial technology (fintech) becomes a popular topic of discussion amongst researchers, business practitioners, and even governments in the world as it brings disruption to the financial service industry. Its popularity was arising from the post-financial crisis of 2008 where the traditional financial intermediaries conducted better control of the credit risk in which resulted in those with lower-credit ratings becoming unable to meet funding requirements to obtain traditional loans [1]. This situation made the underserved group of people has a demand of loan to another financial service. Then, P2P lending as one of financial services technology fills the gap by offering an alternative connection between fund owners (lenders) to borrowers with more simple, speedy lending solutions and lower interest rates that is supported by information communication technology (ICT) [2].

As one of the financial intermediaries, fintech P2P lending drives its business to distribute collected funds from lenders to borrowers. This loan disbursement is slightly similar to traditional financial services in terms of process. The typical of marketplace model could be an example of the loan disbursement process in the fintech P2P lending. It is illustrated with the lenders who have excess capital are willing to lend it for a certain level of return through the fintech P2P lending that is followed by borrowers who submitted their loan request into the same platform before receiving cash or installments disbursement [3]. Interestingly, fintech P2P lending is able to achieve a wider coverage of users than conventional banks as it is utilizing digital applications to substitute verification of physical documents that is required by traditional competitors.

The advantage of fintech P2P lending to cover more users make it absolutely important to increase the level of financial inclusion in Indonesia that later will have a massive effect on overall Indonesia's economy[4]. Financial inclusion itself is defined as the opportunity for all, especially low-income people and micro and small enterprises to access useful and

affordable financial products and services that meet their needs [5]. The level of financial inclusion could be measured from several indicators which one of them is the amount of loans from adults with credit at regulated institutions [6]. Hence, it is important to know the role of fintech P2P lending in contribution to leverage financial inclusion by reflecting the amount of its loan disbursement.

The purpose of this study is to determine the quantity of loan disbursement in Indonesia's fintech P2P lending industry using time series data dan to estimate future conditions. Forecasting is a common data science task that helps organizations with capacity planning, goal setting, and anomaly detection [7]. In regards to detecting anomalies in the forecasting, this study is to observe the effect of the Corona Virus Disease 2019 (Covid-19) outbreak that initially began in early 2020 and that has a significant impact on countries in the world today. Previous studies found that the Covid-19 pandemic resulted in weakening socio-economic activity, hasa high potential to cause inflation, and reduce community income [8; 9]. It also causes a change in consumer behavior across several dimensions to include category consumptions, channel selection, shopper trip frequency, brand preference, and media consumption [10]. Therefore, this study aims to observe the effect of the Covid-19 pandemic on the forecasting of loan disbursement in Indonesia's fintech P2P lending. This is the first study to conduct such research in the area.

RESEARCH METHOD

This study employed a quantitative approach through the forecasting method to determine the trends that occur within the future on the amount of loan disbursement in Indonesia's P2P lending of financial technology service amid the Covid-19 pandemic. This study used this method because it is a technique that uses some specific historical data to find out the regular relations with other factors, thus on to realize the prediction [11]. This method is also proven to create rational results for business and to determine the resource planning and costing that consequently in profitability planning [12].

This study obtained secondary data from the publication of Indonesia's Financial Services Authority concerning the Statistics of Financial Technology. The variable of this study is that the amount of loan disbursement to borrowers. The data in this study uses monthly basis data from January 2018 to October 2021 so that it is expected to be able to predict the forecast for the following 14 months until December 2022 on the amount of loan disbursement in the financial technology service in Indonesia amid the Covid-19 pandemic. Data of this study is a time-series data as it relies on the continuity of the development of things by using the past time-series data [11].

There are several time-series forecasting methods, including Moving Average Method, Exponential Smoothing Method, and Trend Forecasting Method [11]. This study employed Moving Average Method as this method is one of the most frequently used extrapolation models and is considered as the simplest one [13]. Moreover, this method is appropriate to detect a trend or a pattern in a series then its future forecast tends to be close to the last few values of the series [14].

Moving Average Method is the mean value of a set of most recent observations in a time-series data by calculating the average value to be used as a forecast for the next time period [15]. To use this model, this study chose a span of 12 months as the number of terms in each moving average. This large span of a series is important for having a smoother forecasting result than the original series [13]. The equation of Moving Average Method is shown as follows [13]:

$$Moving\ Average = \frac{(A_1 + A_2 + A_3 + \cdots + A_n)}{n}$$

where:
A = Average in Period
n = Number of Time Periods

Microsoft Excel is used to apply Moving Average Method to forecast the amount of loan disbursement in Indonesia's financial technology service amid the Covid-19 pandemic. The first stage of this study is to obtain a time-series data of the amount of loan disbursement to borrowers of fintech P2P lending from Indonesia's Financial Services Authority's website. The second stage is to draw a graphic of the data using Microsoft Excel to see whether the data is a series with a pronounced trend or not. This stage will be used to determine whether Moving Average Method is appropriate to examine this study or not. Finally, the third stage of this study is using Moving Average Method and the result will be drawn once again in a graphic to describe the difference between the actual amount of loan disbursement in the financial technology service and the forecasting version of it amid the Covid-19 pandemic.

RESULTS AND DISCUSSION

The first stage of this study is to download a time-series data of the amount of loan disbursement to borrowers in fintech P2P lending from Indonesia's Financial Service Authority's website. The official website of this institution is as follows https://www.ojk.go.id/id/Default.aspx. From this website, it is obtained 46-months of a time-series data that beginning from January 2018 until October 2021. Table 1 presents data of the amount of loan disbursement in Indonesia's fintech P2P lending.

Using a time-series data from Table 1 above, the following stage is to draw a graphic with Microsoft Excel. Figure 1 below shows the graphic that is intended to observe whether the data is pronounced trend or not.

Table 1 Data of the Amount of Loan Disbursement in Indonesia's Fintech P2P Lending

Month	2018	2019	2020	2021
January	4,38,59,99,37,229	33,37,72,90,34,220	68,76,54,51,33,726	93,84,41,20,73,218
February	5,41,64,71,51,707	32,95,82,70,21,704	70,20,51,26,20,221	95,84,66,87,36,084
March	9,28,69,74,51,636	39,00,84,47,92,302	71,39,82,49,28,925	1,17,67,73,56,88,976
April	9,42,87,58,87,329	38,12,92,31,59,430	35,24,84,86,40,296	1,21,88,61,84,04,108
May	7,44,34,65,82,846	40,25,47,17,47,634	31,16,06,93,21,160	1,31,65,48,40,40,916
June	14,75,35,71,61,887	37,36,46,50,85,267	42,85,22,52,01,677	1,47,93,62,31,07,766
July	15,78,34,80,06,014	50,18,68,85,22,131	35,10,39,63,82,618	1,56,69,17,87,78,044
August	24,71,03,99,99,003	49,21,53,53,39,449	49,00,17,26,71,843	1,49,56,98,38,65,835
September	21,49,45,40,37,356	56,91,75,95,25,399	68,27,38,74,38,391	1,42,61,42,05,24,498
October	21,55,82,69,26,348	75,92,56,63,43,494	89,57,79,33,66,767	1,36,11,73,74,85,528
November	30,65,40,84,31,450	65,44,81,87,70,610	85,94,50,36,03,961	
December	36,10,51,79,27,483	69,52,81,19,86,388	96,51,76,40,80,376	

Source: Indonesia's Financial Services Authority

Figure 1 A Graphic of Loan Disbursement Fintech P2P Lending

Source: Indonesia's Financial Service Authority

Figure 1 shows that the graphic of loan disbursement of fintech P2P lending in Indonesia beginning in January 2018has an exponentially increasing trend. In 2018,December led the position as it had the highest amount of loan disbursement in that year at around Indonesia Rupiah (IDR) 3.6 trillion. Meanwhile, for the following year, the highest position was in October 2019 when the amount of credit was disbursed up to IDR 7.5 trillion. A very sharp decline was occurred from April 2020 until July 2020 due to the Covid-19 pandemic that hit the world, including Indonesia. However, there is not a pronounced seasonality of trend in this data set.

From this information, it will match to conduct this study by applying Moving Average Method. By using this method, this study will forecast the quantity of loan disbursement in Indonesia's fintech P2P lending service.

The forecast's result of the amount of loan disbursement in Indonesia's fintech P2P lending is presented in Table 2 below. It presents the forecasting result of the quantity of loan disbursement in Indonesia's fintech P2P lending beginning from January 2018 until December 2022. By using Moving Average Method, the values of the forecasting result are following the trend of the last few values from the original a series data from Indonesia's Financial Service Authority.

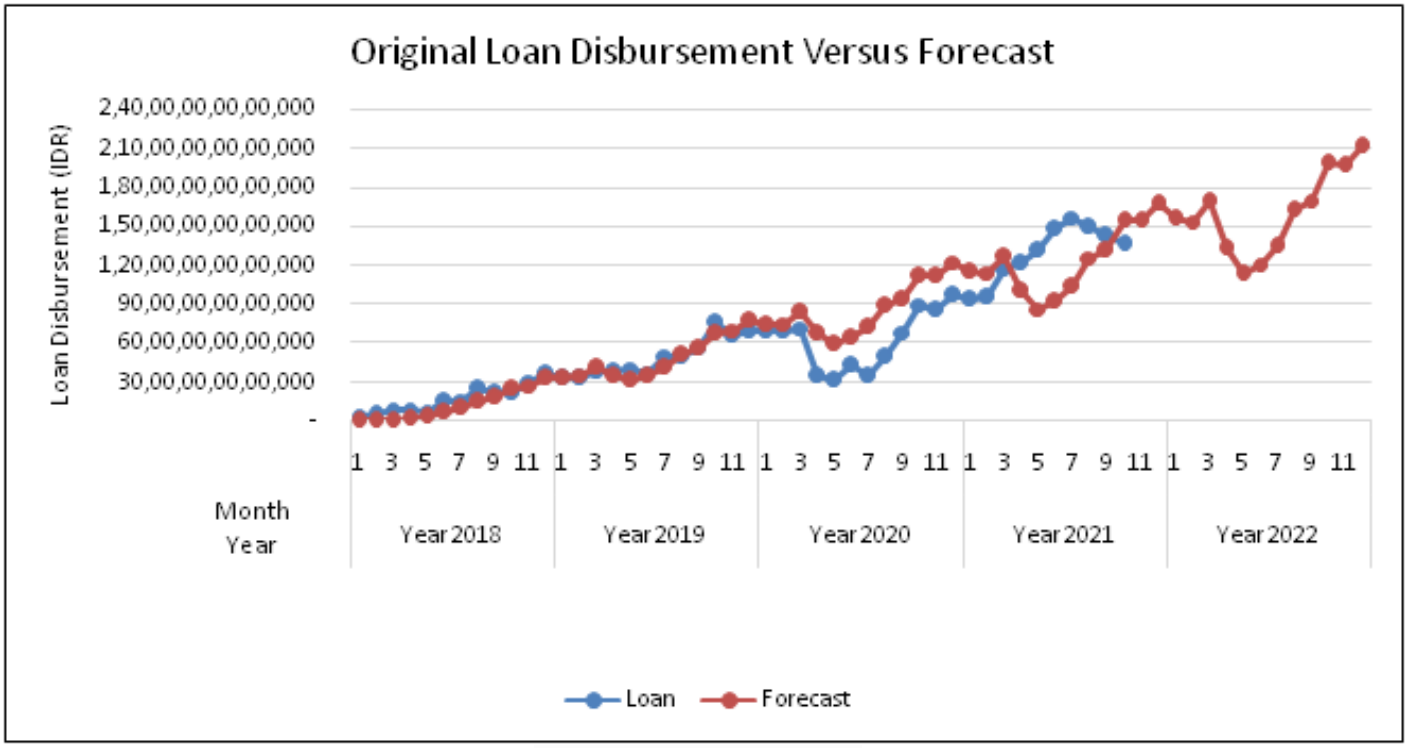
From this table, it is followed by Figure 2 that shows a graphic that compares the original versus the forecast of the data. The original series of data is presented by a blue-colored graphic meanwhile the forecasting version is presented by the red-colored one.

Table 2 Data of Forecasting the Amount of Loan Disbursement in Indonesia's Fintech P2P Lending

Month	2018	2019	2020	2021	2022
January	-	33,19,02,50,46,800	74,04,62,14,67,702	1,14,90,21,78,88,604	1,55,75,81,43,09,506
February	-	35,36,74,96,82,785	74,85,31,25,31,042	1,14,33,87,53,79,300	1,53,82,43,82,27,558
March	-	41,69,85,00,48,374	84,28,97,61,07,931	1,26,88,10,21,67,489	1,69,47,22,82,27,047
April	2,03,64,49,93,686	34,68,63,99,51,919	67,33,63,49,10,153	99,98,62,98,68,387	1,32,63,62,48,26,621
May	3,99,83,79,75,477	31,43,98,84,76,602	58,88,13,89,77,727	86,32,28,94,78,853	1,13,76,43,99,79,978
June	6,55,17,17,45,085	35,15,69,79,46,502	63,76,22,41,47,920	92,36,75,03,49,337	1,20,97,27,65,50,755
July	9,72,37,03,02,105	40,85,22,80,73,877	71,98,08,58,45,648	1,03,10,94,36,17,419	1,34,23,80,13,89,190
August	14,64,19,93,81,732	51,64,42,38,49,731	88,64,64,83,17,730	1,25,64,87,27,85,728	1,62,65,09,72,53,727
September	18,15,15,35,57,234	56,04,31,05,47,037	93,93,46,75,36,840	1,31,82,62,45,26,643	1,69,71,78,15,16,446
October	24,42,78,52,39,156	67,86,50,12,67,749	1,11,30,21,72,96,341	1,54,73,93,33,24,934	1,98,17,64,93,53,526
November	27,35,54,67,21,944	69,72,07,01,57,492	1,12,08,59,35,93,040	1,54,45,11,70,28,588	1,96,81,64,04,64,136
December	32,64,36,15,84,053	77,41,98,49,73,209	1,22,19,60,83,62,364	1,66,97,23,17,51,520	2,11,74,85,51,40,675

Source: Processed Data

Figure 2.AGraphic of Original Loan Disbursement FintechP2P Lending in Indonesia Versus Forecast



Source: Processed Data

From Table 2 and Figure 2 above, it can be seen that the actual quantity of loan disbursement in Indonesia's fintech P2P lending was declining from April 2020 until July 2020. The quantity of loan disbursement in March 2020 was IDR 7.1 trillion before being significantly reduced toIDR 3.5 trillion in July 2020.

This phenomenon was caused by the Covid-19 pandemic that hit the world, including Indonesia. Indonesian government responded to this situation by restricting citizens' mobility in order to control the virus transmission amongst the community as stated in the Government Ordinance Number 21 Year 2020. This order has been regulating community mobility in many provinces in Indonesia since April 2020. The mobility restriction positively affects the economic condition of the effected communities. It is supported by a previous study conducted in Italy that found there was a significant and positive relationship availability of money in fintech P2P lending service as there was a decreasing amount of capital from lenders. Like any other financial service company, fintech P2P lending relies on the money supply from the investor to boost its credit growth [17].

Furthermore, the fintech P2P lending companies also strengthened the risk mitigation of the repayment rate from debtors as there was an economic downturn during the mobility restriction caused by the Covid-19 pandemic outbreak. They reduced credit limits to minimize the risk of increasing an allowance for bad debt due to the borrowers having low credit rate return.

It was a good business decision to be made for the sustainability of fintech P2P lending as their customers have relatively short business experience and fewer prior transactions with the fintech. Hence, this factor of business experience also influenced the fintech P2P lending in disbursing credit to its customers amid the pandemic situation [18].

However, the performance of Indonesia's fintech P2P lending credit amount was starting to increase from August 2020 as economic activities gradually resumed with the end of the large-scale social restriction policy. Moreover, the Indonesian government through the Financial Service Authority issued a new regulation in December 2020 namely POJK Number 14/POJK.05/2020 to mitigate the impact of the Covid-19 pandemic on Non-Bank Financial Institutions (NBFIs). Based on this regulation, the fintech P2P lending company as one of the NBFIs can restructure their lending with borrowers whose businesses the pandemic has harmed.

The credit amount of Indonesia's fintech P2P lending reached a peak in July 2021 at IDR 15.6 trillion. The change of customer behavior during the pandemic is considerably affecting the loan request's growth. Since the start of the pandemic, consumers are avoiding offline consumed products or services and have increased their virtual shopping and online buying behaviors [19]. It was also happening in Indonesia one year after the start of the Covid-19 pandemic where 76% of Indonesians surveyed working from home and studying [20]. These home-centered activities made Indonesian customers of traditional banks switch their choices to the fintech P2P lending service as it offers simple and speedy lending solutions. This financial intermediary service is also using ICT to ease their customers to follow the investment and credit procedures without making face-to-face appointments in the public sphere.

In addition, Figure 2 also reflects the Covid-19 pandemic effect on the forecasting result of the quantity of loan disbursement in Indonesia's fintech P2P lending. As there was a credit decline from April 2020 until July 2020, it made a pattern for the following years in the prediction result. It can be observed that there is a downturn of loan disbursement from April 2021 to May 2021 and it is forecasted will be recurring from April 2022 to May 2022. Nevertheless, the quantity of credit disbursement is predicted to significantly rise from June 2022 until December 2022 where it will reach a peak amounting to IDR 21 trillion by the year-end of 2022.

Those fluctuations are the result of this forecasting study. Interestingly, there is a different condition between the original data and the forecasting result during 2 months from April 2021 until May 2021. The original data shows that there is an increasing amount of loan disbursement in that period meanwhile the forecasting presents the opposite outcome. The actual condition shows the rise of credit disbursement as it might be the result of the Indonesian government and also citizens to control virus transmission successfully by conducting health protocol. The penetration of the Indonesian government to hold the Covid-19 vaccination free for all Indonesians also supports to achieve herd community that consequently positively affects the national economic recovery [21].

CONCLUSION

This study used Moving Average Method to forecast the quantity of loan disbursement in Indonesia's fintech P2P lending amid the Covid-19 pandemic. The forecasting result reveals that the Covid-19

pandemic affected the prediction of loan disbursement in this new financial service by repeating a pattern of downturn and growth of credit disbursement in the following years of a historical data. This declining condition was caused by the pandemic that made Indonesian government restricted communities' mobility to control virus transmission and subsequently affected the economic downturn in Indonesia. This study suggests to the policymakers and business practitioners of fintech P2P lending to adapt new strategies after the pandemic outbreak as there are changes of consumers' behaviors and also to sustain this business model in order to support financial inclusion in Indonesia.

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