FINTECH LENDING DEVELOPMENT, RURAL BANK PERFORMANCE, AND COLLABORATION POTENTIAL: RURAL BANKS PERSPECTIVE

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Abstrak

The rapid development of information technology has brought the presence of fintech to the financial industry, which in turn has had a disruptive effect on banks that still run the business in traditional way, especially the rural banks that have a similar market share and relatively smaller resources. This study aims to examine the impact of fintech lending development on the rural bank performance and the potential for collaboration between fintech companies and rural banks in the Greater Solo Region based on rural banks’ perspective. The research uses primary data obtained from questionnaire survey that are analyzed by using an in-depth descriptive statistics and multiple linear regression analysis. The study discovers that the development of fintech lending in the Greater Solo area is considerably not really significant according to the rural banks’ perceptions. Furthermore, this research finds that the development of fintech lending has a negative effect on rural bank performance and a positive effect on the potential for collaboration between fintech companies and rural banks. This research contributes to providing recommendations for fintech companies and rural banks in building partnerships and for regulators in overseeing such collaborations to increase financial inclusion in Indonesia as a whole.

INTRODUCTION

The financial services industry has experienced a significant transformation following technological advancement, particularly in how financial services are delivered (Dootson, Beatson & Drennan, 2016). Since 2014, financial technology has emerged as a major phenomenon (Wang, Ziuping & Zhang, 2021) involving the application of various advanced technologies (Darolles, 2016), one of which is fintech lending. In the Indonesian context, the fintech lending market share has grown massively with more than 100 online lending platforms registered in the Financial
Services Authority (OJK). The number of active loan recipients has exceeded 21.73 million from 709 thousand lenders and the distribution of funds has reached more than 15 trillion Rupiahs. This major development is inseparable from regulatory support which increases consumer confidence (Santoso, Trinugroho & Risfandy, 2019).

The entry of fintech into the financial industry has a big impact. Fintech with various innovations is able to reform the financial industry (Admati & Hellwig, 2013). However, such innovations can disrupt existing industrial structures. Even further, fintech is able to create a blurring phenomenon among industry boundaries (He, et al., 2017) that threatens the sustainability of banking companies that still operate in traditional way. Banks can implement technological advancement in their services like fintech to improve the quality of their operations in providing loans (Cheng & Qu, 2020). Several studies have explored the potential for adoption of fintech technology in commercial banks and found that implementing fintech in banks can increase efficiency and build better bank business models compared to traditional banking models. However, this will most likely only apply to commercial banks that have large financial resources. Banks with large assets may be able to execute the development, but not with smaller banks, one of which is the rural banks.

Rural banks experienced an even more significant negative impact due to the similarity in market share factor. As both the rural bank and fintech target the smaller lending market, the rural banks competed directly with fintech lending. Thus, the rural banks must try harder in sustaining their business, one of which is with technological innovations. However, with limited financial resources and potentially human resources as well, the adoption of technology used by fintech in rural banks is probably more difficult to realize.

Even though previous research found that fintech has not been able to take over the commercial bank credit market to the point where it threatens its existence, the potential for fintech in the future can still threaten the business continuity of rural banks that may experience more significant negative impact. Rural banks actually have several advantages compared to fintech, such as in customer relation with better closeness to their customers. Several questions arise regarding whether collaboration between fintech and rural banks is needed to support the business processes of both, or how much it is necessary for rural banks to collaborate with fintech. Thus, this study aims to explore rural banks’ perceptions regarding the development of fintech lending on rural bank performance and the potential for collaboration between rural banks and fintech companies.

LITERATURE REVIEW AND HYPOTHESIS

Disruption Theory

Disruption theory was introduced by Clayton Christensen in 1997 through his book entitled The Innovator's Dilemma that discusses the competition in the business world, specifically at the level of innovation (Christensen, McDonald, Altman & Palmer, 2018). Disruption is not merely just a change, but a great change that can change the order. The impact of disruptive innovation reaches a social perspective (Shin & Lee, 2011) by changing the way of life in terms of social activities. There are two important characteristics of disruption (Kumaraswamy, Garud & Ansary, 2018). First, the change is very fundamental related to the business model. Second, disruption always starts at the low-end, or new market and then eventually taking significant portion of the market. In the financial industry, the existence of financial technology has been seen as a disruptive innovation. Crittenden, Crittenden & Crittenden (2019) argues that the existence of fintech companies has great potential to disrupt the sustainability of traditional banking companies because fintech has speed and flexibility in running their business.

Fintech lending development and rural bank performance

The existence of fintech has added a new lending model in financial industry with an innovative way (Jagtiani & Lemieux, 2017) that allows for a higher frequency of lending (Thompson, 2017). Fintech loans have successfully penetrated collateral-free consumer loans
(Dermine, 2017). Also, traditional loans in banking companies have a higher level of complexity with several conditions that may make it difficult for borrowers so that online loans from fintech companies emerge as easy alternatives. Schweitzer & Barkley (2017) find that borrowers whose loan proposal were refused by banks turned to fintech lenders to obtain loan for their businesses that did not qualify for commercial bank loan. With this circumstances, rural banks may experience a decline in their loan market as their target market can switch to fintech lending.

Fintech lending has also grown steadily and significantly since its entry into the financial industry (Vives, 2017) that carries the potential to disrupt established financial institutions such as rural banks with a similar market share. Previous studies discover a negative implication of the development of fintech lending on bank performance in general. Fintech market penetration was followed by a decline in bank revenues (Dermine, 2017) and banking profitability (Guo & Liang, 2016). Based on the above explanation, the research hypothesis is formulated as follows:

**H1. Fintech lending development negatively affects rural bank performance**

**Fintech lending development and potential collaboration between rural banks and fintech companies**

Fintech lending companies can not only become strong competitors for the continuity of the banking business, but also potentially advantageous collaborators. Innovation in digital finance such as what fintech brings is very important (Scott, Van Reenen & Zachariadis, 2017) with long-term potential for banking performance. Furthermore, the majority of fintech companies are start-ups so that they tend to have higher business insights (Yang, 2015) and bring new ideas into business (Skan, Dickerson, & Masood, 2015). Johnes, et al. (2018) revealed that banks can gain advantages from fintech in their business such as reducing operating costs, enhancing the user experience through simplified transaction flow, ease of use and increased choice. For rural banks with lower financial resource, this can also be achieved by collaborating fintech lending companies. This is supported by a study from Boot (2017) in which fintech is usually inseparable from banks, but has developed in joint ventures or other types of alliances with traditional banks. On the other hand, rural banks have an advantage over fintech in customer relations. Collaboration with fintech companies can be an option to help each other to make the two businesses more efficient. The positive relationship between rural banks and fintech companies can make loans smoothly and reduce credit risk or reduce non-performing loans. Based on references from the literature, we formulate the following research hypothesis:

**H2. Fintech lending development positively affects the potential collaboration between rural banks and fintech companies**

**RESEARCH METHOD**

**Population, samples, and research data**

This research focuses on the impact of fintech lending on rural bank performance and the potential collaboration between rural banks and fintech companies based on rural banks’ perspective in the Former Surakarta Residency (Solo Raya). The research uses purposive sampling by eliminating the rural banks under intensive supervision by the OJK, this study generates 76 research samples. The study uses primary data obtained through a questionnaire instrument.

**Research variables**

The dependent variable that becomes the focus of this research consists of perceptions of rural bank performance and potential collaboration between rural banks and fintech companies while the independent variable is the perceptions of fintech lending development. These variables are generated from the answers to a set of questions given in a questionnaire with a scale of 1-10. This study also uses control variables, namely rural bank size, local social and economic conditions, and rural bank ownership. In details, the research variables are presented in Table 1 as follows:
Data analysis

The research data that has been collected will be analyzed with the help of STATA software. Firstly, descriptive statistics is performed to examine rural banks’ perceptions about the development of fintech lending, rural bank performance, and the potential for rural banks collaboration with fintech companies. Furthermore, multiple regression analysis is performed to examine the effect of the development of fintech lending on rural bank performance and the potential for collaboration between rural banks and fintech companies. Before the regression analysis is carried out, the data must first pass a set of tests including the validity test (Cronbach Alpha), reliability test (factor loading), as well as the classic assumption tests consisting of normality, multicollinearity, and heteroscedasticity tests. Once the data have met all the requirements, the regression analysis is performed to test the hypothesis with the following equation:

\[
\text{PERF} = \alpha + \beta_1 \text{FINTECH} + \beta_2 \text{SIZE} + \beta_3 \text{SOSEC} + \beta_4 \text{GOV} + \beta_5 \text{PRIVATE} + e \quad (1)
\]

\[
\text{COLLAB} = \alpha + \beta_1 \text{FINTECH} + \beta_2 \text{SIZE} + \beta_3 \text{SOSEC} + \beta_4 \text{GOV} + \beta_5 \text{PRIVATE} + e \quad (2)
\]

Information:
- PERF: Rural bank performance
- COLLAB: Potential for collaboration between rural banks and fintech companies
- \(\alpha\): Constant
- \(\beta_1 - \beta_3\): Regression coefficient
- FINTECH: Fintech lending development
- SIZE: Rural bank size
- SOSEC: Local social and economic condition
- GOV: Government ownership
- PRIVATE: Private ownership
- \(e\): Error

RESULTS AND DISCUSSION

Descriptive statistics

Descriptive statistics in this study were carried out in depth in order to obtain a comprehensive description in assessing rural bank perceptions about the development of fintech lending, rural bank performance, and the potential for collaboration between rural banks and fintech companies. The results of the descriptive analysis and the correlation of the research variables are presented as follows:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERF</td>
<td>76</td>
<td>6.949</td>
<td>1.374</td>
<td>3.429</td>
<td>10</td>
</tr>
<tr>
<td>COLLAB</td>
<td>76</td>
<td>7.284</td>
<td>1.761</td>
<td>2.429</td>
<td>10</td>
</tr>
<tr>
<td>FINTECH</td>
<td>76</td>
<td>6.229</td>
<td>1.456</td>
<td>2.286</td>
<td>10</td>
</tr>
<tr>
<td>SOSEC</td>
<td>76</td>
<td>6.761</td>
<td>1.265</td>
<td>3.8</td>
<td>10</td>
</tr>
<tr>
<td>SIZE</td>
<td>76</td>
<td>24.972</td>
<td>1.288</td>
<td>18.375</td>
<td>27.418</td>
</tr>
<tr>
<td>GOV</td>
<td>76</td>
<td>0.158</td>
<td>0.367</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>PRIVATE</td>
<td>76</td>
<td>0.842</td>
<td>0.39</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Descriptive statistics analysis exhibits that rural banks’ perceptions regarding their performance achievements since the arrival of fintech loans are not so high with an average score of 6.949. The variable potential for collaboration between fintech companies and rural banks shows a mean value of 7.284. These results indicate that rural banks’ perceptions of the potential for
collaboration between fintech companies and rural banks are considerably open in which rural banks are quite interested and optimistic about the collaboration with fintech companies. Meanwhile, the fintech lending development variable shows an average value of 6.229, which means that according to rural banks’ perceptions, the development of fintech lending in the Solo Raya area is not so significant yet. We further conduct a deeper analysis to explore the research variables for each dimension which are presented as follows.

**Figure 1. Rural banks perspective about their performance**

Based on rural banks perspective, their performance is not so high since the entry of fintech to the financial service sector. Overall, the performance is averaging at 6.949 that is close to 7. The deposit performance appears to be the highest, followed by the financial stability of which scores are still above 7. Other performance indicators are between 6.5 to 7 in which the collaboration with business partner has 6.96 score followed by people’s interest on the rural bank, performance target achievement, earning power. Meanwhile, the loan distribution has the lowest score that may be the result of fintech development that takes over rural banks’ market share.

**Figure 2. Rural banks perspective on collaboration with fintech companies**

In regards with the potential collaboration between rural banks and fintech companies, the rural banks shows considerable interest and optimism. Almost all dimensions of the variable have the score above 7. The necessity for regulator support has the highest score that emphasizes the important role of OJK in this potential collaboration, The necessity of information technology adoption has the second highest score in which this is one of the main aspect of the collaboration. The order is followed by potential market share, impact on financial inclusion, perceived potential benefits, business sustainability post collaboration, and urgency of the collaboration at the last place.
As for the fintech lending development variable, the scores of all variable’s dimension is below 7, indicating that fintech lending has not developed so massively in Solo Raya. Among all dimensions, the market range of fintech has the highest score that is in line with the decrease of rural bank loan distribution of which score is the lowest in the performance variable. The competition has the second highest score, emphasizing that fintech lending has increase the business competition. The rest are regulator support for fintech lending, fintech lending distribution, fintech lending product, fintech lending market growth, and fintech lending advantage over bank loan.

**Multiple regression analysis**

Hypothesis testing in this study was carried out through multiple regression analysis. The research data obtained from the questionnaire instrument have fulfilled the validity and reliability test criteria and have passed the classical assumption tests that consist of normality, multicollinearity, and heteroscedasticity tests. Thus, the results of multiple linear regression analysis can be used as a basis for decision making to test the research hypothesis. The result is presented as follows:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef.</th>
<th>St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINTECH</td>
<td>-0.221</td>
<td>0.088</td>
<td>-2.52</td>
<td>0.014</td>
<td>**</td>
</tr>
<tr>
<td>SOSEC</td>
<td>0.613</td>
<td>0.106</td>
<td>5.76</td>
<td>0.000</td>
<td>***</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.212</td>
<td>0.112</td>
<td>1.88</td>
<td>0.064</td>
<td>*</td>
</tr>
<tr>
<td>GOV</td>
<td>-0.792</td>
<td>0.837</td>
<td>-0.95</td>
<td>0.347</td>
<td></td>
</tr>
<tr>
<td>PRIVATE</td>
<td>-0.97</td>
<td>0.781</td>
<td>-1.24</td>
<td>0.219</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.187</td>
<td>2.86</td>
<td>-0.07</td>
<td>0.948</td>
<td></td>
</tr>
</tbody>
</table>

Multiple linear regression analysis is performed based on the regression model (1) to analyze the impact of perceived fintech lending development on rural bank performance. The results of the analysis demonstrate that the development of fintech lending has a negative effect on rural bank performance. The result supports hypothesis 1 of the study so that the hypothesis is accepted. The more rapidly the development of fintech lending in a certain area will tend to have a negative impact on the performance of rural banks in which the performance achieved by the rural banks is lower.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef.</th>
<th>St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINTECH</td>
<td>0.712</td>
<td>0.111</td>
<td>6.39</td>
<td>0.000</td>
<td>***</td>
</tr>
<tr>
<td>SOSEC</td>
<td>0.287</td>
<td>0.135</td>
<td>2.12</td>
<td>0.037</td>
<td>**</td>
</tr>
</tbody>
</table>
Furthermore, regression model (2) is used to analyze the impact of perceived fintech lending development on the potential for collaboration between fintech companies and rural banks. The regression output for model (2) indicates that the development of fintech lending has a positive effect on the potential for collaboration between fintech companies and rural banks. Thus, hypothesis 2 is accepted referring to this result. The more rapidly the development of fintech lending in a certain area will tend to open the potential for collaboration between fintech companies and rural banks.

**Discussion of the findings**

Our study evidence that the development of fintech lending has a negative effect on rural bank performance in Solo Raya. As business competitors with relatively the same market share in terms of loan size, fintech companies can take over the market that was previously held by the rural banks that causes a decline in rural banks' revenue. Using new ways from technology utilization, fintech lending have various advantages in terms of cost efficiency and access to loans (Jagtiani & Lemieux, 2017; Thompson 2017; Vives 2017), especially compared to rural banks that still offer loans in a more complex traditional way. Even further, fintech also offers an instant and collateral-free loans (Dermine, 2017) so that they can deliver loans faster and with higher frequency. Furthermore, small businesses also experience many problems in taking loans from banks so that they switch to fintech that threatens the business sustainability of rural banks.

The results of the study confirm several previous studies. The decline in banking performance as a result of fintech lending development is also supported by Dermine (2017) of which study proves that the development of fintech lending is associated with a decrease in bank revenue so that bank profitability also decreases. In line with the finding, Guo & Liang (2016) in their study also reported that the emergence of fintech caused a decrease in the Return on Assets (ROA) at commercial banks in China. In addition, the switch of borrowers from banks to fintech is also supported by Schweitzer & Barkley (2017) that figures out that borrowers will turn to fintech loans, especially after their credit application to the bank is rejected.

Further analysis reveals that the development of fintech lending has a positive effect on the potential for collaboration between fintech companies and rural banks. Fintech companies have the potential to become advantageous collaborators for the sustainability of the banking business, not just as competitors. The results also confirm and support several previous studies in the existing literature. From the operational perspective, collaboration between rural banks and fintech companies can reduce operating costs by implementing information technology in business (Johnes et al., 2018) using a collaboration with fintech companies. Furthermore, a study by Boot (2017) states that fintech is usually inseparable from banks because its development is also related to the alliances with traditional banks.

Rural banks can also take advantage of new ideas and broad insights from fintech companies, considering that many fintech companies are start-up companies. According to Skan et al. (2015), collaboration with start-ups brings new ideas into business. In addition, start-up companies tend to have more advanced business insights (Yang, 2015). Rural banks as one of financial industry participants cannot only continue the business using traditional models and must also innovate as innovation in the financial industry plays a long-term positive role for banking performance (Scott et al., 2017). Based on the result and the support of previous studies, collaboration between rural banks and fintech companies has the potential to bring benefits for one another. In addition, in terms of wider impact, a study conducted by Ozili (2018) find that digital finance provided by fintech

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef.</th>
<th>St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>-0.06</td>
<td>0.143</td>
<td>-0.42</td>
<td>0.678</td>
<td></td>
</tr>
<tr>
<td>GOV</td>
<td>0.194</td>
<td>1.063</td>
<td>0.18</td>
<td>0.856</td>
<td></td>
</tr>
<tr>
<td>PRIVATE</td>
<td>0.288</td>
<td>0.993</td>
<td>0.29</td>
<td>0.773</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.132</td>
<td>3.634</td>
<td>0.59</td>
<td>0.559</td>
<td></td>
</tr>
</tbody>
</table>
companies has a positive influence on financial inclusion in developing and developed countries. Therefore, the collaboration can also be expected to increase the financial inclusion in Indonesia.

CONCLUSION
Our study explores the impact of fintech lending development on rural bank performance and the potential for collaboration between rural banks and fintech companies based on rural banks’ perspective in the Former Surakarta Residency (Solo Raya). According to the perception of the rural banks, the development of fintech lending in the Solo Raya has not been very high. The rural performance is considered quite good and the potential for collaboration between rural banks and fintech companies is considerably open. Empirical analysis reveals that the development of fintech lending has a negative effect on rural bank performance. Furthermore, it provides a positive effect on the potential for collaboration between rural banks and fintech companies.

Limitation and suggestions
Based on our findings, rural banks should make various efforts to maintain their business performance and sustainability followed by adequate monitoring to face various business challenges, one of which is from fintech. With regards to the potential collaboration with fintech companies, rural banks must properly study the potential costs and benefits, especially considering market potential, required capital, the level of efficiency to be achieved, and prospects so that the collaboration can provide the expected benefits. Furthermore, OJK as the regulator of the financial industry in Indonesia must provide support for rural banks so that from a regulatory point of view rural banks can maintain their viability equipped with adequate supervision. Regarding the collaboration between rural banks and fintech companies, OJK should facilitate and supervise the collaboration so that it runs well in accordance with applicable regulations and brings benefits for increasing financial inclusion in Indonesia. This research, however, still has a limitation in which the scope is limited at Solo Raya area and only uses primary data from rural banks perspective. Future studies can expand the scope and gain deeper and more insights from secondary data and qualitative analysis.

REFERENCES


