THE DISRUPTION OF FINTECH ON RURAL BANK: AN EMPIRICAL STUDY ON RURAL BANKS IN INDONESIA

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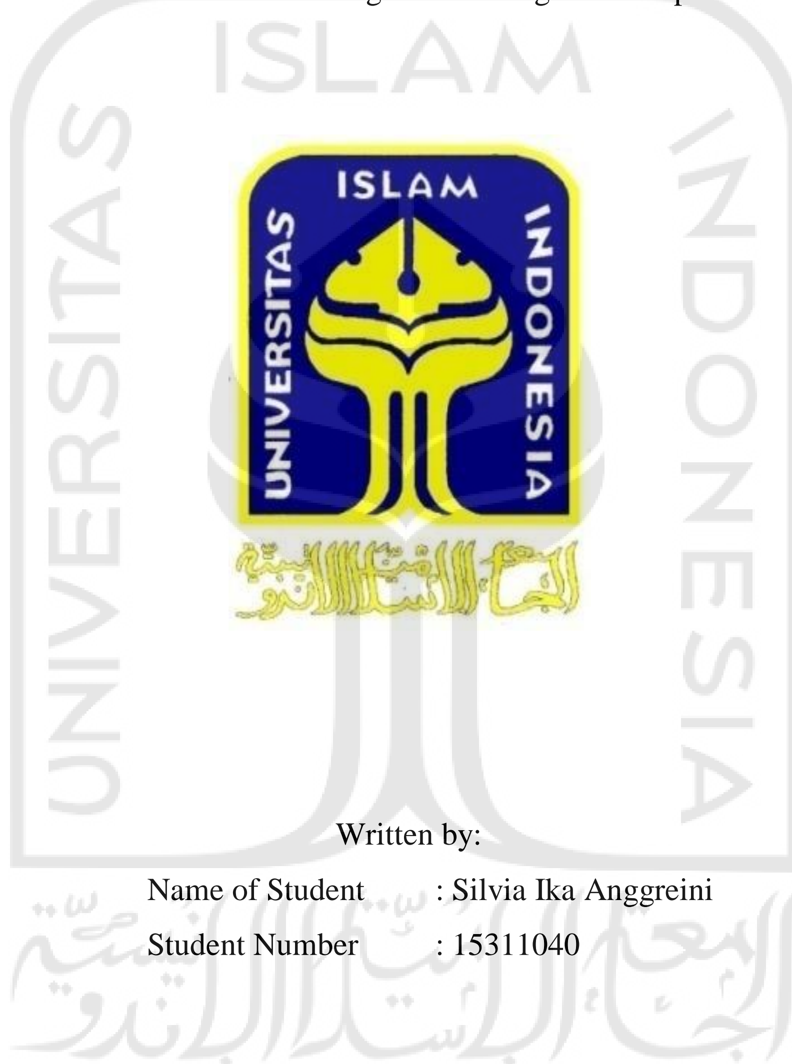

Written by:

Name of Student : Silvia Ika Anggreini

Student Number : 15311040

DEPARTMENT OF MANAGEMENT

FACULTY OF ECONOMICS

UNIVERSITAS ISLAM INDONESIA

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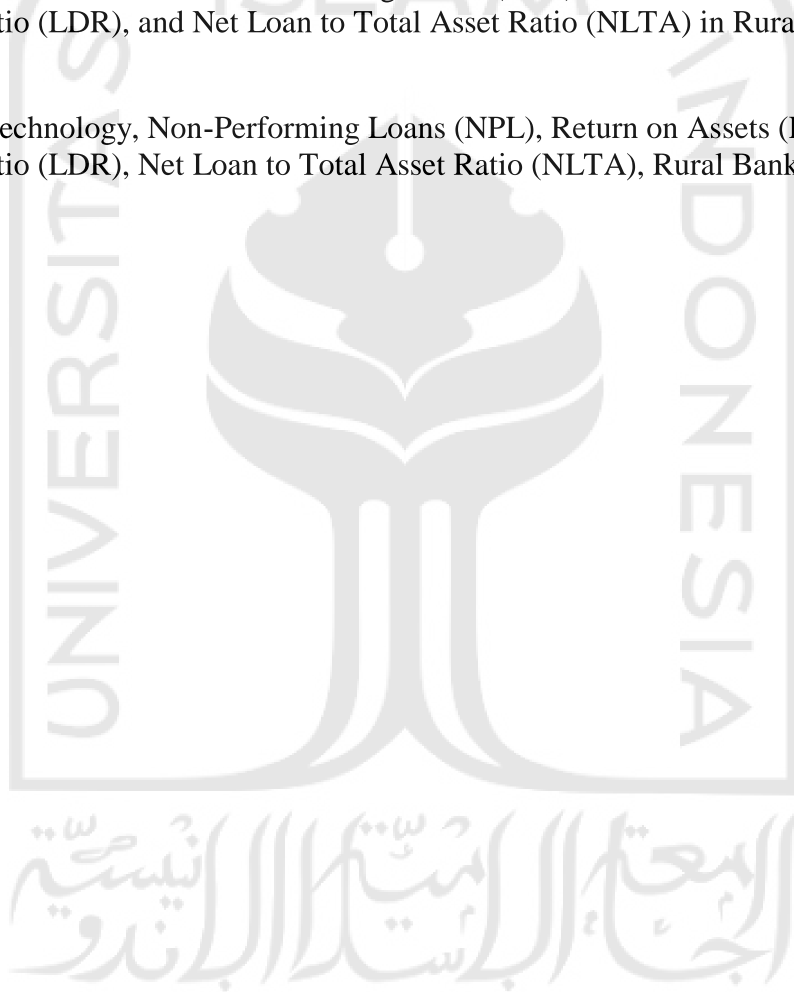
ABSTRACT

This research aims to investigate if the emergence of financial technology startups gives disruption to rural banks. The research is to determine the difference before and after the emergence of Fintech on Non-Performing Loans (NPL), Return on Assets (ROA), Loan to Deposit Ratio (LDR), and Net Loan to Total Asset Ratio (NLTA). Because nowadays the conditions of the Rural Bank industry face challenges with the emergence of Fintech. This research was conducted in Indonesia by involving rural banks registered in Financial Service Authority in the period 2013 - 2018. This research data is taken from 50 Rural Banks. The method carried out in this research was 3 years before the emergence of Fintech and 3 years after the emergence of Fintech. This study employed Paired Sample T-test to examine if NPL, ROA, LDR, and NLTA received differences before and after financial technology emerged. The test results show that there is a difference before and after the emergence of Fintech on Non-Performing Loans (NPL), Return on Assets (ROA), Loan to Deposit Ratio (LDR), and Net Loan to Total Asset Ratio (NLTA) in Rural Banks.

Keywords
Financial Technology, Non-Performing Loans (NPL), Return on Assets (ROA), Loan to Deposit Ratio (LDR), Net Loan to Total Asset Ratio (NLTA), Rural Banks.



INTRODUCTION

The economy of a country cannot be separated from the role of the bank. Bank is a firm that both accepts demand deposits and market commercial loans (Koch & MacDonald, 2014). Banking is a business in financial intermediation where one group of people deposit money with the bank and other group utilize the same money by availing loan from the bank for income generating activities or credit. The word credit comes from the Latin word “credere" means trust. The main definition of credit is reliance on and confidence in the truth, worth, reliability of a person or thing (Edwards, 2004).

In Indonesia, rural bank regulated in the Banking Principal Act Number 7 of 1992 and the Law of the Republic of Indonesia Number 10 of 1998, it is stated that village banks, market banks, village barns and employee banks have become rural banks. Rural banks are much narrower if they are compared to commercial banks. In accordance with the bank regulation, it has been stated that the credit provided by the bank contains risks. Bank can anticipate credit risk through several ratios. The ratio used is asset quality ratio, profitability ratio, and liquidity ratio. Those ratios can be measured by Non-Performing Ratio (NPL), Return on Asset (ROA), Loan to Deposit Ratio (LDR), and Net Loan to Asset Ratio (NLTA).

Competition in financial markets is getting tighter with the emergence of digital financial technology or Fintech (Navaretti, et al., 2018). Convenience provided by Fintech in providing online portfolio management services and international money transfers, such as crowdfunding platforms and mobile payment solutions is a new way of providing "financial" services by utilizing "technology" or called "Fintech". Therefore, there is competition from the emergence of Fintech with traditional banks and financial institutions (Darolles, 2016). In different word, Fintech means the innovation from financial services or products that are produced by technology. In concert with the progress in technology as well as mobile and internet along with their global widespread adoption, the expectations from consumers are changing. Many businesses or startups are operating on Fintech related products and there are major disruptions in financial services (LEE & TEO, 2015).

Fintech is growing very rapidly along with the development of technology. In economic finance, Fintech provides solutions with every type of technology it offers (Arner, et al., 2015). There are similarities in services offered by Fintech and traditional banks, but in different ways because Fintech is more efficient by utilizing technology (Navaretti, et al., 2018). Because Fintech provides the same service as a bank, it can disrupt the performance and profitability of the bank.

According to Fintech Indonesia, there are 161 Fintech companies in Indonesia until 2018. In addition, Financial service authority (FSA) in Indonesia on July 2017 until December 2018, there are 88 Fintech lending companies have been registered and licensed. Globally, the Compound annual growth rate (CAGR) for Fintech companies from 2014-2020 is estimated to reach 51% (Stanley, 2016). Based on these data, it can be seen that the growth of Fintech is growing very rapidly and has succeeded in transforming an existing system or market. The emergence of Fintech introduces practicality, ease of access, convenience, and economical costs, otherwise known as disruptive innovation (Bower & Christensen, 1996).

2. LITERATURE REVIEW

2.1. Fintech

Traditional financial institutions run into disrupted, revolutionary, and attacks from digital weapons, which is from the emergence of Fintech (MCWATERS & BRUNO, 2017). According to Indonesian Bank, the modern financial system produces new services, products, and business models using technology or Fintech, which affect monetary stability, financial system stability, smoothness, security, reliability, and efficiency of the payment or loan system. Digitalization in the financial sector is also called Fintech, which is the use of advanced internet-based technology that moves mostly in the financial sector. Internet-based technology in the fields of cellular

payments, e-commerce, and early-stage crowd-based financing or can be called crowdfunding and crowd investing is an example of modern technology services to activate or provide financial services (Dapp, et al., 2014). In the other meaning, the increase in financial activity is currently influenced by the emergence of Fintech which entered the financial industry by applying technology in its activities (Schueffel, 2016). The term of Fintech is not confined to specific industries, such as peer-to-peer (P2P) lending, nevertheless it includes financial services that were traditionally supplied by the financial industry and all of financial products (Lu, 2018).

The evolution of Fintech is started in (Arner, et al., 2015):

1. 1967: the launch of the ATM (Automated Teller Machine)
2. 1967-1987: the financial services industry changes from traditional to digital industry
3. 1987-2008: the financial services industry was largely transformed into a digital industry, supported by the emergence of the internet around 2000.

Fintech provide several advantages, such as Fintech allows them to lend cheaper or provide better products, Fintech companies can save labor and office space costs that are significantly more comfortable according to consumer reviews, and creditors may be able to choose better prospective borrowers, provide information from various sources, and technology-based lending that uses the big data approach (Buchak, et al., 2018). Fintech is easy to adapt with the needs of consumers who are fast changing, and the existence of low-cost financial services that make Fintech more attractive to the public, so there is no need for geographical concentration. Fintech easy adjusting changes in consumer behavior, easier regulation, and offers a lower risk of services and products (Romānova & Kudinska, 2016). The services and products offered by Fintech are the same as banks, the difference is they utilize technology that makes Fintech becomes more efficient (Navaretti, et al., 2018).

2.2. Rural Bank

Rural banks are a place to help the poor in alleviating poverty by providing loans and firsthand information of the needs and enthusiasm of poor people (Nsiah, 2014). In Indonesia, rural banks are commonly referred to as Bank Perkreditan Rakyat (BPR), and can be categorized as small banks that usually finance small and medium enterprises (SMEs). Rural banks are one of the main financial intermediary entities for the SMEs (Chou & Buchdadi, 2016). The basic function of rural banks is to meet the financial pressures of middle and small entrepreneurs, farmers, and savings mobilization (Koduah-Boateng, 2016). There are several services that are provided by rural banks in general, which are savings, deposits, and credit.

The history of the emergence of Rural Banks (BPR) in Indonesia:

1. Began in the Dutch colonial era.
2. Rural banks (BPR) in Indonesia began in the 19th century with the establishment of Bank Kredit Rakyat (BKR) and the village granary, which was built with the aim of helping farmers, employees, workers, in order to escape the bondage of moneylenders who are burdened with high interest.
3. After Indonesia proclaimed independence, the government encouraged the establishment of market banks which were particularly well-known because they were established in the market environment and aimed to provide financial services to market traders. Then, the market banks were confirmed as rural banks (BPR). Thenceforward, rural banks in Indonesia have grown rapidly.
4. On June 2018, rural banks were recorded in the Financial Services Authority (FSA) in Indonesia as many as 1,603 offices spread across regions in Indonesia.

Rural banks provide several benefits by providing loans, the first is that rural folks have been helped for several years by the existence of rural banks with loans. Second, the Rural Bank teaches rural folks to have savings and make loans at banks. Third, helping the economy by giving loans to people who have productive businesses, helping development, and improving the socio-economic life of the rural population (Koduah-Boateng, 2016).

2.3. Management Credit of Bank

Credit is the provision of money or bills based on an approval or agreement. Before obtaining credit, the customer must go through several phases of credit which must be fulfilled as the stage of the crediting process. Credit in a planned economy means both the enterprise as borrower and the bank as lender (Zwass, 2017). In providing credit to borrowers, there is a process that must be performed which is credit administration. Credit administration is carried out to protect both parties, namely banks or related financial institutions and clients or parties who carry out credit. Banks or related financial institutions conduct credit administration to avoid the risk of default, while the client is making more obligation commitments that cannot be settled in auspicious way (Nsiah, 2014). There are 4 types of banking credit products, which are Micro-finance loans, SouSou loans, Salary loans, and Commercial loans.

2.4. Loan of Portfolio

Loans are the main sources of profit among banks (Chou & Buchdadi, 2016). Loan risk can be classified into pass, other loans especially mentioned (OLEM), substandard, doubtful and loss. To determine the level of loans on rural bank, it can use the NPL ratio. Liquidity and profitability in banks can be seen with an increase or decrease on NPL, the higher the value on NPL in the loan portfolio of bank indicates there is a greater risk (Ghosh, 2015). The presence of moral hazard or risk in the banking sector can also be identified through the NPL level at the bank (Zhang, et al., 2016).

In the profitability, the aspect of performance of a bank can be captured through Return on assets (ROA) and this is the ratio of net income to total assets (Japparova & Rupeika-Apoga, 2017). The company measures the level of effectiveness in generating profits by exploiting its assets, this is obtained from income in the company's operations which is calculated using ROA (Sidharta & Affandi, 2016). To assess the liquidity can use LDR, means a ratio between loan that is distributed and total deposit from the bank creditor. The emergence of Fintech brings convenience in loans, the Rural Bank needs to see the ability of asset liquidity to avoid illiquid assets. It can be measured by NLTA ratio, which means an increased percentage of the total assets is tied up in loans (Trujillo-Ponce, 2013).

2.5. Hypothesis Development

Fintech adds credit modelling. An increase in financial inclusion marked by an increase in loan ratings obtained by several borrowers is the result from the emergence of Fintech. It can make borrowers more often to take loans at Fintech, so that the borrowers are not on time to pay loans at rural banks. As a result, non-performing loans at rural banks has increased. They also stated that credit in banks has a complexity in providing loans (Jagtiani & Lemieux, 2017). Therefore, Fintech provides a place for borrowers or businesses that do not get loans at the bank or they are rejected by the bank because they cannot fulfill the requirements to take loans in traditional banking (Schweitzer & Barkley, 2017). On the other hand, in exchange for providing funds, the insights possessed by startup companies can be utilized by traditional financial institutions, the purpose is that they are not obsolete and keep up with technological developments. It means the emergence of Fintech can help Rural Banks become more efficient. The positive relationship between rural banks and Fintech can make the borrower carries out credit smoothly and reduces the value of delinquent or decrease the value of Non-Performing Loans.

A decline in ROA due to the emergence of Fintech in banks also occurred in the US (Dermine, 2017) and in commercial banks in China during 2014 to 2016 (Guo & Liang, 2016). Incumbent companies such as rural banks can obtain a significant threat with the emergence of Fintech that continues to grow and penetrate deeper in the daily scenario of its customers. The new era when technology began to be used to provide services that were needed and could be accepted by community easily and directly or indirectly created new ways for society, so this

made the emergence of new cultures. New business schemes and new business models provided by Fintech are effective forms from the utilization of technology that will be a demand in the future for the community. When community demand can be fulfilled, this makes the community begin to switch to using Fintech in conducting transactions especially in credit loans (Nakashima, 2018). In a research that conducted a survey among financial executives, found that collaboration between traditional financial institutions and Fintech startups could provide new ideas into their business. It is a positive impact for financial institution such as rural banks, because from collaboration with Fintech startup can generate a new profit that can increase company's ROA (Skan, et al., 2015). By embracing Fintech, rural bank can reduce operating cost (Johnes, et al., 2018).

Fintech provide better services to their customers, such as reduce the number of middlemen that a person must pass through to get service from buyer to seller, help tailor payment amounts to individual participation levels, and facilitate higher payment frequencies. It became threat for traditional banking service because the easier people to lend money from Fintech, the more often they will do it. Therefore, it led to reduce in bank deposits. Debtor are more likely to distribute money to Fintech which causes a reduction in the level of bank liquidity. The decline in the level of bank liquidity has an impact on the percentage of LDR. It gives a negative impact on the bank (Thompson, 2017). Fintech provide convenience to individual low income to take loans and rural banks face a decrease in funds from third parties (Ozili, 2018). However, the performance of banks is greatly assisted by existing innovations in digital finance for the long-term impacts (Scott, et al., 2017).

Fintech is growing quickly, steadily, and it can be supplement for the present financial industry to serve SME borrowers neglected by most banks, and able to help exist lenders to assess the financial conditions of millions of consumers, smaller businesses, and make smarter lending decisions (Lu, 2018). Joint ventures or other types of alliances can be made between Fintech and traditional banks. Through this joint ventures or partnership, banks can fulfill obligations in providing funds to third parties (Boot, 2016). Another research found that payment services provided by Google, Amazon, and Apple run into rapid growth. In addition, since the launch of Amazon lending services in 2011, this service has grown steadily. In fact, digital financial services are also available on social media and utilize the technology that knows the characteristics of its users. Through these findings, Fintech has the potential to disrupt established financial intermediaries and incumbent companies (Vives, 2017).

Based on the theories and previous studies, the hypotheses are as follows:

H^1 There is a difference before and after the emergence of Fintech on NPL in rural bank

H^2 There is a difference before and after the emergence of Fintech on ROA in rural bank

H^3 There is a difference before and after the emergence of Fintech on LDR in rural bank

H^4 There is a difference before and after the emergence of Fintech on NLTA in rural bank

3. RESEARCH METHODOLOGY

Population in this research are conducted on rural banks in Indonesia. Financial Services Authority in Indonesia report that until September 2018, there were 1,598 rural banks that spread throughout Indonesia. The rural bank samples were selected by considering the following criteria:

1. Rural banks registered in the Financial Services Authority and Indonesian Bank
2. Rural banks that publish their annual financial statements from 2013 until 2018
3. Rural banks that have assets of 25 billion rupiahs to 1 trillion rupiahs
4. The sample companies have complete data.

Based on the four criteria, this research obtained 76 rural banks with 50 rural banks which have complete data, and there are 38 samples Rural Bank that can be used in this research. The data in this research was secondary data collected from financial services authority (FSA), Indonesian bank (BI), and library research. The investigation was conducted in 2013-2018. The

variables of this research were NPL, ROA, LDR, and NLTA, which measured in a period of three years before the emergence of Fintech and three years after the emergence of Fintech. To test the hypothesis, this research employed paired sample t-test. The use of variables can be seen on table I and table II.

ANPLBF	Average Non-Performing Loan Before Fintech
AROABF	Average Return On Asset Before Fintech
ALDRBF	Average Loan To Deposit Ratio Before Fintech
ANLTABF	Average Net Loan To Total Asset Before Fintech

Table 1: Variables before the emergence of Fintech

ANPLAF	Average Non-Performing Loan After Fintech
AROAAF	Average Return On Asset After Fintech
ALDRAF	Average Loan To Deposit Ratio After Fintech
ANLTAAF	Average Net Loan To Total Asset After Fintech

Table 2: Variables after the emergence of Fintech

4. RESULTS AND FINDINGS

To test the hypothesis, researcher look the result from the table III. In table III, it shows that hypothesis 1 and 2 are accepted. This result is supported with previous research that stated Fintech have similar market segment with rural bank, which is Fintech in line with the value chain of a traditional bank, and financing is by far the most important segment of the emerging Fintech market (Haddad & Hornuf, 2018). And this finding also confirm the previous research, which stated the credit facilities for consumers at a lower cost and Fintech facilities made it easier for borrowers to make loans. It causes a decline in profits at the Rural Bank, because the borrower cannot pay off the loan which causes an increase in the NPL (Jagtiani & Lemieux, 2017). In addition, Fintech firms have other potential cost advantages which may partially offset advantage of banks such as lower regulatory costs and more effective utilization of information technology (Thakor & Merton, 2018).

Another research stated that Fintech disturbs traditional banking services especially in providing credit and this disruption was evidenced by the success of the Fintech company called Lending Club in the US, which resulted in a decrease in ROA for traditional banks (Dermine, 2017). Research conducted in commercial bank in China, stated that there is a change in the scenario in the financial services business, where the Rural Bank gets a threat from the emergence of Fintech (Guo & Liang, 2016). The impact from the emergence of Fintech also found in the previous research which stated, the emergence brings new ideas for rural banks (Skan, et al., 2015). Fintech can help rural bank to reduce operating cost, and the impact is relating to the size, complexity, and nature of business (Johnes, et al., 2018). Therefore, the emergence of Fintech is disrupting the rural bank, and it can be seen from the increasing NPL and decreasing ROA.

However, hypotheses 3 and 4 are rejected which means there is no difference before and after the emergence of Fintech on LDR and NLTA. This result is opposite to previous research which stated that there are differences before and after the emergence of Fintech. The results obtained from this research test during 2013-2018 indicate that rural banks still have sufficient liquidity for their business expansion and only a few assets are bound in the loan.

Based on previous research and test results in this research, it can be concluded that the emergence of Fintech influences asset quality and profitability of rural banks, but it does not influence the liquidity of Rural Banks. Therefore, there is no difference before and after the emergence of Fintech on the liquidity of rural banks.

Indicator	Means	Significance	Conclusion
ANPLBF – ANPLAF	2.05 - 3.07	0.000	Accepted
AROABF – AROAAF	4.22 - 3.71	0.001	Accepted
ALDRBF – ALDRAF	82.59 - 82.23	0.654	Rejected
ANLTABF – ANLTAAF	80.54 - 80.54	0.998	Rejected

Table 3: Variables Comparison Before and After the Emergence of Fintech

5. DISCUSSION AND CONCLUSION

The emergence of Fintech as an innovation in financial technology can affect financial institutions. There are various types of financial institutions. In this research, the researchers chose rural banks as research samples because the research sample influenced the results of the study. Fintech and rural banks have almost the same market segmentation, which is providing peer to peer lending for SMEs and retail market. However, not all aspects of rural banks are affected by the emergence of Fintech. The results of this research revealed that the emergence of Fintech affects the quality of assets and the profitability of rural banks.

The emergence of Fintech made people switch to take loans from Fintech companies because they offered loan services that were easier, faster and more efficient. This causes people who have made loans at the rural bank cannot payback the loans and make bad loans. Thus, rural banks run into an increase in bad loans and a decrease in income. Even though the emergence of Fintech affected the asset quality and profitability of rural banks, the test showed that there was no difference with before and after the emergence of Fintech in rural banks liquidity. Therefore, rural banks still have liquidity to provide loans. It can be seen from the LDR in rural banks are still at normal level.

6. LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

There are several limitations in this research. Therefore, some additions and improvements need to be made by the next researcher. First, future researcher can make research with more sample number, and it can cover many rural banks where the result can be more accurate. Second, the data used for calculation can be using monthly or quarterly in order to get a better result. Third, use more independent variables to obtain more complex results in calculating variables, therefore the results obtained are more effective. Fourth, future research can look for the relationships between variables on NPL, ROA, LDR, and NLTA.

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