Jurnal Akuntansi dan Perpajakan, 12(1): 98-114, 2026
http://jurnal.unmer.ac.id/index.php/ap

Fintech Adoption and Liquidity Creation in Indonesian Commercial Banks

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ABSTRACT

The rapid development of fintech (financial technology) has encouraged banks to digitize their services to improve efficiency and competitiveness, while its implications for the role of banks in collecting and distributing funds, particularly in liquidity creation, remain a concern in financial economics studies. This study aims to analyze the effect of fintech adoption on bank liquidity creation. The research sample consists of 13 commercial banks listed on the Indonesia Stock Exchange during the period 2021–2024. Fintech adoption is measured using online media exposure via content analysis to reflects the intensity of technology adoption and development. Meanwhile, liquidity creation is calculated from balance sheet positions and off-balance-sheet exposure. Data analysis is performed using panel data regression. The results indicate that fintech adoption negatively affects banks' liquidity creation. This negative relationship may arise because the fintech coverage examined in this study predominantly represents the use of technology for transactions and operational efficiency, which does not yet support an increase in credit disbursement as the primary source of liquidity creation. This finding indicates that the use of fintech in banking remains dominated by transactional and operational activities, which ultimately do not increase and may even decrease banks' ability to create liquidity. This finding indicates that the use of fintech in banking remains dominated by transactional and operational activities, which ultimately do not increase and may even decrease banks' ability to create liquidity. The results of this study have implications for banks to align fintech development with asset and liability management policies so that their role in liquidity creation can be more effective.

Keywords: *Banking; Digitalization; Fintech; Liquidity Creation; News*

INTRODUCTION

Financial technology (fintech) is an innovation in the financial sector that integrates financial services with digital technology. The emergence of fintech in banking has been a major innovation in the financial industry (Guo & Zhang, 2023; Wu et al., 2024). Fintech involves the use of modern technology to improve the efficiency and accessibility of financial services (Gomber et al., 2017). Since its inception in 1972, fintech has experienced rapid development with the emergence of various digital platforms that provide financial services, such as payments, loans, and investments (Lishobrina et al., 2023). However, the development of fintech also faces various problems such as complex and varied regulations across countries. For example, unique laws and policies regarding data protection, privacy, and information security require banks to adjust their business practices to comply with local requirements (Wang, 2022). In addition, cyberattacks, human error, and system failures can lead to data leakage issues (Anggara & Dinata, 2023; Waskita & Sidik, 2023; Cao et al., 2024). Despite various challenges, fintech is increasingly important in the financial industry, especially in banking.

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Fintech in banking has changed the way banks do business, with offline services (such as through branches) shifting to online services (Wu et al., 2024). In the past, people living in rural areas had difficulty opening accounts because there were no bank branches near their homes (Posumah & Moridu, 2023). Now, fintech overcomes these limitations, enabling people to access a wider range of financial services (Setiawan et al., 2021). The adoption of fintech can help users conduct financial transactions virtually anytime anywhere (Suzianti et al., 2022). The existence of fintech has revolutionized the financial industry by providing technology-based solutions that are more efficient, convenient, and affordable for the public (Wonglimpiyarat, 2017). Fintech applications widely used in the financial and banking industries cover various services ranging from digital payments and peer-to-peer lending services from crowdfunding platforms to online investments (Lee & Shin, 2018).

The adoption of fintech in banking has provided several benefits. First, the use of digital technology accelerates transactions by offering faster, more efficient services, improving service quality, and increasing profitability by reducing operational costs, such as human resource requirements (Gai et al., 2018; Lee et al., 2021). Second, the use of technologies such as data analysis and artificial intelligence can help banks improve operational efficiency and optimize internal banking processes (Mar'atushsholihah & Karyani, 2021). Third, the adoption of fintech can expand the reach of banks' business by increasing users' access to banking services (Chen, 2016; Maskara et al., 2021; Senyo & Osabutey, 2020). By utilizing technologies such as mobile applications and digital platforms, banks can offer faster and more efficient services, thereby increasing their ability to generate liquidity (Mar'atushsholihah & Karyani, 2021; Harahap et al., 2024).

Bank liquidity refers to a bank's ability to meet its short-term obligations, namely debt payments and customer withdrawals. Liquidity is important not only for bank's ability to meet these obligations, but also for its reputation and competitiveness in the market (Wie, 2018; Winanti, 2019). Good liquidity can strengthen customer confidence and expand access to external funding sources through financial markets (Somantri & Sukmana, 2020; Lestari & Rani, 2022). Good liquidity can also make banks more competitive in the market, especially in the era of fintech adoption (Budiarti & Morita, 2023; Darma, 2023). Previous studies have shown a positive relationship between fintech adoption and liquidity creation in banks (Budiarti &Morita, 2023; Yudaruddin et al., 2023). Fintech adoption has positive impacts, including reducing operational costs, increasing service speed, and increasing liquidity (Yudaruddin *et al.*, 2023). Furthermore, fintech adoption also plays a role in expanding the customer base, enabling banks to attract more deposits, and increasing liquidity (Kaddumi et al., 2023). As fintech adoption increases, banks not only provide traditional financial services but also utilize technology to expand financial access and improve operational efficiency (Feyen et al., 2021). However, the development of fintech not only offers positive benefits but also has negative implications for banks' liquidity creation (Tsakila *et al.*, 2024). The use of technology in banking processes may encourage banks to reduce their risk-taking, thereby reducing their incentive to allocate funds into less liquid assets and ultimately limiting liquidity creation (Wang *et al.*, 2025). Furthermore, the expansion of non-bank digital finance may result in a competition for resources and customers, which could potentially reduce the intermediation activities of banks and limit the liquidity creation (Liu and Hou, 2023). Wu et al. (2024) also found a negative relationship between the adoption of fintech and the liquidity creation at banks, suggesting that fintech adoption is not always accompanied by an increase in the intermediation functions of banks. Consequently, fintech has the potential to reduce liquidity creation when its use is focused on operational efficiency and risk reduction rather than on strengthening the channelling of funds, in addition enhancing the efficiency of and access to banking services.

Previous studies conducted by Guo & Zhang (2023) and Wu et al. (2024) focused on the adoption of fintech on liquidity creation in banks in the United States and China. The findings of both studies indicate that the impact of fintech adoption on liquidity creation is context-dependent, varying with the purpose of fintech use, financial system characteristics, and geographic conditions across countries. In addition, research conducted in Indonesia by Budiarti & Morita (2023), Mar'atushsholihah & Karyani (2021), and Yudaruddin et al. (2024) focused their discussion of fintech on aspects of bank performance, such as profitability, efficiency, and financial inclusion, without examining how fintech affects the function of banks in creating liquidity.

The novelty of this study lies in examining the relationship between fintech adoption and bank liquidity creation in the Indonesian banking context, which remains relatively underexplored in previous research. Unlike previous studies that have primarily examined the implications of fintech adoption for bank performance, efficiency, or liquidity, this study focuses on liquidity creation as an indicator of banks' financial intermediation function. Furthermore, this study measures fintech adoption through online media exposure, offering an alternative measure that quantifies the extent to which banks are associated with and publicly disclose fintech-related developments. This study offers a unique perspective on whether the growing digitalisation of banking is accompanied by stronger fund mobilization and credit distribution. Furthermore, this investigation offers empirical evidence from a period that was marked by the transition from the COVID-19 pandemic to post-pandemic recovery and the ongoing advancement of digital banking by concentrating on Indonesian commercial banks from 2021 to 2024.

The urgency of this research is further emphasised by the fact that the increasing digitization does not inherently equate to the strengthening of banks' roles as institutions that channel and mobilize funds. Fintech can improve the efficiency of transactions and services, but it does not necessarily increase the flow of funds into loans and productive assets, which play a vital role in creating liquidity. This situation warrants careful examination because banks continue to serve as financial intermediaries, while the growth of fintech has the potential to transform how banks mobilize, manage, and channel funds. Therefore, understanding the relationship between fintech adoption and liquidity creation is essential to assessing whether the digital transformation of the banking sector is truly aligned with the strengthening of banks' intermediary functions in Indonesia.

Research on the impact of fintech adoption on liquidity creation is important because it directly affects banks' ability to meet their short-term obligations. In addition, given that Indonesia has characteristics different from those of the United States and China, similar research needs to be conducted to ensure the results are more relevant and aligned with domestic conditions. This study is designed to answer the research question, "Does the adoption of fintech affect the creation of bank liquidity in Indonesia?" Thus, this study aims to analyze the effect of fintech adoption on the creation of bank liquidity in Indonesia. This study contributes to the literature on fintech dynamics and liquidity creation in Indonesian banking by analyzing the relationship between fintech adoption and bank liquidity creation. By focusing the analysis on liquidity creation and using media exposure as a proxy for fintech, this study provides empirical evidence on fintech's role in the banking intermediation process, including fund collection and distribution.

HYPOTHESIS DEVELOPMENT

The adoption of fintech plays an important role in creating liquidity in banks (Mar'atushsholihah & Karyani, 2021; Budiarti & Morita, 2023; Guo & Zhang, 2023; Yudaruddin et al., 2024). The adoption

of fintech has significantly improved bank performance by expanding service coverage, increasing the number of customers, and strengthening liquidity, thereby enabling more strategic investments (Almulla & Aljughaiman, 2021). The adoption of fintech plays an important role in increasing financial inclusion and bank liquidity by expanding access to easy, secure, and affordable financial services for all levels of society (Demir et al., 2022). The application of fintech can increase liquidity, thereby positively impacting bank performance (Yudaruddin et al., 2024). In addition, the application of fintech is an external factor that can increase liquidity by improving fund management and accelerating transaction processes (Somantri & Sukmana, 2020; Lestari & Rani, 2022).

The adoption of fintech enables the transformation of traditional banking services making them more efficient. With mobile banking applications and other digital platforms, customers can conduct financial transactions more quickly and easily. This can increase the transaction volume and cash flow into banks, which has the potential to increase liquidity (Khumairok, 2023; Mulyana et al., 2024). The adoption of fintech such as analytical technology and cloud-based management systems can also help banks manage their funds more efficiently so that banks can analyze cash flow patterns (Aditya, 2021). This enables banks to make faster and more accurate fund allocation decisions, thereby supporting the fulfillment of short-term obligations and the utilization of available funds (Paradila & Regina, 2024). Furthermore, other studies also confirm that the adoption of fintech in banking improves bank performance and liquidity by improving fund management and accelerating transaction processes (Yao & Song, 2021).

However, the adoption of fintech can also have a negative impact on liquidity creation. Increased use of technology is not always accompanied by an increase in the channelling of funds in the form of credit. The advantages of fintech in banking are more apparent in operational efficiency than in the banks' intermediation function, as it is more frequently employed to support transactional activities, digital payments, mobile banking, internet banking, and service automation (Baker *et al.*, 2023). If the adoption of fintech focuses solely on improving the convenience and speed of transactions without being accompanied by an increase in lending, then the rise in digital activity will not be sufficient to strengthen banks' capacity to generate liquidity (Artha *et al.*, 2023). Such circumstances may motivate banks to prioritise holding funds in easily liquidated assets rather than directing them towards loans. Consequently, the rate at which banks create liquidity is likely to decline (Bhoka *et al.*, 2021). Based on these perspectives, the adoption of fintech has both positive and negative effects on liquidity creation. Therefore, the hypothesis put forward in this study is as follows:

H_1: The adoption of fintech in banking has a positive effect on liquidity creation.

METHODS, DATA, AND ANALYSIS

The samples in this study were taken using purposive sampling with the following criteria: (1) commercial banks listed on the IDX during the observation period of 2021–2024 (n=21); (2) commercial banks classified as banking institutions, thus securities companies listed on the IDX were excluded from the research sample because they are not commercial banks and have different business characteristics from banking institutions (n=17); (3) banks that did not have sufficient data on fintech adoption were excluded because measuring fintech adoption requires relevant data on media exposure related to fintech. Based on these criteria, 13 commercial banks met all sampling requirements and were included in the final sample.

The research period covers 2021–2024. This period was chosen because it illustrates the Indonesian banking sector's transition from the COVID-19 pandemic to the post-pandemic recovery phase, while

also reflecting the ongoing digital transformation in the banking sector. In 2021–2022, the banking sector was still affected by the COVID-19 pandemic, and economic activity had not yet recovered, leading to increased credit risk and a slowdown in lending. Entering 2023, the banking industry began to show improvement in line with economic growth and increased business activity. During this period, credit demand began to increase, and banking intermediation performance gradually recovered. Banks also began to optimize the use of digital technology and fintech services to improve operational efficiency and service quality (Hamdi and Herianingrum, 2022). Furthermore, in 2024, the banking sector will be in a phase of performance strengthening and stabilization. Liquidity conditions will be relatively more stable, asset quality will improve, and digital technology adoption will continue to grow. During this period, banks will focus not only on recovery, but also on strengthening competitiveness through digital transformation and the development of more integrated fintech-based services (Saputra et al., 2023). In this context, banks listed on the IDX tend to be pioneers in technology adoption, including fintech, as they have utilized technology-based products and services to improve operational efficiency and strengthen competitiveness (Eliana et al., 2019).

This study uses data obtained from two main sources. First, financial data were obtained from each bank's financial reports and used to calculate liquidity creation and research control variables. Second, online news related to the adoption of fintech in banking was collected from four national online media outlets, namely Kontan.co.id, Bisnis.com, Investor.id, CNBC Indonesia, and Kompas.com. These media outlets were selected because they frequently cover the latest developments in Indonesian banking and maintain a high level of objectivity in their reporting (Prawira et al., 2021). These media outlets are also considered relevant because they have operated for many years and have a strong reputation among readers and within the industry (Sofia et al., 2022).

The dependent variable in this study is liquidity creation, which is measured by classifying all bank activities as on- or off-balance-sheet. The first step is to group all activities—both on-balance-sheet and off-balance-sheet—into three categories: liquid, semi-liquid, and illiquid. The liquid group consists of assets that can be immediately converted into cash within a short period (less than 3 months), such as deposits, checking accounts, and bonds. The semi-liquid group consists of assets that can be converted into cash within a moderate timeframe (3 to 12 months), such as stock investments or land and buildings ready for sale. The illiquid group consists of assets that are difficult to convert into cash or require a long time (more than 1 year), such as intangible assets (patents, copyrights), and other fixed assets. This classification covers assets, liabilities, and equity (on the balance sheet) as well as derivatives and collateral (off-balance sheet) (Wu *et al.*, 2026).

The second step is to assign each activity a liquidity weight to indicate its contribution to the bank's liquidity creation. The purpose of assigning liquidity weights is to measure how quickly assets can be converted into cash, thereby facilitating the identification process (Wu et al., 2024). Liquidity weights are determined by the ease and time required for customers to withdraw funds, as well as the bank's ability to meet its liquidity obligations. There are three liquidity weights: 0.5 for illiquid assets (such as long-term deposits) and liquid liabilities (such as customer deposits) (Wu et al., 2024). Assigning a liquidity weight of 0.5 indicates that banks create liquidity when they use liquid liabilities to fund illiquid assets. In other words, when banks convert deposit funds into loans, they create liquidity in the financial system (Beck et al., 2023). A weight of -0.5 is assigned to liquid assets (such as cash/easily sold securities) and illiquid liabilities (such as long-term debt) (Wu et al., 2024). Banks are considered to reduce liquidity when they use illiquid liabilities to fund liquid assets. In this case, banks do not create liquidity, but rather transfer liquidity from one form to another. A weight of 0 is assigned to semi-liquid assets and liabilities, such as

time deposits. Assigning a liquidity weight of 0 indicates that activities considered semi-liquid neither directly increase nor decrease liquidity, but fall between liquid and illiquid assets (Wu et al., 2024).

After all activities are assigned a weighting, the total of all activities is the total liquidity creation (Lc_{total}). The main ratio used as a proxy for liquidity creation is: Lc_{total} divided by total gross assets (Wu *et al.*, 2026). Thus, Lctotal is calculated using the following formula:

$$\mathbf{Lc_{total} = 0{,}5 \times (IA+LL+IQ) + 0 \times (SA+SL+SQ) - 0{,}5 \times (LA+IL+E+LQ+LD)}$$

Description:

Lc_{total} = Creation of total liquidity	SQ = Semiliquid guarantees
IA = Illiquid assets	LA = Liquid assets
LL = Liquid liabilities	IL = Illiquid liabilities
IQ = Illiquid guarantees	E = Equity
SA = Semiliquid assets	LQ = Liquid guarantees
SL = Semiliquid liabilities	LD = Liquid derivatives

The independent variable in this study is the adoption of fintech, which is obtained from the categorization of news content in online news media using content analysis procedures. The use of media coverage as a proxy for fintech adoption is based on the consideration that information regarding the implementation and development of fintech at individual banks is not yet fully available in the form of data that can be directly observed and measured (Harahap *et al.*, 2024; Sudarmanto *et al.*, 2024). Online media coverage can provide information on fintech activities undertaken by banks, such as the development of digital services, the use of technology, and partnerships with fintech companies. Consequently, this coverage is used to gather information on the development and implementation of fintech by banks during the research period (Tsakila *et al.*, 2024). The fintech variable was measured by coding the content of news articles published during a specified period. Each news article was coded based on the type of information it conveyed, whether it was related to AI, blockchain, cloud, or the internet.

Before identifying the text data for the independent variable, the researcher created a coding guide (codebook). To ensure consistency in the coding process, this study involved an independent coder (Neuendorf, 2017). The researcher and the independent coder coded 10 per cent of the news data using the same coding manual. The results of the test showed a Cohen's Kappa value of 0.880, indicating a good level of coding agreement. Therefore, the coding results were deemed to have sufficient reliability for use in measuring the fintech adoption variable. Data for each fintech category is calculated and combined into quarterly frequencies to analyze fintech data over a specific period. The fintech value for each bank is calculated based on the number of news items related to each category. The higher the fintech value, the higher the level of development and adoption of more advanced technology. The equation used to measure fintech is:

$$\mathbf{Fintech_{i,t} = In\ (1+ ©News_{i,t})}$$

Description:

$Fintech_{i,t}$ = overall fintech adoption rate at bank (i) at time (t)

$News_{i,t}$ = total number of news items related to the four fintech categories

The control variable in this study is bank size, as it can affect a bank's ability to adapt to fintech

technology and create liquidity. Larger banks tend to have more resources to invest in new technologies and innovations (Khan, 2022; Amin et al., 2023). Bank size is measured using ratios such as the Loan-to-Deposit Ratio (LDR) and the Capital Adequacy Ratio (CAR). The CAR is used as a control variable because it reflects a bank's capital adequacy level in absorbing risk and supporting the sustainability of its operations (Pratama and Wahyudi, 2021). Differences in capital adequacy levels among banks can affect a bank's capacity to carry out intermediation activities and generate liquidity. Therefore, the CAR is controlled for to reduce the likelihood that the relationship between fintech adoption and liquidity creation is influenced by differences in capital conditions among banks (Amin *et al.*, 2023; Dionna and Sholahuddin, 2025). The LDR is used as a control variable because it reflects the level of bank intermediation through a bank's ability to channel third-party funds in the form of loans (Somantri and Sukmana, 2020). The LDR is also related to the intensity of lending and a bank's liquidity management. Thus, controlling the LDR is necessary because differences in the level of intermediation among banks can directly affect liquidity creation (Rini *et al.*, 2021). LDR measures the proportion of loans granted compared to total deposits received by the bank, reflecting the bank's liquidity level in meeting its short-term obligations. Meanwhile, CAR measures how well a bank can cover potential losses with its capital. LDR and CAR are measured using the following formulas:

$$LDR = \frac{\textbf{Total Credit Granted}}{\textbf{Total Third Party Funds}} \textbf{ X 100\%}$$

$$CAR = \frac{\textbf{Bank Capital}}{\textbf{Risk - Weighted Assets}} \textbf{ X 100\%}$$

This study uses panel data regression because it can combine data across time periods and banks, yielding more accurate estimates (Wooldridge, 2016). Additionally, panel regression can account for the unique, constant characteristics of each bank that cannot be directly observed, thereby reducing potential bias in the estimation results (Hsio, 2022). In panel data regression, several model specifications can be used, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Therefore, it is necessary to select the model specification that best fits the data characteristics. The determination of the panel regression model is performed using the Chow test, the Hausman test, and the Lagrange Multiplier test.

Based on the test results in Tabel 1, the most appropriate model to use in this study is REM. REM accounts for random differences in characteristics across banks, making it more tolerant of potential violations of classical assumptions, such as heteroscedasticity and autocorrelation. To improve the reliability of the estimation results, this study uses a robust standard error approach, thereby enabling more reliable significance testing of regression coefficients (Sakti, 2018).

Table 1. Model Selection Test

Type of Testing	Compared Models	Prob	Criteria	Selected Model
Chow test	CEM vs FEM	0.000	Prob<0.5	FEM
Hausman test	FEM vs REM	0.905	Prob>0.5	REM
Langrage Multiplier test	CEM vs REM	0.000	Prob<0.5	REM

The test for H1 uses the following regression equation:

$Lc_{total} = \alpha + \beta_1$ fintech + ε

$Lc_{total} = \alpha + \beta_1$ fintech+ β_2 *CAR* + β_3 *LDR*+ ε

Description:
Lctotal = level of liquidity creation by banks
α = constant
β_{1-3} = regression coefficient
ε = error

RESULTs AND DISCUSSION

Result

News coverage in online media related to IT (n= 467) was the most frequent among other types of fintech news. This high proportion occurred because IT-based fintech is directly related to digital services such as mobile banking, internet banking, and online banking applications (Indrianti et al., 2022; Khalaf & Shaer, 2023). This technology is considered the main driver of increased access to banking services and the creation of liquidity through the expansion of the customer base (Chen et al., 2021; Wu et al., 2024). This condition causes the frequency of news coverage of IT technology to be higher than other fintech technologies. Furthermore, AI-related news (n=70) ranks second in the distribution of fintech news. This proportion indicates that AI technology is beginning to attract media attention, in line with the increasing use of AI in financial services, such as credit scoring systems, fraud detection, and customer service chatbots (Permatasari et al., 2021; Ali, 2025). Then, news coverage related to Blockchain (n= 25) and cloud (n= 21) had a lower proportion of coverage compared to IT and AI. The low coverage of these two categories was due to the technology's characteristics, which functioned more as supporting infrastructure (Gai et al., 2018; Guo & Zhang, 2023; Jamal et al., 2023). This situation means that issues related to blockchain and cloud computing are relatively rare as newsworthy topics for the media, compared to IT and AI innovations that directly impact user experience.

In Table 2, the average total liquidity creation (Lc total) is positive, indicating that banks are more dominant in channeling funds into credit and productive assets than in placing them in liquid assets, thus playing a role in providing liquidity to the economy (Wie, 2018; Winanti, 2019). This condition indicates that banks function as fund-collecting and distributing institutions, where funds collected from the public are not only stored but also reallocated to support economic activities (Mia, 2023). In 2022, JP Morgan Chase Bank (JPMB) had the lowest level of liquidity creation among the banks in the sample. This shows that JPMB's liquidity creation through credit distribution and productive assets is influenced by the bank's business model, which focuses on investment activities, global financial services, and capital market transactions, so that credit distribution is not a major activity in banking operations (Liputan6, 2024)). Conversely, Bank Central Asia (BCA) was recorded as having the highest total LC value in 2024. This condition indicates that BCA has a strong ability to collect public funds and channel them back as credit and other productive assets (Kontan, 2024). A stable third-party fund structure, a broad customer base, and high operational efficiency support BCA's role in creating optimal liquidity (Kontan, 2024).

Table 2. Descriptive Statistics

Variable	N	Mean	Std. Dev	Min	Max
Lc Total	52	0.377	0.121	0.055	0.602
Fintech	52	2.003	0.990	0.693	4.007
CAR	52	0.254	0.056	0.181	0.502
LDR	52	0.774	0.141	0.035	0.098

The average fintech media exposure of banks in the sample was around 7 fintech news reports per observation period (ln 2.003 = 7). JPMB has the lowest level of fintech media exposure (n=5), reflecting its limited involvement in fintech issues in the media (Salsabila et al., 2022). This condition may be due to JPMB's main focus on institutional financial services and global banking activities, which means its digital innovations are not widely covered in national banking news (Liputan6, 2024). Conversely, Bank Rakyat Indonesia (BRI) is the bank most frequently reported on regarding its fintech activities (n=149). The high media exposure of BRI reflects its active role in developing digital services, including the digitization of banking processes, strengthening the payment ecosystem, and collaborating with financial technology companies (Anisah et al., 2021). The high intensity of media coverage also indicates that BRI's fintech innovations are highly attractive to the public and the media, consistent with BRI's position as a bank with a large customer base and extensive operational reach (BRI, 2025).

The average Capital Adequacy Ratio (CAR) indicates that banks in the sample have sufficient capital to absorb risks and support the sustainability of their operations. Banks in the sample have relatively strong capital adequacy. Referring to regulatory provisions, banks are deemed to meet capital requirements if they have a CAR above 8%, while a CAR of 12% or more reflects strong capitalization (OJK, 2016). In 2024, Bank Tabungan Negara (BTN) was recorded as having the lowest CAR among the banks in the sample. BTN's low CAR is related to the bank's focus on housing finance, particularly home ownership loans (KPR), which increase risk-weighted assets and require greater capital buffers against credit risk (Febriati & Lathifah, 2024). In addition, the increase in credit distribution and the need for credit risk reserves also put pressure on capital, thereby affecting BTN's capital adequacy ratio in that year (Herlina & Suryaningprang, 2023). In contrast, JPMB recorded the highest CAR in 2021. This high CAR indicates that JPMB has a healthy capital position. This is supported by its large scale of operations, diverse sources of income, and careful risk management, enabling the bank to maintain adequate capital reserves to deal with various risks (Wahyuni, 2017).

The average Loan to Deposit Ratio (LDR) reflects that banks are in a fairly active intermediation position, namely able to channel third-party funds into credit in an optimal manner without causing liquidity pressure or the accumulation of unproductive funds (Putri & Susila, 2025) This condition shows that banks are generally at a point of equilibrium between the functions of fund collection and credit distribution, so that the LDR not only reflects the intensity of credit distribution but also the quality of liquidity management (Adawiyah & Azifah, 2020; Krisdayanti et al., 2021; Wiriya et al., 2023). In 2024, JPMB recorded the lowest LDR among banks in the sample, indicating that its lending was relatively small compared to its third-party funds (Liputan6, 2024). This low LDR does not solely reflect weak intermediation functions, but also reflects the bank's cautious strategy in facing global economic uncertainty (Krisdayanti et al.,2021). JPMB's focus on corporate and institutional banking services, as well as non-credit activities, means that lending is not a top priority in its operations (JPMorgan, 2021). Meanwhile, ANZ Bank recorded the highest LDR in 2021, indicating that ANZ Bank disbursed loans in a larger proportion than the third-party funds it collected (Idfilandu & Saripudin, 2021)). This condition reflects the bank's focus on increasing loan disbursements as its main source of income, so that

the proportion of funds disbursed as loans became dominant. In addition, the high LDR may also be influenced by the bank's funding structure, which not only relies on third-party funds but also utilizes the global capital market for wholesale funding and obtains funding support from its parent banks in Australia and New Zealand. Support from diverse funding sources enables ANZ to maintain adequate liquidity even though credit growth exceeds customer deposit growth, thereby maintaining the bank's liquidity stability (Wiriya et al., 2023).

Table 3 shows an increase in the R-squared value from Model 1 to Model 2. This increase indicates that adding control variables such as CAR and LDR improves the model's ability to explain variation in bank liquidity creation. Thus, Model 2 is considered a better fit in describing the relationship between fintech and total liquidity creation (Lc total).

Table 3. Fintech REM Test

Variable	Model 1		Model 2	
	Coef	p-value	Coef	p-value
Fintech	-0.030	0.030*	-0.063	0.000***
CAR			-0.245	0.047*
LDR			0.206	0.016**
Constant	0.437	0.000***	0.407	0.000***
R-squared	0.116		0.163	
Prob > chi2	0.029*		0.000***	

Note: coefficients *p<0.05, **p<0.01, ***p<0.001

The results of Model 2 estimates in Table 3 indicate a significant negative relationship between fintech adoption and bank liquidity creation. This negative coefficient suggests that a higher level of fintech adoption is associated with lower liquidity creation amongst the banks in the sample. After controlling for the relevant variables, the direction and significance of this relationship remained consistent. Therefore, the proposed hypothesis regarding a positive relationship is not supported by the empirical results.

Discussion

The Impact of Fintech Adoption on Liquidity Creation

The results of the study show that the adoption of fintech has a negative effect on total liquidity (Lc total). These findings indicate that the more banks report adopting fintech, the lower their ability to create liquidity. This negative effect can be explained by the fact that fintech adoption in Indonesian banking is still dominated by transaction services and operational efficiency improvements, such as mobile banking, internet banking, digital payment systems, and customer service automation (Amrin et al., 2022; Hidayat et al., 2023; Vincent & Agustin, 2024). The adoption of fintech focuses on ease, speed, and convenience of transactions, but it is unable to encourage an increase in credit distribution, which is a major component in the creation of bank liquidity (Arif & Masdupi, 2020; Bere et al., 2022; Mulyana et al.,2024). Thus, despite increased digital activity, the observed pattern suggests that fintech adoption during the research period was not necessarily accompanied by stronger bank intermediation through the conversion of liquid funds into loans and other productive assets (Judijanto et al., 2024).

In the Indonesian context, this condition is further reinforced by the cautious attitude of banks in the aftermath of the covid-19 pandemic. During the research period, banks were more selective in extending credit due to heightened credit risk and economic uncertainty (Isma & Hartiningtyas, 2022).

In this situation, fintech was used more as a tool for risk control, improving internal efficiency, and strengthening transaction services, rather than as a means of expanding financing (Hidayat et al., 2023). As a consequence, banks maintained larger liquidity reserves to anticipate cash-flow volatility, thereby reducing the allocation of funds to financing activities and affecting liquidity creation (Gautama et al., 2018; Hamdi & Herianingrum, 2022; Riyanah et al., 2023).

This finding is in line with Wu et al. (2024), who state that the use of financial technology does not always strengthen the role of banks as institutions that collect and distribute funds, especially when its adoption has not been integrated with credit distribution activities as the main source of liquidity creation. Fintech can reduce liquidity creation when its use is more directed at transaction efficiency and internal bank management, without being accompanied by an expansion of fund distribution into credit and productive assets (Kaddumi et al., 2023; Wu et al., 2024). However, the results of this study differ from a number ofseveral previous studies that argue that fintech adoption positively affects bank liquidity and performance (Mar'atushsholihah & Karyani, 2021; Guo & Zhang, 2023; Khumairok, 2023). These differences in results can be explained by differences in the characteristics of fintech adoption observed. Previous studies have generally highlighted fintech as a tool used by banks to support credit distribution, for example, through digital credit scoring systems, data analysis to assess debtor eligibility, or technology that helps manage credit risk (Mar'atushsholihah & Karyani, 2021; Indrianti et al., 2022; Yudaruddin et al., 2024). However, the results of this study show that fintech is more widely used to strengthen transaction services and internal management, while credit decisions remain conservative (Hidayat et al., 2023).

The correlation between empirical results and research data is evident in the dominance of IT-based fintech news, which accounts for more than 80 per cent of total fintech news. This dominance indicates that fintech innovation among the sample banks primarily focuses on strengthening digital transaction channels rather than developing financing technology (Khalaf & Shaer, 2023; Vincent & Agustin, 2024). This condition explains why increased fintech exposure actually reduces banks' ability to create liquidity, because the growing digital activities have not been integrated with credit distribution functions. In addition, the results of the control variables further reinforce this interpretation. The negative association between CAR and liquidity creation indicates that banks with higher capital adequacy tend to exhibit lower liquidity creation within the sample. This pattern may be related to more conservative lending behavior, although the observational design does not allow a causal interpretation (Assa & Loindong, 2023). Conversely, the positive effect of LDR indicates that liquidity creation is more determined by the bank's Conversely, the positive association between LDR and liquidity creation indicates that banks with higher loan disbursement relative to third-party funds tend to exhibit higher liquidity creation. These findings suggest that bank intermediation and financing decisions remain closely associated with liquidity creation, while fintech adoption does not necessarily translate into stronger credit-based intermediation (Somantri & Sukmana, 2020).

CONCLUSION AND SUGGESTION

This study aims to analyze the relationship between fintech adoption and liquidity creation at commercial banks listed on the Indonesia Stock Exchange during the period 2021–2024. Based on the results of a panel data regression analysis, fintech adoption was found to have a significant negative effect on liquidity creation. These findings suggest that, within the sample and study period, an increase in media coverage related to fintech is associated with a decline in banks' liquidity creation. However,

these findings should be interpreted with caution as fintech adoption in this study was measured using online media coverage. This measurement reflects the intensity of media coverage of fintech activities; it does not directly measure the actual level, quality or scale of fintech implementation at each bank. Therefore, the findings of this study cannot be interpreted to mean that the adoption of fintech generally always reduces liquidity creation across all banks.

This negative relationship can be attributed to the characteristics of fintech activities widely reported during the research period, which were dominated by the use of technology to support transactions and operational efficiency rather than technology that directly supports credit disbursement. The research findings also indicate that liquidity creation remains closely linked to banks' intermediation decisions, particularly their ability and willingness to channel funds into credit and productive assets. Consequently, fintech's contribution to liquidity creation depends not only on the level of technology adoption, but also on how that technology is integrated into banks' financing activities and intermediation functions.

This study has several limitations. First, fintech adoption was measured based on online media exposure through content analysis. This measurement captures the intensity of media coverage relating to fintech, rather than the actual level and scope of fintech adoption at each bank. Consequently, media exposure may not fully reflect the actual use of fintech in the banks' internal operations and services. Future research could utilise alternative measures of fintech adoption that more directly reflect actual implementation, such as the number or value of fintech-based transactions, the level of partnership between banks and fintech firms, or other indicators of fintech usage reported by banks. Second, there are variations in the completeness and depth of information across banks' annual reports. Some banks present detailed breakdowns of assets, liabilities, and off-balance-sheet activities, while others provide only brief information. This condition can affect the accuracy of liquidity creation calculations, given that the measurement requires detailed classification of assets, liabilities, and off-balance-sheet activities, which are not always consistently available. Therefore, future research can adjust the liquidity creation measurement method to the availability of relatively uniform data across banks, or use alternative liquidity measures for comparison, so that the analysis results are more consistent.

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