| RESEARCH ARTICLE

Conventional, Sharia & Digital Banking: Comparison of Bank Soundness and Performance in Indonesia

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| ABSTRACT
This research aims to compare the soundness and performance of digital, conventional and sharia banks in Indonesia. The sample in this research were 8 digital banks, 8 sharia banks and 5 conventional banks from 2021 to 2023 as measured by CAMEL for banking soundness and ROA, ROE and NIM for banking performance. This research implements non-parametric difference test methods such as Kruskal-Wallis and Friedman used to analyze differences in banking soundness and performance. The results of the research show that there are differences in the level of performance and soundness between digital, conventional and sharia banks in Indonesia. Furthermore, the soundness and performance of conventional banks are superior to digital banks and sharia banks.

| KEYWORDS
Bank Soundness; Bank Performance; Digital Bank; Sharia Bank; Conventional Bank

| ARTICLE DOI:

I. INTRODUCTION
Existence and increases in digital banking transactions in the last 5 years from 2018 - 2023 by 158% based on the Databoks in 2023 followed by almost doubled of total asset of sharia bank in the same period based on the report OJK in 2023. Furthermore, the competition between digital, sharia, and conventional banks has become increasingly fierce as each seeks to cater to different market segments in the financial services industry. Digital banks (or neobanks) leverage technology to offer convenient, fast, and cost-effective services, attracting tech-savvy customers with features like instant account opening, 24/7 access, and lower fees due to their branchless model. The growth of digital banking is driven by Gen Z (young people aged 12 to 27 years old) who gather the largest generation group in Indonesia nowadays. As the first generation to grow up with internet access and digital technology from a young age, Gen Z plays a vital role in the digital economy ecosystem. This convenience poses a challenge to conventional banks, which traditionally rely on their physical presence, established trust, and a broad range of financial products. However, conventional banks are responding by enhancing their digital capabilities to remain competitive. On the other hand, sharia banks target customer seeking financial services that comply with Islamic principles, offering interest-free loans and profit-sharing models. Although their market is niche, sharia banks are growing rapidly, particularly in Muslim-majority countries like Indonesia. The challenge for sharia banks is to innovate and digitalize their services to appeal to a younger, tech-oriented customer base, while still adhering to religious guidelines. Thus, the competition between these three types of banks revolves around technological innovation, customer experience, and meeting specific cultural or ethical needs through a new business model [1], [2]. This Competition finally create a rivalry between digital, sharia, and conventional banks that leads to increased performance on effort-based tasks [3].

In efficiency and performance perspective, digital bank as a development of financial technology (FinTech) increased efficiency and reduced costs, especially in Muslim majority country that integrate or disrupt Islamic banks [4], [5]. On the other hand, Islamic banks generally exhibit 4% higher cost efficiency but 17% lower profit efficiency compared to conventional banks, indicating a focus on ethical financing over profit maximization while conventional banks show greater profit efficiency, benefiting from established market practices and risk management strategies [6]. In governance and stability perspective, Islamic banks fundamentally governed by Sharia principles, which can enhance asset quality and financial stability, but may limit profit generation

in volatile markets [7], [8], conventional banks are more flexible in governance. In Turkey, however, Islamic banks outperform conventional banks in profitability and asset management, although the Islamic banks exhibit lower sensitivity to market risks [9], while digital banks typically benefit from agile governance structures, enabling quick responses to regulatory changes and customer needs [10], [11], [12]. According to previous research related to the overall performance, Islamic bank performance can lag behind conventional banks in terms of efficiency and recovery from crises while Islamic banks maintain a stable regime more frequently [8], [13]. However, currently there is still limited research that considers the soundness and performance of digital banks, even though technological disruption allows this transformation to create long-term competitive advantages. Thus, this research aims to compare the soundness and performance of digital, conventional and sharia banks in Indonesia. The section 2 in this research provides methodological necessity and section 3 provides results analysis.

II. METHODOLOGY

This research conducts quantitative analysis to examine the bank performance and soundness. Analysis in this research used data that related to the bank in Indonesia which comprises digital, sharia and conventional bank that listed in OJK databases. This research only includes digital and sharia bank that as a firm entity and exclude digital and sharia bank that as a business unit. The period of collected data in this research is from 2021 until 2023. The consideration of chose period because the digital bank starting to appear more in 2021. Furthermore, the conventional bank in this research limited to 5 top conventional banks in Indonesia based on the [14] that state the top bank has concentrated market which focused customer, less competition and higher market power of individual bank. Due to the monopolistic market, 5 top banks could become the benchmark of the other bank. The specific data collection represented in table 1 of this research. Based on the table 1, bank database in OJK provides 8 digital bank, 14 sharia bank and 5 top conventional banks. Afterward, certain criteria determined as a selection in order to provide focused sample. The bank with unavailable financial report and included as a BUMD or BPR bank also excluded in this research. After sorting based on certain criteria, therefore, sample of this research obtained 8 digital bank, 8 sharia bank and 5 top conventional banks. Furthermore, the sample contains data each period from 2021 until 2023. Thus, the number of observations of this research is 24 digital bank, 24 sharia bank and 15 top conventional banks.

TABLE 1.
SAMPLE CALCULATION

Criteria	Bank Type	Total
Bank listed in OJK data	*Digital*	*8*
	Sharia	*14*
	*Conventional**	*5*
Number of banks with unavailable financial report	*Digital*	*0*
	Sharia	*(4)*
	*Conventional**	*0*
Number of BUMD and BPR banking	*Digital*	*0*
	Sharia	*(2)*
	*Conventional**	*0*
Number of banks used as a sample	*Digital*	*8*
	Sharia	*8*
	*Conventional**	*5*
Number of observations	*Digital*	*24*
	Sharia	*24*
	*Conventional**	*15*

*Based on Bank Concentration of Gupta & Mahakud, 2020

This research conducts CAMEL analysis to examine the bank soundness. CAMEL is comprised Capital Adequacy, Asset Quality, Management Quality, Earning Quality and Liquidity. The main reason of usage of CAMEL analysis because this method provided holistic approach and standardized view for evaluating the performance of financial institutions [15]. The flow of CAMEL analysis in this research adapted from [16] called CAMEL composite rating. CAMEL composite rating assessed and rated on a scale from 1 to 5, with 1 indicating strong performance and 5 reflecting serious weaknesses. For specific interpretation, 1 interpreted that the bank is in excellent condition and poses minimal risk, 2 interpreted that the bank is fundamentally sound, with only minor weaknesses, 3 interpreted that the bank shows some weaknesses that could lead to deterioration if not addressed, 4 interpreted that the bank has significant weaknesses that pose risks to its stability and 5 interpreted that the bank is in a very unsatisfactory condition, with immediate regulatory intervention likely required. The CAMEL analysis underpinning certain financial ratios for each variable. the ratio that implemented in this research based on the previous relevance research which defined in the table 2 as follows:

TABLE 2.

OPERATIONALIZATION OF THE CAMEL VARIABLES

CAMEL	Ratios	Formula	Source
Capital Adequacy	*Capital Adequacy Ratio*	*CAR = Capital / Risk Weighted Asset*	*[17]*
Asset Quality	*Non-Performing Loan Gross*	*NPL Gross = Substandard + Doubtful + Loss Credit / Credits Total*	*[18]*
Management Quality	*Net Profit Margin*	*NPM = Net Income / Operating Profit*	*[19]*
Earnings Ability	*Return on Asset*	*ROA = Operating Profit / Total Asset*	*[20]*
Liquidity	*Loan to Deposit Ratio*	*LDR = Total Credits / Total Deposit*	*[21]*

After obtain ration formulation for each variable, the variable categorized into five ratings based on the bank soundness condition according to the Bank Indonesia Circular Letter that defined in the table 3. Furthermore, the result of category averaged with each variable to generate CAMEL value. Finally, these averaged CAMEL. Finally, these averaged CAMEL reflected the bank soundness that provided information for make a decision. On the other hand, this research also measures the bank performance to compare and test the robustness of bank soundness which examined by CAMEL analysis. The bank performance in this research evaluated by highlighting the value of Return on Asset, Return on Equity and Net Interest Margin of each bank [14], [22]. Moreover, the non-parametric statistical approach also conducted in this research to provide wider insight. The Kruskal-Wallis and Friedman test are conducted in this research which Kruskal-Wallis test is used to measure the bank soundness in consecutive years while friedman test is used to measure the bank performance based on several ratio.

TABLE 3.
CRITERION IN CAMEL RATING SYSTEM

	1 (Very Sound)	2 (Sound)	3 (Fairly Sound)	4 (Less Sound)	5 (Unsound)
CAR	*CAR ≥ 12%*	*9% ≤ CAR < 12%*	*8% ≤ CAR < 9%*	*6% ≤ CAR < 8%*	*CAR ≤ 6%*
NPL Gross	*NPL < 2%*	*2% ≤ NPL < 5%*	*5% ≤ NPL < 8%*	*8% ≤ NPL < 12%*	*NPL ≥ 12%*
NPM	*NPM ≥ 100%*	*81% ≤ NPM < 100%*	*66% ≤ NPM < 81%*	*51% ≤ NPM < 66%*	*NPM ≤ 51%*
ROA	*ROA ≥ 1.5%*	*1,25% ≤ ROA < 1.5%*	*0,5% ≤ ROA < 1.25%*	*0% ≤ ROA < 0.5%*	*ROA ≤ 0%*
LDR	*LDR ≤ 75%*	*75% < NPM ≤ 85%*	*85% < NPM ≤ 100%*	*100% < NPM ≤ 120%*	*LDR > 120%*

Source: Bank Indonesia Circular Letter No. 13/24/DPNP 2011 & Bank Indonesia Circular Letter No. 9/24/DPBS 2007

III. RESULTS AND DISCUSSION

This section provides result from analysis of bank soundness and performance. Table 4. describe statistical summary of each CAMEL analysis ratio of each bank category in consecutive years from 2021 until 2023. First in capital adequacy factor, in the consecutive years from 2021 until 2023 consistently shows digital bank has higher capital adequacy ratio than sharia and conventional bank. It because the rigorous regulation of government due to the digital bank technology risk and business model novelty. Second in asset quality factor, digital bank shows incremental increases in consecutive years. It reflects that the total of digital bank creditors who are in default is increasing every year. In contrast with sharia bank, in 2023 shows that sharia bank has lower value than the other bank category. Third in management quality factor, all three bank categories show a decline value in every year. However, digital bank shows higher management quality than sharia and conventional bank. Fourth in earning ability factor, post-pandemic in 2021 influence bank condition globally. It is presented with negative values and low levels of earning capability from each bank category, especially digital banks. In the following years, the earning ability of each bank starting to improve. The result shows top conventional bank generates higher income than the other bank. It because the top conventional bank dominates the market in Indonesia. Lastly in terms of liquidity, all three bank categories show that there has been an increase value in each year. However, digital bank shows worst performance than the other banks. Overall, each bank categories shows varying of performance in each year.

TABLE 4.
SUMMARY OF CAMEL FINANCIAL RATIOS

Year	Bank Type	Capital Adequacy	Asset Quality	Management Quality	Earnings Ability	Liquidity
2021	Digital Bank	186,66%	2,27%	142,21%	-3,35%	84,22%
	Conventional Bank	21,68%	3,09%	78,59%	2,00%	79,65%
	Sharia Bank	77,49%	2,37%	138,96%	0,91%	65,47%
2022	Digital Bank	73,84%	2,36%	99,74%	-0,49%	101,70%
	Conventional Bank	21,59%	2,52%	64,54%	2,66%	79,78%
	Sharia Bank	65,91%	1,94%	113,21%	1,56%	87,21%
2023	Digital Bank	66,09%	2,79%	89,94%	1,19%	126,79%
	Conventional Bank	23,63%	2,23%	62,90%	3,00%	84,57%
	Sharia Bank	43,59%	1,70%	87,63%	1,34%	83,98%

Table 5 in this research present the result of ranking of each CAMEL component based on the proposed criteria which further become an examination of CAMEL composite rating to answer the research objectives. In terms of capital adequacy ranks, the result shows uniform rank that all bank in Indonesia is in very sound condition. It because the rigorous regulation of government to mitigate the bank rush during financial crises. In terms of asset quality ranks, the table shows varying result. However, overall bank condition shows improvement in consecutive years which included in sound condition. In terms of management quality ranks, all condition getting worse year by year. It proven by higher rank in consecutive years, especially in conventional bank. The result shows sharia and conventional bank included in rank 3 or in fairly sound condition while digital bank included in rank 2 or in sound condition. In terms of earning ability, the table 4 reflect that recovery condition from post pandemic that create varying condition of the bank. The average rank of sharia bank shows superior condition which in second rank or sound condition while top conventional bank included in second rank and digital bank included in third rank. In terms of liquidity ranks, all three banks category shows weakening condition in consecutive years. The result shows sharia and conventional bank included in sound condition while digital bank included in fairly sound condition. Furthermore, the ranks of each variable averaged in order to obtain the CAMEL value and composite ranking. Finally, the overall result shows the Indonesian bank including digital, sharia and conventional banks are in sound condition although there is a slight difference in conditions.

TABLE 5.
SUMMARY OF CAMEL RATING SYSTEM

Year	Bank Type	Capital Adequacy Rank	Asset Quality Rank	Management Quality Rank	Earnings Ability Rank	Liquidity Rank	CAMEL	CR	Rating
2021	Digital Bank	1	1,5	1,75	4,125	2,375	2,15	2	Sound
	Conventional Bank	1	2	2,6	1,6	2	1,84	2	Sound
	Sharia Bank	1	1,625	2,375	2,875	1,75	1,925	2	Sound
	Overall	1	1,67	2,19	3,05	2,05	1,99	2	Sound
2022	Digital Bank	1	1,75	1,875	3,75	2,5	2,175	2	Sound
	Conventional Bank	1	1,6	3,6	1,4	2	1,92	2	Sound
	Sharia Bank	1	1,5	2,5	2,5	2,375	1,975	2	Sound
	Overall	1	1,62	2,52	2,71	2,33	2,04	2	Sound
2023	Digital Bank	1	1,625	2,125	3	3	2,15	2	Sound
	Conventional Bank	1	1,6	3,6	1,4	2,4	2	2	Sound

Sharia Bank	*1*	*1,5*	*2,5*	*2,375*	*2,375*	*1,95*	*2*	*Sound*
Overall	*1*	*1,57*	*2,62*	*2,38*	*2,62*	*2,04*	*2*	*Sound*
Consecutive Years	*1*	*1,62*	*2,44*	*2,71*	*2,33*	*2,02*	*2*	*Sound*

After conduct the CAMEL analysis, this research also provides non-parametric statistical analysis to consider the robustness of the result. First, this research conducted Kruskal-Wallis Test to measure the ranks differences from each banks categories in consecutive years. The result shows that chi-squared is 6.9832 and p-value is 0.03045. Furthermore, figure 1 also provide the visualization of ranking differences between bank categories. Therefore, it concluded that there is significant differences bank soundness of each bank categories. Second, this research also conducted Friedman Test to measure the bank performance from each banks category. The result shows that chi-squared is 6 and p-value is 0.04979. It also supported by figure 2 that describe about the condition of ROA, ROE and NIM of each bank categories in consecutive years. Therefore, it concluded that there are significant differences of digital, sharia and conventional bank performance.

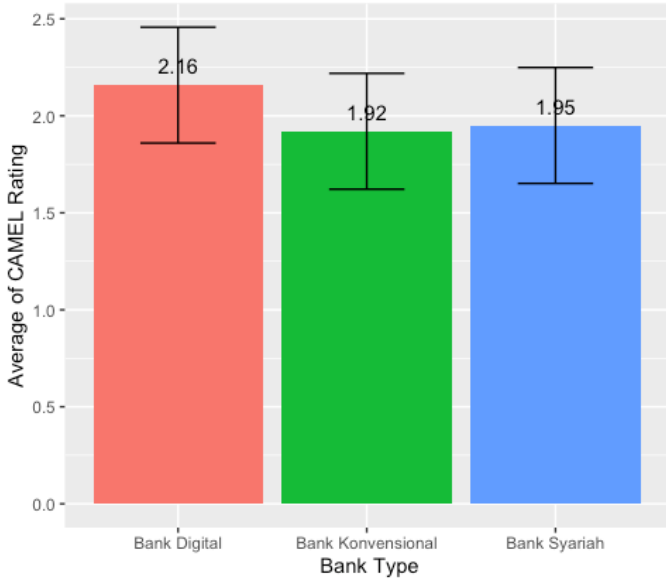

FIGURE 1.
AVERAGE OF CAMEL RATING IN 2021 - 2023

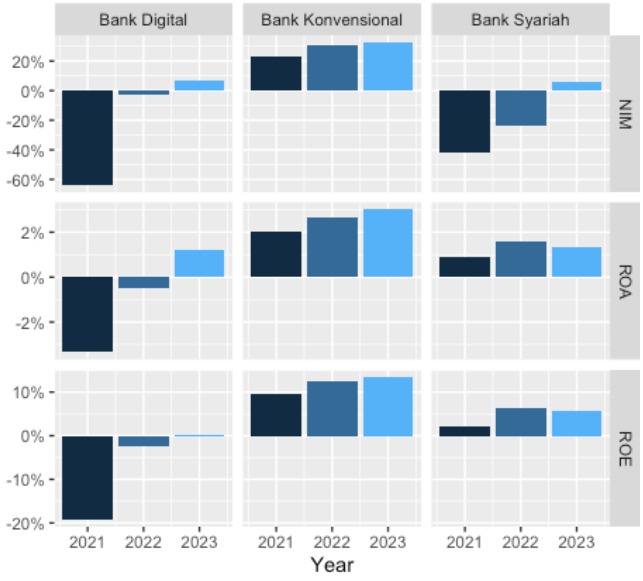

FIGURE 2.
BANK PERFORMANCE IN 2021 - 2023

IV. CONCLUSION

This research aims to compare the soundness and performance of digital, conventional and sharia banks in Indonesia. The result shows there are significant differences of bank soundness and performance between digital, conventional and sharia banks in Indonesia. This can be used as a long-term investment and to gain a competitive advantage where global conditions are being disrupted by technological developments. With a touch of relevant marketing strategies, digital banking services can gain a competitive advantage [23]. Basically, this technological touch is carried out to improve the performance and efficiency of a bank [24]. Therefore, banks in general will try to upgrade their services through technology that leads to digital service transformation in the end. Thus, this also allows other banks to increase competition which causes insignificant changes in profitability [2]. In practice, this research has certain limitation. first, this research merely measures the bank soundness and performance in a single measurement with CAMEL analysis. Further research is expected to provide determination of factor that influence bank soundness and performance, especially digital bank. Second, this research merely provides descriptive and non-parametric analysis, Therefore, further research is expected to integrate regression or machine learning analysis in order to provide wider insight which related to banking soundness and performance.

REFERENCES

[1] C.-C. Lee, X. Li, C.-H. Yu, and J. Zhao, "Does fintech innovation improve bank efficiency? Evidence from China's banking industry," International Review of Economics & Finance, vol. 74, pp. 468–483, Mar. 2021, doi: 10.1016/j.iref.2021.03.009.

[2] H. Kharrat, Y. Trichilli, and B. Abbes, "Relationship between FinTech index and bank's performance: a comparative study between Islamic and conventional banks in the MENA region," Journal of Islamic Accounting and Business Research, vol. 15, no. 1, pp. 172–195, Apr. 2023, doi: 10.1108/jiabr-03-2022-0081.

[3] G. J. Kilduff, H. A. Elfenbein, and B. M. Staw, "The Psychology of Rivalry: A relationally dependent analysis of competition," Academy of Management Journal, vol. 53, no. 5, pp. 943–969, Oct. 2010, doi: 10.5465/amj.2010.54533171.
[4] Q. Zhao, P.-H. Tsai, and J.-L. Wang, "Improving Financial Service Innovation Strategies for Enhancing China's Banking Industry Competitive Advantage during the Fintech Revolution: A Hybrid MCDM Model," Sustainability, vol. 11, no. 5, p. 1419, Mar. 2019, doi: 10.3390/su11051419.
[5] H. Hamza and K. B. Jedidia, "Central bank digital currency and financial stability in a dual banking system," in Advances in finance, accounting, and economics book series, 2019, pp. 233–252. doi: 10.4018/978-1-7998-0039-2.ch012.
[6] M. Safiullah and A. Shamsuddin, "Risk-adjusted efficiency and corporate governance: Evidence from Islamic and conventional banks," Journal of Corporate Finance, vol. 55, pp. 105–140, Apr. 2019, doi: 10.1016/j.jcorpfin.2018.08.009.
[7] N. Mirza, B. Rahat, and K. Reddy, "Business dynamics, efficiency, asset quality and stability: The case of financial intermediaries in Pakistan," Economic Modelling, vol. 46, pp. 358–363, Feb. 2015, doi: 10.1016/j.econmod.2015.02.006.
[8] I. Mawardi et al., "Comparative stability analysis of Indonesian banks: Markov Switching—Dynamic Regression for Islamic and conventional sectors," PLoS ONE, vol. 19, no. 4, p. e0301398, Apr. 2024, doi: 10.1371/journal.pone.0301398.
[9] C. Erol, H. F. Baklaci, B. Aydoğan, and G. Tunç, "Performance comparison of Islamic (participation) banks and commercial banks in Turkish banking sector," EuroMed Journal of Business, vol. 9, no. 2, pp. 114–128, Jul. 2014, doi: 10.1108/emjb-05-2013-0024.
[10] P. B. Washington, S. U. Rehman, and E. Lee, "Nexus between Regulatory Sandbox and Performance of Digital Banks—A Study on UK Digital Banks," Journal of Risk and Financial Management, vol. 15, no. 12, p. 610, Dec. 2022, doi: 10.3390/jrfm15120610.
[11] C. I. Mbama and P. O. Ezepue, "Digital banking, customer experience and bank financial performance," International Journal of Bank Marketing, vol. 36, no. 2, pp. 230–255, Apr. 2018, doi: 10.1108/ijbm-11-2016-0181.
[12] S. J. Kaur, L. Ali, M. K. Hassan, and M. Al-Emran, "Adoption of digital banking channels in an emerging economy: exploring the role of in-branch efforts," Journal of Financial Services Marketing, vol. 26, no. 2, pp. 107–121, Feb. 2021, doi: 10.1057/s41264-020-00082-w.
[13] F. Alqahtani and D. G. Mayes, "Financial stability of Islamic banking and the global financial crisis: Evidence from the Gulf Cooperation Council," Economic Systems, vol. 42, no. 2, pp. 346–360, May 2018, doi: 10.1016/j.ecosys.2017.09.001.
[14] N. Gupta and J. Mahakud, "Ownership, bank size, capitalization and bank performance: Evidence from India," Cogent Economics & Finance, vol. 8, no. 1, p. 1808282, Jan. 2020, doi: 10.1080/23322039.2020.1808282.
[15] W. A. Dzeawuni and P. M. Tanko, "CAMELs and Banks Performance Evaluation: The Way forward," SSRN Electronic Journal, Jan. 2008, doi: 10.2139/ssrn.1150968.
[16] H. Z. Babar and G. Zeb, "Camels Rating System for Banking Industry in Pakistan : Does CAMELS System Provide Similar Rating as PACRA System in Assessing the Performance of Banks in Pakistan?," Master Thesis, Umea School of Business, 2011. [Online]. Available: http://umu.diva-portal.org/smash/get/diva2:448378/FULLTEXT01
[17] H. V. Kaur, "Analysis of Banks in India—A CAMEL approach," Global Business Review, vol. 11, no. 2, pp. 257–280, Jun. 2010, doi: 10.1177/097215091001100209.
[18] A. H. Nguyen, H. T. Nguyen, and H. T. Pham, "Applying the CAMEL model to assess performance of commercial banks: empirical evidence from Vietnam," Banks and Bank Systems, vol. 15, no. 2, pp. 177–186, Jun. 2020, doi: 10.21511/bbs.15(2).2020.16.
[19] S. N. Muhmad and H. A. Hashim, "USING THE CAMEL FRAMEWORK IN ASSESSING BANK PERFORMANCE IN MALAYSIA," International Journal of Economics, Management and Accounting, vol. 23, no. 1, Jun. 2015.
[20] M. Pekkaya and F. E. Demir, "Determining the priorities of CAMELS dimensions based on bank performance," in Contributions to economics, 2018, pp. 445–463. doi: 10.1007/978-3-319-78494-6_21.
[21] Susanti, R. Putra, and Moh. D. Bahtiar, "Banking performance before and during the Covid-19 pandemic: Perspectives from Indonesia," Cogent Economics & Finance, vol. 11, no. 1, Apr. 2023, doi: 10.1080/23322039.2023.2202965.
[22] J. Y. Lee and D. Kim, "Bank performance and its determinants in Korea," Japan and the World Economy, vol. 27, pp. 83–94, Jun. 2013, doi: 10.1016/j.japwor.2013.05.001.
[23] O. Limy and M. Zarlis, "Analysis Customers' Factors of Switching Intention from Using Conventional Bank Services to Digital Bank in Indonesia," in Lecture notes in networks and systems, 2024, pp. 218–228. doi: 10.1007/978-3-031-68675-7_22.
[24] A. Bashayreh and R. M. A. Wadi, "The effect of fintech on banks' performance: Jordan Case," in Lecture notes in networks and systems, 2021, pp. 812–821. doi: 10.1007/978-3-030-69221-6_62.