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ANALYSIS OF INCREASING CREDIT ACCOUNTS, DPK AND BANKING FRAUD ON E-KYC PROVIDER BUSINESS GROWTH: OJK REGULATORY SANDBOX AS MODERATION

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ABSTRACT

Following the issuance of OJK Regulation (POJK) Number 13 of 2018 concerning Digital Financial Innovation in the Financial Services Sector, Digital Financial Innovation (IKD) has continued to increase since 2018. To strengthen IKD, OJK issued SEOJK No. 21/SEOJK.02/2019 concerning Implementation of the Regulatory Sandbox for Digital Financial Innovation Organizers.This research aims to analyze the influence of the development of the banking industry, which is proxied through an increase in the number of credit accounts and third party funds (DPK), as well as an increase in fraud cases, on the business growth of E -KYC (electronic-know-your-customer) providers in the 2019-2023. Through a causality approach and multiple linear regression analysis, this study produces empirical findings about the factors that influence E-KYC business growth. Furthermore, this research also explores the role of the OJK regulatory sandbox as a moderating variable in this relationship.The research results found that the growth of credit accounts, the growth of Third Party Fund (DPK) accounts had a positive effect on the business growth of E-KYC providers and the regulatory sandbox as a moderating variable strengthened the positive effect.

Keywords: Electronic Know Your Customer, Credit Accounts, Third-Party Funds, Banking Fraud, Regulatory Sandbox

INTRODUCTION

Business growth is a crucial issue that is often the focus of research because of its relationship to the sustainability and success of organizations in a competitive market. According to McKinsey & Company research, growth that exceeds the industry average indicates a solid business model, which is rewarded by capital markets (McKinsey & Company, 2023). This research highlights that companies that are able to outpace industry average growth tend to provide higher returns for shareholders, showing how important business growth is to long-term success.

In the financial services sector, digitalization can be seen through the significant growth of the fintech industry in Indonesia. According to data from the Indonesian Fintech Association (AFTECH), the number of fintech companies increased from 238 in 2017 to 361 in 2020. In addition, transactions via fintech applications jumped from USD 15.6 billion in 2017 to USD 31 billion in 2020. Total Fintech users in Indonesia also continue to grow, reaching 128.5 million at the end of 2020, which is equivalent to around 48% of the total population.

This research focuses on E-KYC cluster IKD Organizers (*Electronic Know Your Customer*) which is a platform to help provide identification and verification services for prospective clients/customers using population data sourced from Dukcapil. The scope of research is limited to the E-KYC cluster based on the consideration that the characteristics of start-up companies often operate in a dynamic and high-risk environment with markets that are not yet well-established (Schwab, 2018). In this case, E-KYC is the only IKD cluster with a well-established market, making it more possible to analyze the impact of the development of the financial services industry, especially banking as the parent of the E-KYC industry, on its business growth.

The growth of the E-KYC business can be measured, one way, through the number of monthly growth (month-to-month percentage) transactions as summarized in the table below:

Table 1 Monthly Growth (%Mtm) of E-KYC Cluster IKD Implementation Transactions (After Entering the OJK Regulatory Sandbox) Yr. 2019 to 2023

Month	mtm 2019	mtm 2020	mtm 2021	mtm 2022	mtm 2023
January	7.25	2.34	11.86	0.04	0.09
February	14.49	4.68	3.86	0.03	0.03
March	21.74	17.91	17.78	0.06	0.13
April	28.99	7.02	3.72	0.01	0.03
May	36.23	2.98	12.62	0.14	0.07
June	65.97	32.10	18.93	0.21	0.11
July	16.98	4.07	3.91	0.20	0.10
August	18.25	4.33	8.84	0.08	0.06
September	177.46	38.27	5.86	0.31	0.15
October	19.68	5.24	33.41	0.07	0.16
November	23.16	12.79	21.17	0.08	0.12
December	17.46	17.85	50.11	0.10	0.24

Source: OJK Digital Financial Innovation Group, data processed by research

However, business growth for E-KYC providers is not just about increasing revenue, but also about ensuring they can continue to provide services that are relevant, secure and compliant with changing regulations. According to a study conducted by QuestionPro (2023), business research plays a key role in identifying opportunities and threats, as well as understanding customers and markets better. Thus, understanding the factors influencing the growth of E-KYC businesses becomes critical to ensure they can meet the dynamic and increasing market and regulatory demands in the financial industry.

Research by Nguyen (2018) shows that digitalization in the banking sector has produced new products and services, increased efficiency, and expanded market reach. This transformation creates demand for more sophisticated E-KYC solutions, thereby opening up opportunities for E-KYC providers to grow and develop. On the other hand, with the increase in fraud cases, especially in digital transactions, banks and financial institutions need more effective E-KYC solutions to manage risk. Research by Kim (2017) shows that the increase in fraud cases forces financial institutions to increase investment in security technology and customer verification processes. Although this creates challenges, it also creates opportunities for E-KYC providers to develop more innovative and effective solutions. The data table for the increase/decrease in the number of fraud incidents in Commercial Banks and the number of Commercial Banks that experienced fraud incidents in the monthly period from 2019 to 2023 is as follows.

Table 2 Increase (Decrease) in the Number of Fraud Incidents and Banks Experiencing Fraud Incidents (mtm Frequency) 2019 to 2023.

Month	2019		2020		2021		2022		2023	
	Fraud	Bank	Fraud	Bank	Fraud	Bank	Fraud	Bank	Fraud	Bank
January	0	0	0	0	-1	-1	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	1	1	0	0	0	0	1	1
April	0	0	-1	-1	1	1	0	0	-1	-1
May	0	0	1	1	-1	-1	0	0	3	2
June	0	0	-1	-1	0	0	0	0	-3	-2
July	3	3	0	0	0	0	0	0	0	0
August	-3	-3	0	0	0	0	1	1	0	0
September	0	0	0	0	0	0	1	1	1	1
October	1	1	0	0	0	0	-2	-2	-1	-1
November	-1	-1	0	0	0	0	0	0	0	0
December	0	0	1	1	0	0	0	0	0	0

Source: OJK Special Inspection and Regional Banking Supervision Department

Based on the data above, it shows that the gap phenomenonThis research recognizes that while the development of the banking industry and the increase in fraud cases have a significant influence on the growth of E-KYC businesses, the relationship is not always linear or easy to predict. A study by Fernandez (2023) reveals that while some financial institutions have successfully adapted to these changes, others have faced difficulties in integrating effective E-KYC solutions. This shows that although these factors are influential, there are other variables that also play a role in determining business success.

Several studies conducted previously are summarized in the Research Gap table with the phenomenon of the influence of an increase in the number of credit accounts, TPF accounts, and fraud cases in the banking sector on the growth of the E-KYC business which gives rise to a research gap or research gap. The following table shows the differences in research results (research gaps) from previous studies.

Table 3 Research Gap

Writer	Title	Theme	Research result
Aashna Karmacharya; Santosh Gopalkrishnan (2023)	Leveraging artificial intelligence in enhancing financial inclusion for the un-banked and under-banked in India	Use of Artificial Intelligence for Financial Inclusion in India	Artificial Intelligence (AI) significantly increases financial inclusion by overcoming information asymmetry, improving access to banking and credit services for underprivileged communities, and providing customer service through chatbots, fraud detection, and E-KYC. This research recommends leveraging AI to ensure that marginalized financial sectors can participate in financial markets and reap the benefits.
Priya Jindal, Jasmine Kaur, Kiran Sood (2022)	Process Innovation and Unification of KYC Document Management System with Blockchain in Banking	Use of E-KYC Based on Blockchain Technology in the Banking Sector	E-KYC adoption has a positive effect on the efficiency of banking business processes. This research emphasizes the potential of blockchain technology to renew and improve KYC verification processes in the banking sector. Using Distributed Ledger Technology (DLT) can reduce redundancy and increase efficiency by validating KYC compliance only once. It also allows distribution of client details in an encrypted form to maintain privacy and security of data across all banks in real-time, which is very helpful especially during bank mergers in the Indian banking system.
Walker, T., Nikbakht, E., & Kooli, M. (2023).	The fintech disruption: How financial innovation is transforming the banking industry	The disruptive influence of financial technology (fintech) on the banking industry	Fintech has significant disruptive potential for the banking industry. This research reveals that fintech is influencing service formats and pricing in the traditional banking sector, and calls for a review of existing banking regulations. This book also emphasizes the need for the banking industry to strike a balance between the benefits of fintech innovation and the challenges it poses in terms of monitoring and risk management.

Source: Published journal

The novelty of this research is by referring to existing literature, this research plays a crucial

role in filling the existing research gap regarding the dynamics between the growth of digital finance and its impact on the traditional banking sector. Looking at previous research discussing fintech disruption of the traditional banking industry, as discussed by Walker et al. (2023), there is an urgent need for in-depth analysis of banking adaptation to new technologies. Other references analyzed show that although fintechs bring much innovation, there are still significant challenges in their full integration into existing financial systems without disrupting established regulatory and compliance frameworks. Therefore, this research is not only relevant in an academic context but is also of great importance for financial industry practice, providing insight into how financial institutions can manage the transition to digital services while ensuring security, compliance and operational continuity. Thus, this research aims to examine the impact of the development of the banking industry and the increase in fraud cases in the banking sector on the business growth of E-KYC Cluster IKD organizers by taking the OJK Regulatory Sandbox as a moderating (mediating) variable.

FORMULATION OF THE PROBLEM

Based on this background, the problem formulation in this research is:

1. How does increasing the number of credit accounts affect the growth of the E-KYC business?
2. How will the increase in the number of third party fund (DPK) accounts impact the growth of the E-KYC business?
3. How does the increase in fraud cases in the banking sector affect the growth of the E-KYC business?
4. How does the OJK regulatory sandbox influence the growth of the E-KYC business?

LITERATURE REVIEW

The Effect of Increasing Credit Accounts on E-KYC Business Growth

The study by Zhang et al. (2018) show that the development of the banking industry, which is reflected in the growth of credit accounts, creates new opportunities for innovation in digital financial services, including E-KYC services. This research supports the idea that the more people use banking services, especially through the growth of credit accounts, the higher the demand for E-KYC solutions.

An increase in credit accounts can also indicate high public trust in the banking system, which in turn, opens up opportunities for IKD organizers in the E-KYC cluster to grow and develop.Thus, the following hypothesis is formulated:

H1: Credit account growth has a positive effect on E-KYC business growth

The Effect of Increasing Third Party Fund Accounts (DPK) on E-KYC Business Growth

Research by Chen et al. (2019) show that the growth in TPF reflects the high level of public trust in the banking sector, which is positively correlated with the adoption of digital financial services such as E-KYC. Increasing TPF can also strengthen the competitiveness of the banking industry, which encourages innovation and increases the availability of resources for developing E-KYC services.

Furthermore, a study by Gupta et al. (2020) emphasized that the development of DPK can be an indicator of the health and stability of the banking sector, creating a conducive environment for the growth of IKD organizers in the E-KYC cluster. With the increase in the number of third party fund accounts, it can be assumed that people are increasingly accustomed to and trusting digital financial transactions, including the use of E-KYC services.Thus, the following hypothesis is formulated:

H2: The development of third party fund accounts (DPK) has a positive effect on the growth of the E-KYC business

The Influence of Increasing Fraud Cases in the Banking Sector on IKD Business Growth

According to analysis by Smith et al. (2018), an increase in fraud cases can create an urgent need for more innovative and effective security solutions. In the context of E-KYC, which includes digital customer identification and verification processes, increasing concerns over cases of identity forgery or fraudulent activities may encourage the adoption of E-KYC technology as a proactive measure to increase the security of financial transactions.

Furthermore, the study by Li et al. (2019) highlighted that IKD providers in the E-KYC cluster who are able to provide security solutions that are reliable and adaptive to fraud risks can gain higher customer trust. Therefore, the increasing threat of fraud may encourage the adoption of E-KYC solutions in response to growing security challenges. This can be seen as a strategic step for IKD organizers to mitigate risks and build customer trust.

H3: The increase in fraud cases in the banking sector has a positive effect on the growth of the E-KYC business

The Influence of the OJK Regulatory Sandbox on the Relationship between Increasing Credit Accounts and E-KYC Business Growth

The increase in the number of credit accounts is directly proportional to the increasing need for more efficient customer verification solutions, such as those offered by E-KYC services. In this context, the Regulatory Sandbox initiated by the Financial Services Authority (OJK) in Indonesia is an approach that allows fintech companies, including E-KYC providers, to test new products and services in a controlled environment. This sandbox gives companies the freedom to innovate while remaining overseen by regulators, which helps reduce risk and increase investor and consumer confidence.

Thus, the relationship between increasing credit accounts and E-KYC business growth, which is already positive, is strengthened by support from the OJK Regulatory Sandbox. The innovations resulting from the sandbox offer solutions that not only meet market needs but also adapt to existing regulations, thereby increasing market acceptance of the use of E-KYC in credit management.

Thus, the following hypothesis is formulated:

H4: OJK's Regulatory Sandbox moderates the positive relationship between increasing credit accounts and E-KYC business growth

The Influence of the OJK Regulatory Sandbox on the Relationship between Increased Third Party Funds (DPK) and E-KYC Business Growth

The increase in third party funds (DPK) reflects the great potential in managing financial assets and resources that can be utilized by E-KYC services to increase the security and efficiency of financial transactions. As a means of innovation supported by regulations, the OJK Regulatory Sandbox not only allows E-KYC organizers to develop products more safely, but also increases the confidence of financial institutions to integrate this technology, especially in managing TPF.

A study by (EY, 2018) revealed that Regulatory Sandboxes in the Asia-Pacific region are designed to support innovation in a controlled environment, ensuring a balance between technological progress and regulatory compliance. This approach reduces the time and costs to market new fintech solutions, while receiving direct guidance from regulators ensuring compliance with applicable laws and standards. This strategic approach helps mitigate risks while building consumer trust and facilitating financial inclusion, as well as supporting the steady growth of the fintech sector.

H5: OJK's Regulatory Sandbox moderates the positive relationship between increasing third party fund accounts (DPK) and E-KYC business growth

The Influence of the OJK Regulatory Sandbox on the Relationship between Increased Fraud Cases and E-KYC Business Growth

The increase in fraud cases in the banking sector often triggers the need for increased security in transactions and customer verification processes, especially through technology such as E-KYC. In this context, the OJK Regulatory Sandbox can play a vital role in moderating the relationship between the increase in fraud cases and the growth of the E-KYC business.

Regulatory Sandbox, implemented by OJK, provides infrastructure that supports the development and implementation of fintech innovations, including E-KYC. This not only increases consumer and financial institutions' confidence in adopting new technologies but also facilitates the development of more efficient and secure solutions to deal with increasing fraud. Thus, OJK plays an important role in supporting the interaction between increasing security needs due to fraud and continuous technological adaptation to strengthen the foundations of financial security.

H6: OJK's Regulatory Sandbox moderates the positive relationship between the increase in fraud cases and the growth of the E-KYC business

Research Framework

Based on the discussion regarding the theoretical basis and previous research, the following is a framework of thinking according to the following diagram:

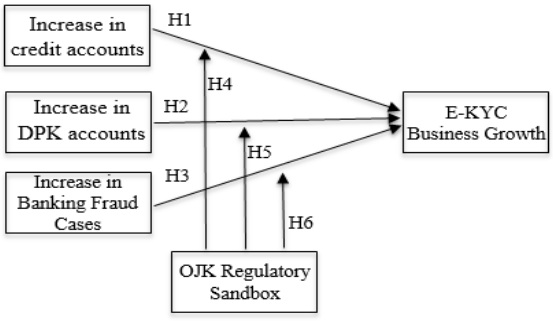

Figure 1 Framework of Thought

RESEARCH METHODS

Research Design

The design of this research is quantitative and aims to analyze the influence of the increase in credit accounts, deposit accounts, and fraud cases in the banking sector on the business growth of e-KYC providers: OJK's regulatory sandbox as a moderating variable for the case study: IKD e-KYC cluster for the 2019-2023 period. Researchers use a regression model with variables consisting of increase in credit accounts, deposit accounts, banking sector fraud cases, business growth and regulatory sandbox.

Types and Sources of Research Data

The type of data source used in research is a secondary data source consisting of:

1. Data on the growth of the number of internet users in Indonesia is based on survey results from the Indonesian Internet Service Providers Association (APJII).
2. IKD Fintech growth data.
3. OJK regulations and policies regarding fintech IKD and E-KYC, include:
   - POJK No. 13/POJK.02/2018 concerning Digital Financial Innovation (IKD);
   - POJK No. 8 of 2023 concerning Implementation of Anti-Money Laundering Programs, Prevention of Terrorism Financing and Prevention of Funding for the Proliferation of Weapons of Mass Destruction in the Financial Services Sector (APU PPT and PPPSPM in SJK);
   - POJK No. 38/POJK.03/2016 concerning the Implementation of Risk Management in the Use of Information Technology by Commercial Banks (POJK MRTI);
   - SEOJK No. 20 /SEOJK.02/2019 concerning Recording Mechanisms for Digital Financial Innovation Providers;
   - SEOJK No. 21/SEOJK.02/2019 concerning Implementation of the Regulatory Sandbox for Digital Financial Innovation Providers; And
   - SEOJK No. 22 /SEOJK.02/2019 concerning Appointment of the Digital Financial Innovation Organizing Association.
4. Quarterly performance report of E-KYC cluster IKD Operators for the 2020-2023 period.
5. Related literature consisting of various journals, books and publications related to cyber risk management in the fintech industry, OJK and association policies, as well as similar case studies in Indonesia and other countries.

Population and Sample

The population used in this research is Digital Financial Innovation (IKD) Providers registered with the OJK in the 2020 - 2023 period, where there are 97 companies. Research samplein the IKD organizer of the E-KYC cluster which consists of six companies, namely: PT Privy Identity Digital, PT Indonesia Digital Identity, PT Solusi Net Internusa, PT Asli Tikus Indonesia, PT Anugrah Pendataan Digital, PT Identity Anak Bangsa, research year period.

Method of collecting data

Documentation

This is done through reviewing files and recording written data documentation related to the research.

Literature Study Method

Used through books and other reading sources as well as understanding literature with discussions that are relevant and in accordance with research.

RESEARCH RESULTS

Descriptive Statistics of Research Variables

This subchapter describes descriptive statistical measures of central tendency (mean, median, standard deviation, minimum, maximum) to see the distribution of data for each research variable.

Table 4 Descriptive Statistics for Research Variables Monthly Data 2019 to 2023

Variable Name	Variable Description	Mean	Median	Std. dev	Min	Max
KYD	Increase in Credit Account (%mtm)	1.22	0.53	5.72	-32.21	16.95
DPK	Increase in TPF Accounts (%mtm)	1.69	1.70	2.44	-6.70	8.48
F	Increase in Fraud Cases in the Banking Sector (%mtm)	0	0	1	-3	3
EKYC	Growth in the number of E-KYC transactions (%mtm)	10.53	4.20	13.90	0.01	65.97

Source: research data (processed)

a. **KYD:**The mean (1.22%) is higher than the median (0.53%), indicating a right-skewed distribution. This shows that there are months with a very high increase in the number of

credit accounts, thus increasing the average of all data. The standard deviation (5.72) is relatively large compared to the mean, thus indicating variability in the monthly growth rate trend.

b. **DPK:**The mean (1.69%) and median (1.70%) are very close, indicating a more symmetrical distribution. The standard deviation (2.44) is smaller compared to KYD, indicating less variability in the monthly growth rate of total TPF accounts.
c. **Fraud:**The average and median are both 0%, meaning there is no change in the average number of fraud cases from month to month. However, the standard deviation value (1) and the minimum (-3) and maximum (3) values show that there are months that experience a decrease and an increase in fraud cases.
d. **EKYC:**The mean (10.53%) is much higher than the median (4.20%), indicating a right-skewed distribution. This shows that there are months with a very high growth rate of E-KYC users. The standard deviation (13.90) is the largest among all research variables, thus indicating high variability in the monthly growth rate of EKYC transactions.
e. OJK Regulatory Sandbox (Mod): moderating variables can be included in the multiple regression model. Moderating variables are also called interaction variables or effect modifiers, which are variables that can change the strength or direction of the relationship between the independent variable (x) and the dependent variable (y). The value of the Mod variable in the regression analysis is determined with a numerical score (0 and 1) to represent the variable category "before" and "after" the implementation of the Financial Services Authority Circular Letter Number 21/SEOJK.02/SEOJK 2019 concerning Regulatory Sandbox. The values 0 and 1 are the dummy coding method or creating indicator variables.

Normality Test

The residual values of the equation are normally distributed. In data that has outliers, checks are carried out so that the regression model is analyzed with data that does not have outliers.

Table 5Normality Assumption Test

	Skewness		**Kurtosis**	
	Mark	Std. error	Mark	Std. error
Unstandardized residuals	0.978	0.871	1,761	1,215

From table 5As a result of checking the normality of the residuals, it can be observed that the skewness ratio is an unstandardized residual value of 0.978 divided by a standard error of 0.871 which produces a value of 1.12284. Next, the kurtosis ratio value is obtained with an unstandardized residual value of 1.761 divided by a standard error of 1.215 which produces a value of 1.449. Based on these results, because both ratios are in the range +2 to -2, we can conclude that the data distribution follows a normal distribution pattern.

Hypothesis Testing

In this research, hypothesis testing was carried out through multiple regression analysis. The probability value interval for testing an accepted hypothesis is a p-value of less than 0.05 (sig < 0.05). Next, the sign of the beta coefficient (β)used to see whether the direction of influence of the independent variable on the dependent variable is positive or negative. The results of research hypothesis testing are presented as follows

Table 6 Research Hypothesis Testing with Multiple Regression Without Moderating

No	**Influence of x on y**	**Beta value (standardized)**	**Std. Dev**	**t-stat**	**P values (sig)**	**Hypothesis**
H1	KYD -> EKYC	0.124	0.006	6,021	0.035	Accepted
H2	DPK -> EKYC	0.543	0.008	3,285	0.041	Accepted
H3	Fraud -> EKYC	0.045	1,266	0.876	0.863	Rejected

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Table 7 Multiple Regression Research Hypothesis Testing with Moderating

No	Influence of x on y	Beta value (standardized)	Std. Dev	t-stat	P values	Hypothesis
H4	KYD x Mod -> EKYC	0.978	0,000	67,638	0.001	Accepted
H5	DPK x Mod -> EKYC	1,107	0,000	51,609	0.001	Accepted
H6	Fraud x Mod -> EKYC	0.030	0.029	0.707	0.707	Rejected

DISCUSSION

Discussion of Multiple Regression Results Without Moderating Variables

Credit account growth has a positive effect on E-KYC business growth

The hypothesis which states that credit account growth has a positive effect on E-KYC business growth is accepted. This is because the influence coefficient is positive (0.124) and significant (p-value 0.035).The acceptance of H1, which shows a positive relationship between credit account growth and E-KYC business growth, underscores the important role of traditional banking services in driving the adoption of digital identity verification solutions. The positive and significant coefficient (0.124) indicates that for every 1% increase in credit accounts, there is an increase of 0.124% in E-KYC business growth. This shows that as Commercial Banks expand their credit portfolio and accept more customers, the demand for efficient and secure customer identification and verification processes, facilitated by E-KYC, also increases.

The results of accepting H1 of this study support the ideas and results of the study by Zhang et al. (2018) which shows that the development of the banking industry, which is reflected in the growth of credit accounts, creates new opportunities for innovation in digital financial services, including E-KYC services. The more people use banking services, especially through the growth of credit accounts, the higher the demand for E-KYC solutions. The important implications for Commercial Banks and E-KYC providers include: For Commercial Banks, this highlights the importance of investing in E-KYC solutions to simplify customer onboarding and improve the overall customer experience. For E-KYC providers, this underlines the potential for business growth by aligning service offerings with the expansion of credit services in the banking sector.

The development of Third Party Fund (DPK) accounts has a positive influence on the growth of the E-KYC business

The hypothesis which states that the development of third party fund accounts (DPK) has a positive effect on the growth of the E-KYC business is accepted with a positive coefficient of influence (0.543), with a significant value (p-value 0.041). The acceptance of the H2 test results, which show a positive relationship between the growth of Third Party Funds (DPK) and the growth of the E-KYC business, highlights the important role of deposit mobilization in driving the adoption of digital identity verification solutions. The positive and significant coefficient (0.543) shows that for every 1% increase in TPF, there is an increase in E-KYC business growth of 0.543%. This shows that as banks attract more deposits and expand their customer base, demand for efficient and secure customer onboarding and verification processes (facilitated by E-KYC) also increases.

This finding is in line with the results of a study by Chen et al (2019) which suggests that the growth of TPF reflects the high level of public trust in the banking sector, which is positively correlated with the adoption of digital financial services such as E-KYC. An additional finding of this research is the importance of deposit mobilization strategies for Commercial Banks wishing to utilize E-KYC solutions. By attracting more depositors and expanding the TPF base, Commercial Banks can create new economic business opportunities for the implementation and growth of E-KYC services. For E-KYC providers, this highlights the potential for business expansion by targeting Commercial Banks with initiatives to strengthen active deposit fund mobilization.

The increase in fraud cases in the banking sector has a positive effect on the growth of the E-KYC business

The hypothesis which states that the increase in fraud cases in the banking sector has a positive effect on the growth of the E-KYC business is rejected. The influence coefficient is according to initial expectations, namely positive (0.045) but the influence is not significant (p-value 0.863). The hypothesis H3 which states that there is a positive relationship between the increase in fraud cases and the growth of the E-KYC business has not been accepted, is due to the low prevalence of fraud incidents in the Commercial Bank sector.

Although the effect coefficient is positive (0.045), indicating a potential relationship between fraud and E-KYC adoption, the lack of statistical significance (p-value 0.863) suggests that this relationship is not strong enough to draw any definite conclusions.

The minimal number of fraud incidents, as outlined by the previous analysis in subsection 4.1.2.3, provides a reasonable explanation for this lack of significance. When fraud cases are rare, the impact on the implementation of E-KYC solutions may be masked by other variables, such as the growth of credit accounts (KYD) and Third Party Fund accounts (DPK). The conclusion is more or less that, although the data shows that concerns about fraud may exist and have the potential to contribute to the background of improving E-KYC digital solutions, the overall low number of fraud incidents limits its statistical influence as a predictor of E-KYC business growth. These results illustrate that in the Commercial Bank industry in Indonesia, the main driver for implementing E-KYC is more closely related to the expansion of key banking business activities (raising funds and disbursing credit), rather than being directly influenced by fraud incidents.

Discussion of Multiple Regression Results with Moderating Variables

The OJK Regulatory Sandbox moderates the positive relationship between increasing credit accounts and E-KYC business growth

The hypothesis which states that the OJK Regulatory Sandbox moderates the positive relationship between increasing credit accounts and E-KYC business growth is accepted. The influence coefficient is positive (0.978) and significant (p-value 0.001).The acceptance of the H4 test results, is in line with the findings of Goo and Heo's (2020) study, namely that the implementation of regulatory sandboxes has a positive effect on the growth of venture investment in fintech, indicating that they play an important role in increasing the flow of venture capital into the fintech ecosystem by reducing regulatory uncertainty. The results of this research strengthen the findings of the role of the regulatory sandbox when positioned as Moderation, namely further emphasizing the importance of regulatory space in shaping the relationship between credit account growth and E-KYC adoption. The positive and significant coefficient (0.978) of the KYD variable which has an interaction with the Moderation variable shows that the positive impact of credit account growth on E-KYC business growth is strengthened by the existence of a regulatory sandbox.

These findings suggest that regulatory sandboxes, by providing a controlled environment for the testing and implementation of innovative financial solutions, play an important role in facilitating the adoption of E-KYC services. This can reduce regulatory uncertainty, encourage experimentation, and create a more favorable market environment for E-KYC providers, allowing Commercial Banks to capitalize on the growing demand for their solutions as credit accounts expand.

OJK's Regulatory Sandbox moderates the positive relationship between increasing third party fund accounts (DPK) and E-KYC business growth

The hypothesis which states that the OJK Regulatory Sandbox moderates the positive relationship between the increase in third party fund accounts (DPK) and E-KYC business growth is accepted. The influence coefficient is positive (1.107) and significant (p-value 0.001).The acceptance of the H5 test results also emphasizes the importance of regulatory space in strengthening the relationship between TPF growth and E-KYC adoption. The positive and significant interaction coefficient (1.107) shows that the positive impact of TPF growth on E-KYC business growth is increasing with the existence of sandbox regulations.

The results of testing the H5 hypothesis are in line with EY (2018) research which revealed that Regulatory Sandboxes in the Asia-Pacific region are designed to support innovation in a controlled environment, ensuring a balance between technological progress and regulatory compliance. This approach can reduce the time and costs to market new fintech solutions, while receiving direct direction from regulators ensuring compliance with applicable laws and standards. This strategic approach helps mitigate risks while building consumer trust and facilitating financial inclusion, as well as supporting the steady growth of the fintech sector.

The OJK Regulatory Sandbox moderates the positive relationship between the increase in fraud cases and the growth of the E-KYC business

The hypothesis which states that the OJK Regulatory Sandbox moderates the positive relationship between the increase in fraud cases and the growth of the E-KYC business is rejected. The influence coefficient is according to initial expectations, namely positive (0.030) but the influence is not significant (p-value 0.707). The hypothesis that H6 has not been accepted, which states that the OJK Regulatory Sandbox moderates

the positive relationship between the increase in fraud cases and the growth of the E-KYC business, could also be caused by the low prevalence of fraud incidents. The positive but insignificant coefficient (0.030) of the variable interaction indicates that the potential of sandbox regulations to amplify the impact of fraud on E-KYC adoption cannot be statistically discerned in the context of the current research data. The limited number of fraud cases may not provide sufficient variation to reveal the impact of moderating variables from existing regulations. These results indicate that, although existing regulations may play a role in facilitating the adoption of E-KYC in mitigating fraud, their effect is not yet statistically significant when the fraud incidents that occur are minimal. The main driver for the adoption of E-KYC digital solutions, as shown by the results of testing other hypotheses, remains related to the growth of the main business activities of Commercial Banks and the overall business ecosystem supported by regulatory provisions.

RESEARCH LIMITATIONS

Although this research has sought to provide insights into the dynamics of E-KYC business growth in the fintech ecosystem, particularly in relation to interactions with the Commercial Bank industry and its regulatory environment in Indonesia, there are several limitations that need to be considered. The total influence of the independent variables regressed on the dependent variable in the research model has an adjusted R square level of 53.2%, so there are 46.8% of other variables as influencing factors. Further research can further explore the variables in question and conduct studies on other IKD clusters.

PRACTICAL IMPLICATIONS

The following is a description of the managerial implications that can be drawn from the research results.

For the Commercial Bank Industry

Banks must prioritize customer acquisition and strengthen the intermediation function by implementing active and efficient marketing strategies to increase deposit potential and E-KYC utilization. Additionally, the integration of E-KYC technology into digital platforms is critical to improving operational efficiency and reducing the risk of fraud. Collaboration with E-KYC service providers is also needed to implement innovative solutions that comply with regulations.

For Companies Providing E-KYC Services

E-KYC providers should focus on the emerging Commercial Bank market, developing innovative digital solutions such as leveraging biometrics and artificial intelligence. It is also important for them to ensure compliance with KYC/AML regulations to build trust in the financial services sector.

For the Financial Services Authority (OJK)

As a regulator, OJK must strengthen consumer protection and implement appropriate provisions to reduce complaints. OJK also needs to maintain a regulatory environment that supports innovation and collaboration, and regularly evaluate the effectiveness of regulations to ensure regulations continue to facilitate the development of E-KYC.

UPCOMING RESEARCH AGENDA

The future research agenda needs to focus on exploring more deeply other variables that influence E-KYC business growth in the fintech ecosystem, considering that there are 46.8% of variables that have not been identified in this research. Future research should also consider conducting a more in-depth study on other digital financial industry (IKD) clusters, in order to obtain a more comprehensive perspective. In addition, conducting longitudinal analysis can provide an understanding of the dynamics of changes in interactions between E-KYC and the Commercial Bank industry as well as relevant regulations in Indonesia over time. Likewise, expanding the research into an international context could provide a broader picture of best practices and challenges faced in E-KYC implementation.

CONCLUSION

The growth of credit accounts has a positive influence on the development of the E-KYC business, in line with previous theory and research which shows that advances in the banking industry create new opportunities for innovation in digital financial services. In addition, the development of Third Party Fund (DPK) accounts also contributed positively, because when banks attracted more deposits, demand for efficient customer onboarding and verification processes with E-KYC increased.

OJK's Regulatory Sandbox plays an important role in strengthening this positive influence, creating an ecosystem that supports innovation and testing of financial solutions. A safe regulatory space allows industry players to reduce uncertainty and encourage the adoption of E-KYC services.

Even though the increase in fraud cases in the banking sector does not show a significant influence on the growth of the E-KYC business,

the importance of E-KYC in fraud mitigation remains crucial. This service ensures secure customer identification and verification, maintaining the integrity of the banking industry within the overall financial system.

REFERENCES:

Arner, D. W., Barberis, J. N., Walker, J., Buckley, R. P., Dahdal, A. M., & Zetzsche, D. A. (2020). Digital finance & the COVID-19 crisis. Available at SSRN.

Arner, D. W., Zetzsche, D. A., Buckley, R. P., & et al. (2019). The identity challenge in finance: From analogue identity to digitized identification to digital KYC utilities. European Business Organization Law Review, 20, 55–80.

Asif, M., Khan, M. N., Tiwari, S., Wani, S. K., & Alam, F. (2023). The Impact of Fintech and Digital Financial Services on Financial Inclusion in India. *Journal of Risk and Financial Management, 16* (2), 122.

Badan Pengawas Pasar Modal dan Lembaga Keuangan. (2021). *Kajian implementasi regulatory sandbox dalam pengembangan teknologi finansial di Indonesia.* BPMLK.

Bughin, J., Catlin, T., Hirt, M., & Willmott, P. (2018). Lighthouse manufacturers lead the way—can the rest of the world keep up? McKinsey & Company.

Fernandez, L. (2023). Regulatory compliance and its impact on banking operations. Journal of Financial Regulations.

EY. (2018). Regulatory sandboxes facilitate optimal regulation in Asia-Pacific. Retrieved from https://www.ey.com/en_lt/financial-services--emeia-insights/regulatory-sandboxes-facilitate-optimal-regulation-in-asia-pacific

Fu, Jonathan; Mishra, Mrinal (2020). The Global Impact of COVID-19 on Fintech Adoption. Swiss Finance Institute Research Paper 20-38, University of Zurich.

Goo, J.J.; Heo, J.-Y. (2020). The Impact of the Regulatory Sandbox on the Fintech Industry, with a Discussion on the Relation between Regulatory Sandboxes and Open Innovation. J. Open Innov. Technol. Mark. Complex, 6, 43.

Haddad, C., & Hornuf, L. (2019). The emergence of the global fintech market: Economic and technological determinants. Small Business Economics, 53, 81.

Hasan, H. A., Mansyur, S., & Mustamin, S. W. (2021). "Dampak Pandemi Covid-19 Terhadap Pertumbuhan Dana Pihak Ketiga pada Bank Syariah." Universitas Muhammadiyah Makassar.

Jindal, P., Kaur, J., Sood, K., Dhanaraj, R. K., Balusamy, B., & Kadry, S. (2022). Process innovation and unification of KYC document management system with blockchain in banking. In K. Sood, R. K. Dhanaraj, B. Balusamy, & S. Kadry (Eds.), Blockchain Technology in Corporate Governance.

Johnson, A., et al. (2021). The Impact of Artificial Intelligence and Machine Learning on E-KYC Services. Journal of Financial Technology.

Johnson, L., et al. (2021). The impact of fraud and money laundering on E-KYC solutions: A financial industry perspective. Journal of Financial Compliance.

Kanungo, E. (2022). An analysis of digital financial awareness and satisfaction of people using digital banking products. International Journal of Digital Literacy and Digital Competence (IJDLDC), 13(1).

Karmacharya, A., & Gopalkrishnan, S. (2023). Leveraging artificial intelligence in enhancing financial inclusion for the un-banked and under-banked in India. International Conference On Innovations In Robotics, Intelligent Automation And Control, 2914(1).

Keir, K. (2021). Not all banks are cutting new purchases of third-party funds. Investment Executive.

Lv, S., Du, Y., & Liu, Y. (2022). How Do Fintechs Impact Banks' Profitability?—An Empirical Study Based on Banks in China. FinTech, 1(2), 155-163.

Mairani, S., & Patrisia, D. (2021). Third Party Fund Analysis Towards Bank Risk in the Banking Industry in Indonesia Stock Exchange. Atlantis Press.

Nguyen, T. (2018). Digital banking and business opportunities. Journal of Digital Banking.

Nurhadi, L., & Yulianto, E. (2020). The determinants of financial technology adoption: Empirical evidence from Indonesian customers. Banks and Bank Systems, 15 (3), 129–139.

Osei, L. K., Cherkasova, Y., & Oware, K. M. (2023). Unlocking the full potential of digital transformation in banking: a bibliometric review and emerging trend. *Future Business Journal, 9*(30).

Patil, N. M., Solanki, A., Patil, P., & Yadav, S. (2021). Accessible and secure artificial intelligence based banking solution.

Proceedings of the International Conference on Smart Data Intelligence (ICSMDI 2021).

Pauwels, C., & Kourtit, K. (2019). Towards a conceptual framework for understanding FinTech. International Journal of Innovation Management, 23.

Smith, A., & Thomas, B. (2020). Blockchain technology in E-KYC: Enhancing efficiency and security. Journal of Digital Banking.

Smith, J., & Li, H. (2022). Regulation and Innovation in E-KYC: Challenges and Opportunities. International Journal of Banking and Finance.

Sukhinina, A., & Koroleva, E. (2020). Determinants of FinTech performance: Case of Russia. In DTMIS '20: Proceedings of the International Scientific Conference - Digital Transformation on Manufacturing, Infrastructure and Service (Article No.: 48).

Taujanskaitė, K., & Kuizinaitė, J. (2021). Development of FinTech business in Lithuania: Driving factors and future scenarios. Vilnius Gediminas Technical University.

Varma, P., Nijjer, S., Sood, K., Grima, S., & Rupeika-Apoga, R. (2022). Thematic Analysis of Financial Technology (Fintech) Influence on the Banking Industry. Risks, 10(10), 186.

Walker, T., Nikbakht, E., & Kooli, M. (2023). *The fintech disruption: How financial innovation is transforming the banking industry*. Palgrave Macmillan.

Zarrouk, H., El Ghak, T., & Bakhouche, A. (2021). Exploring Economic and Technological Determinants of FinTech Startups' Success and Growth in the United Arab Emirates. Journal of Open Innovation: Technology, Market, and Complexity, 7 (1), 50.

Zouaghi, A., Hasan, A. B., & Othman, A. H. A. (2021). The attitude of potential customers toward eKYC at Malaysian Banks during the Coronavirus pandemic: perspectives of clients. Review of International Geographical Education.