



## The Role of Regulatory Technology & Bankers to Prevent Money Laundering in Bank

*Veranto Kurniawan\**

*Faculty of Economics and Business, Universitas Indonesia*

\*Corresponding author. Email: [veranto.kurniawan11@ui.ac.id](mailto:veranto.kurniawan11@ui.ac.id)

### Abstract

As financial institutions, banks are commonly used as a place for money laundering activity, and most financial institution sends suspicious transaction reports to the Indonesian Financial Transaction Reports and Analysis Center (PPATK). This research aims to examine the impact of implementing regulatory technology (regtech) and the role of Anti Money Laundering (AML) officers in money laundering prevention in a bank. This research used explanatory research to test hypotheses; the primary data for this study was collected through a questionnaire distributed to 689 Anti Money Laundering (AML) officers in Indonesia; 296 respondents filled out the questionnaire with a response rate of 42.9%. The multivariate analysis results show that electronic know-your-customer (KYC) is not significant in money laundering prevention. Transactions monitoring and cost & time has a positive & significant impact on money laundering prevention. Furthermore, there is a positive & significant effect between bankers' competency & awareness of money laundering prevention. Regulatory Technology and bankers have an important role in preventing money laundering. Research related to technology & bankers on money laundering prevention is still limited in Indonesia. This study contributes to the current literature on anti-money laundering and the advancement of anti-money laundering systems.

**Keywords:** Money laundering, Regulatory Technology, Competency, Awareness, Bank

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Muhadjir Anwar

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*\*Correspondence author:*

Veranto Kurniawan

[veranto.kurniawan11@ui.ac.id](mailto:veranto.kurniawan11@ui.ac.id)

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## INTRODUCTION

Money laundering is a crime that has become a global phenomenon; money laundering refers to using cash to facilitate the mixing of legal and illegal funds so that the source of these funds can be disguised (Cox, 2014). This phenomenon occurs in line with the growth of international trading, the expansion of the financial system, the reduction of financial transaction barriers, and international travel. The estimation of global money laundering in one year is around 2-5% of global GDP; due to the hidden nature of money laundering, it is difficult to estimate the exact amount of money that goes through money laundering cycles (UNODC, 2022). Money launderers use financial institutions as the main objective of money laundering to clean the money (Chukwuemerie, 2006; Ofoeda et al., 2020)

Of the many existing financial sectors, banking is the most affected by money laundering (Raweh et al., 2017). Money laundering is also one of the risks that banks must face (Isa et al., 2015). Money laundering actors use banks to hide the illegitimate origin of funds and legitimize ownership and control of the proceeds of the crime (Hamin et al., 2014). According to Lilley P (2006, two essential things need to be done in identifying money laundering: knowing your customer (KYC) and identifying suspicious transactions.

Such conditions certainly put banks in need of tools to assist the institution in fulfilling regulatory obligations to avoid regulatory and reputation risks. The tools that can be used are regulatory technology. It is a subdivision of fintech that focuses on technology that facilitates fulfilling regulatory obligations more efficiently and effectively than existing capabilities (Anagnostopoulos, 2018). Regulatory technology helps financial institutions to automatize and adhere to regulatory obligations related to anti-money laundering (Demetis & Angell, 2006).

Bank employees who specifically deal with anti-money laundering (AML), known as AML officers, are vital in detecting money laundering and carrying out their obligations. AML Officers are also in charge when corresponding with PPATK. They are also the first parties to obtain information related to regulations, policies, or typologies and the latest money laundering and crime-related newsletters. According to Latif and Rahman (2018) and Viritha & Mariappan (2017), the lack of expert staff hinders implementing anti-money laundering prevention. Competent staff influence effectiveness in implementing anti-money laundering (Bahrin et al., 2022). To maintain staff expertise, it is necessary to provide relevant education and training, for example, the latest technologies, new financial instruments, regulations, policies, and the ability to identify illegal behavior in the digital economy (Vaithilingam & Nair, 2007).

Previous studies related to regtech have been conducted on banking in Bahrain; at that time, KYC, transaction monitoring, and cost & time were key factors in preventing money laundering (Turki et al., 2020). The study presented that eKYC on regulatory technology did not significantly prevent money

laundering (Turki et al., 2020). This research uses e-KYC of regtech, transaction monitoring of regtech, cost & time of regtech, competency, and awareness bankers as independent variables. Empirical studies on money laundering are still limited in Indonesia; this study aimed to analyze the effect of regulatory technology and bankers to prevent money laundering.

## LITERATURE REVIEW

### Regulatory Technology

Regtech is an information technology that helps companies administer their regulative responsibility. This is also useful for companies to control and maintain financial and non-financial risks. (Butler & O'Brien, 2019). The use of regtech can help fulfill obligations to comply with regulations, in accordance with the findings of Singh et al. (2022), which state that using smart technology solutions can help comply with regulations, reduce risk, and succeed in preventing financial crimes. Regulatory technology consists of three aspects; e-KYC, transaction monitoring, also cost and time (Turki et al., 2020).

KYC can be used as a valuable risk assessment tool by giving information to banks (Chen, 2020). Applying KYC to banks can help reduce risks such as financial fraud, money laundering, and terrorist financing. In previous research by Meiryani et al. (2022), it was found that applying eKYC contained in regtech effectively helps banks with money laundering and terrorism financing prevention. The presence of regulatory technology certainly helps the KYC process, which has so far been manual, to be more automated and integrated with other data sources to assist the identification and verification process.

One part of KYC is transaction monitoring, which is an important process for assessing the fairness of a transaction; without bank monitoring, it will be difficult to identify suspicious transactions. Transaction monitoring offered by regtech positively influences efforts to prevent money laundering (Turki et al., 2020). In previous research conducted by Meiryani et al. (2022), the transaction monitoring offered by regtech helps prevent money laundering.

Regulatory technology is very important for an anti-money laundering system because it can help provide regulatory solutions that are safe, cost-effective, and reliable (Karsha & Abufara, 2020). Besides that, Turki et al. (2020) state that regulatory technology can minimize the cost and time used in anti-money laundering action. Regulatory technology provides integrated solutions from automation, scalability, flexibility, and security.

According to the statement above, the conceptual framework & hypotheses were developed:

[Figure 1 about here.]

*H<sub>1</sub>: There is a positive and significant effect of eKYC provided by regulatory technology on money laundering prevention*

*H<sub>2</sub>: There is a positive and significant effect of transaction monitoring provided by regulatory technology on money laundering prevention*

*H<sub>3</sub>: There is a positive and significant effect of cost & time provided by regulatory technology on regulatory technology on money laundering prevention*

#### Competency

Competency significantly affects an individual's ability to complete tasks (Ahmad Tarmizi, Zolkafli et al., 2022)(Ahmad Tarmizi, Zolkafli, et al., 2022). Competence affects the level of compliance in implementing anti-money laundering programs (Ahmad Tarmizi, Zolkafli, et al., 2022). Based on the research of Usman Kemal (2014), there is an opposite relationship between training and money laundering prevention in banks.

Dusabe (2016) disclosed that individuals who work in the anti-money laundering sector need knowledge and skills to fulfill regulatory obligations. Lack of knowledge about anti-money laundering obligations and limited resources can negatively impact implementation of an anti-money laundering program (Subbotina, 2009). Teichman in Zakaria et al. (2022) states that compliance officers who receive training related to a criminal perspective can anticipate and prevent crime. Competency affects the level of compliance in implementing anti-money laundering programs (Ahmad Tarmizi et al., 2022).

Vaithilingan and Nair (2007) also explain that to continue and maintain human capital skills, continuing education and training need to be provided, for example, combining the latest technology, latest financial instruments, regulations & policies along with the ability to find and track illegal behavior (Ahmad Tarmizi et al., 2022)

According to the statement above, the hypotheses were developed:

*H<sub>4</sub>: There is a positive and significant effect competency of AML officers to prevent money laundering*

#### Awareness

Awareness is an individual's understanding of their perceptions & thoughts, whereas awareness is the capacity to gain accurate and in-depth knowledge of something (Carden et al., 2022). The responsibility to fight money laundering more effectively and efficiently should not be carried solely by the government. There should be a strong awareness of Anti Money Laundering (Nobanee & Ellili, 2018). Zolkafil et al. (2015) found that awareness about money laundering affects compliance levels because it helps them understand money laundering methods and their consequences on society and the economy. In general, the findings show that the lack of awareness of compliance officers will affect perceived compliance (Zakaria et al., 2022).

According to the statement above, the hypotheses were developed:

*H<sub>5</sub>: There is a positive and significant effect Awareness of AML officers to prevent money laundering*

## METHOD (FOR RESEARCH ARTICLE)

### Research Design

This study analyzes the relationship between e-KYC, transaction monitoring, cost & time, competency, and awareness as the independent variable and money laundering prevention as the dependent variable. To describe sample data and an overview of the basic concepts of research, this research used descriptive statistics as a primary device (Cooper & Schindler, 2013). The hypotheses testing was done by using multiple linear regression analysis.

### Population & sample size

In this study, the data was acquired by questionnaires with the criteria of respondents being anti-money laundering bank officers. This research's sampling technique used purposive sampling; according to Indonesian Financial Transaction Reports and Analysis Center (INTRAC/PPATK), there were 689 Anti Money Laundering (AML) Officers in Indonesia, as many 296 respondents that filled questionnaire with a response rate of 42.9%. Data was collected from September-November 2022 through a google form distributed to anti-money laundering officers working in banking in Indonesia.

### Survey Instrument Reliability and Validity

A validity test is needed to examine the correlation between variables. This validity test use IBM SPSS edition 25. Validity was measured by item-to-item criteria equal to or more than 0.20 (Duncan et al., 2018) and item-to-total equal to or more than 0.50 Francis & White (2002) and Kim and Stoel (2004) cited by (Turki et al., (2020). The following is the calculation of validity and reliability:

[Table 1 about here.]

Based on the calculation in table 1, the item-to-item value exceeds 0.2, and the total item correlation exceeds 0.5, so all items are valid. Then based on the Cronbach alpha reliability test, all variables have a Cronbach alpha value of more than 0.7, so all variables have met reliability. Furthermore, all items can be used for regression analysis.

The questionnaire used in this research was adapted from the questionnaire by (Turki et al., 2020; Viritha & Mariappan, 2017) (Zakaria et al., 2022)

## RESULTS AND DISCUSSION

### Normality Test

Based on the SPSS output, the sig.normality test used the Kolmogorov-Smirnov method equal to 0.062. The p-value is greater than alpha (0.05), so that says that the residual data is normally distributed.

## Hypothesis Test

A hypothesis test on the existing data was conducted after multicollinearity and heteroscedasticity tests. VIF for independent variables below 10 based on these results shows no multicollinearity in the model. Then based on the results of the heteroscedasticity test, the p-value of all variables was  $> 0.05$ , which means it is not significant and indicates no symptoms of heteroscedasticity in the model. After that, the regression test was carried out, and the following are the results:

[Table 2 about here.]

Based on the hypothesis testing in table 2, the  $t_{\text{count}}$  value for the eKYC variable ( $X_1$ ) is 0.168 with a p-value of 0.866. It means that eKYC ( $X_1$ ) does not impact Money Laundering Prevention ( $Y$ ). The results of this research are consistent with those of Turki et al. (2020) in Bahrain, showing eKYC on regulatory technology has no significant effect on money laundering prevention. Bank employees perceive that the non-electronic KYC process is still quite effective in preventing money laundering, and bank employees still do not understand the benefits of blockchain in helping to prevent money laundering (Lootsma, 2017) effectively.

Currently, the implementation of eKYC has not been optimal; banks in Indonesia have not fully implemented e-KYC because banks still allow the KYC process to be carried out manually. Of course, the manual KYC process still has many weaknesses, such as mandatory fields that may not be filled but not following actual conditions. If this condition occurs, the customer profile may become inaccurate, affecting the future identification process. Furthermore, based on table 1, it is known that the  $t_{\text{count}}$  value for the transaction monitoring variable ( $X_2$ ) is 4.211 with a p-value of 0.000. It means that Transaction Monitoring ( $X_2$ ) positively and significantly influences Money Laundering Prevention ( $Y$ ). The result of this research is in line with research conducted by Turki et al. (2020). Regulatory technology helps monitor transactions by utilizing data in sophisticated real-time analysis (Anagnostopoulos, 2018).

Balooni (2021) states that transaction monitoring helps detect abnormalities in customer transactions, a daunting job for banks with millions of daily transactions (Turki et al., 2020). Currently, transactions made by commercial banks have reached hundreds of millions of transactions; this number will certainly continue to grow, as shown by bank Mandiri transactions up to July 2022, which had recorded 118 million transactions, as well as bank rakyat Indonesia (BRI) as of June 2022, which had recorded 726.4 million of digital transactions.

(Anggraeni, 2022; Hutauruk, 2022). In addition, the number of financial transactions at the bank can increase at certain moments, for example, during elections. In the 2014 election, the number of transactions increased significantly, especially cash financial transactions (Rastika, 2014). In the 2019 simultaneous elections, there was a significant increase in the number of transactions (PPATK, 2018).

Furthermore, based on the analysis, the  $t_{\text{count}}$  value for the variable Cost & Time ( $X_3$ ) is 4.363 with a p-value of 0.000. Cost & Time ( $X_3$ ) positively impacts the Prevention of Money Laundering ( $Y$ ). Research carried out by Turki et al. (2020) also found the same conclusion: regulatory technology helps banks more quickly and efficiently to prevent money laundering. Speed and efficiency are the perceived benefits of regtech in preventing money laundering (Tennant, 2017).

Reports submitted by banks to regulators have a time limit; any delays submitted by banks can certainly affect non-compliance with applicable regulations. As a business that needs to maintain its reputation, banks will try their best to fulfill every obligation from the regulator. For example, for reporting a suspicious report, the bank must submit it within 3 (three) days after becoming aware of any suspicious elements. Without a system that helps generate reports quickly, the bank will find it difficult to meet the predetermined period. Ball (2017) states that regulatory technology can help identify in real time and reduce false positives (Turki et al., 2020).

## Competency

Table 2 shows that the  $t_{\text{count}}$  value for the Competency variable ( $X_4$ ) is 3.689 with a p-value of 0.000. Competency ( $X_4$ ) positively influences Money Laundering Prevention ( $Y$ ). Competency is important in detecting money laundering activities; training conducted by banks is used to improve staff's ability to detect money laundering continuously. The result of this hypothesis is in line with a previous study (Ahmad Tarmizi, Zolkafilil, et al., 2022; Bahrin et al., 2022; Dusabe, 2016; Usman Kemal, 2014)

Money laundering crimes continue to change in method and typology; for this reason, there is a need for continuous efforts to improve the competency of bank employees, especially AML Officers, through training. OJK regulation Number 12/2017 article 61 requires continuous training for employees of financial institutions related to provisions, techniques, methods, typologies, and APUPPT policies and procedures. Even though there is an obligation from the regulations, the fact is that based on the responses from the respondents, most respondents attended training 1-5 times in the last 5 (five) years, so it is necessary to increase the frequency of activity. Moreover, the challenges faced during this time are growing alongside the increasing number of digital transactions and cryptocurrency. The training is related to money laundering detection and the business processes of each existing industry so that all bank employees, especially AML officers, understand new emerging industries such as peer-to-peer lending, crowdfunding, and others.

## Awareness

Table 2 shows that the  $t_{\text{count}}$  value for the Awareness variable ( $X_5$ ) is 4.015 with a p-value of 0.000. It means that Awareness ( $X_5$ ) positively influences the Prevention of Money Laundering ( $Y$ ). The results of this study are

consistent with the research conducted (Dujovski & Mojsoska, 2019; Viritha & Mariappan, 2017; Zakaria et al., 2022). Awareness is a prevention tool used to expose crime and prepare to deal with the crime, which is ultimately useful for reducing crime (Magalla, 2017). Raghavan (2006) states that bank employees must integrate their daily work to fulfill compliance and increase risk-related responsibility and awareness (Isa et al., 2015).

## CONCLUSION

Money laundering is a real threat to banks; the more transactions and the increasing complexity of transactions, the more challenges banks face. Application of regulatory technology and strengthening the role of bankers can prevent money laundering transactions from occurring. The presence of regtech provides benefits to assist customers with transaction monitoring. The results of this research can serve as input for regulators and banks to start implementing regtech as well as continuous training to increase the competency and awareness of all staff at the bank. The anti-money laundering regime requires all parties to continue working together to prevent money laundering. In the future, other studies can add other variables to determine their effect on money laundering prevention.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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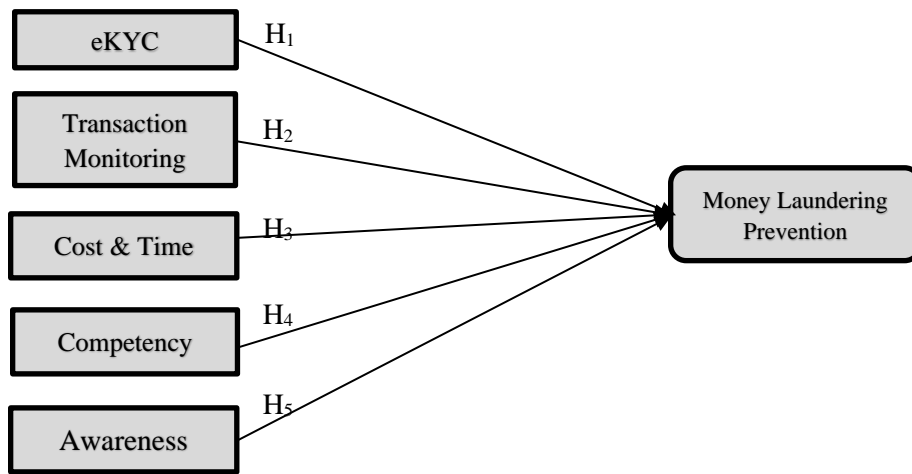
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**Figure 1. Conceptual Framework**





**Table 1. Validity & Reliability Test**

Variable	<i>Item to Item Correlation <math>\geq 0.2</math></i>		<i>Item to Total Correlation <math>\geq 0.5</math></i>		Cronbach Alpha	Remarks
	Min	Max	Min	Max		
<b>eKYC</b>	0.372	0.535	0.509	0.638	0.793	Valid & Reliable
<b>Transaction Monitoring</b>	0.491	0.694	0.608	0.726	0.869	Valid & Reliable
<b>Cost &amp; Time</b>	0.359	0.694	0.513	0.659	0.807	Valid & Reliable
<b>Competency</b>	0.299	0.839	0.620	0.708	0.891	Valid & Reliable
<b>Awareness</b>	0.482	0.656	0.597	0.730	0.863	Valid & Reliable
<b>Money Laundering Prevention</b>	0.416	0.656	0.545	0.706	0.830	Valid & Reliable

**Table 2. Hypothesis Test**

Model	Unstandarized Coefficients		Standardized Coefficients	t	Sig.
	B	Standard Error	Beta		
(Constant)	-175	0.914		-191	0.848
eKYC	0.009	0.054	0.009	0.168	0.866
Transaction Monitorong	0.252	0.060	0.246	4.211	0.000
Cost & Time	0.241	0.055	0.242	4.363	0.000
Compentecy	0.137	0.037	0.209	3.689	0.000
Awareness	0.232	0.058	0.224	4.015	0.000