The Role of Reg Tech and Bank Employees' Competency and Awareness in Preventing Money Laundering: Ethical Culture as a Moderator

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المستخلص :

الغرض من هذه الدراسة هو توضيح كيفية تأثر برامج منع غسيل الأموال لدى البنوك عندما تتبنى وتنفذ التطورات التقنية التنظيمية، كما يوضح ايضا دور كفاءة موظفي البنوك ووعيهم على كفاءة برامج منع غسيل الأموال. كما تتطرق الدراسة إلى دور الثقافة الأخلاقية داخل البنك كمتغير معدل للعلاقة. تم جمع البيانات الأولية لهذه الدراسة من خلال استبيان تم تنفيذه بواسطة نماذج جوجل وتوزيعه على موظفي البنوك وخاصة الذين تتعلق طبيعة عملهم بإجراءات غسل الأموال. قام مائة وثلاثون مشاركًا من الصناعة المصرفية المصرية بملا الاستمارات. وتم تحليل البيانات باستخدام التحليل الوصفي، وتم اختبار الفرضيات باستخدام نموذج المعادلة الهيكلية. ووفقاً لنتائج التحليل، تم تعزيز وتحسين جهود البنوك لمنع غسيل الأموال من خلال استخدام التطورات التقنية التنظيمية، كما أن لتوعية موظفي البنوك تأثير إيجابي على منع غسيل الأموال. الاعتبارات الأخلاقية في البنوك تعزز العلاقة بين التطورات التقنية التنظيمية ومنع غسيل الأموال. تساعد استنتاجات الدراسة البنوك في فهم فعالية حلول التطورات التقنية التنظيمية، وزيادة معرفة المصرفيين بالتقنيات الناشئة، وإعطاء المنظمين نظرة ثاقبة حول إمكانات التطورات التقنية التنظيمية لوقف غسيل الأموال.

الكلمات المفتاحية: التطورات التقنية التنظيمية - غسيل الأموال – إجراءات مكافحة غسيل الأموال – التوعية – الكفاءة

Abstract:

The purpose of this study is to demonstrate how banks' money laundering prevention programs are affected when they adopt and implement RegTech advances and by the role of banks' employees' competency and awareness. Also the study delves into the moderating role of an ethical culture within the bank. The primary data of this study was collected through an questionnaire developed by google forms and distributed among Banks' employees especially whose work related with money laundering procedures. One hundred and thirty respondents from Egyptian's banking industry provided the data.The data were analyzed using descriptive analysis, and the hypotheses were tested using Structural Equation model. According to the analysis's findings, banks' efforts to prevent money laundering are strengthened and improved by RegTech, also the banks employees' awarness has a positive impact on preventing money laundering. The Ethical considerations in banks strength the relationship between Regtech and money laundering preventing. The study's conclusions will aid banks in comprehending the efficacy of RegTech solutions, increase bankers' knowledge of emerging technologies, and give regulators insight into RegTech's potential to stop money laundering.

Keywords: Regtech- Money Laundering – Anti Money Laundering Procedures- Awareness- Competency

Introduction:

Money laundering is a significant issue for financial systems and banking due to its detrimental effects on the economy and society. It is the practice of utilising cash to help conceal the source of funds by combining legal and illegal payments (Cox, 2014). Sanitising money through financial institutions is the main goal of money laundering (Kurniawan, 2023).Also money laundering undermines the integrity of the financial sector by siphoning off capital from the formal economy and reducing overall tax revenue. This tendency coincides with the rise in global trade, the financial system's expansion, the lowering of obstacles to financial transactions, and the rise in foreign travel. The amount of money estimated to be globally laundered in a single year is between 2 and 5% of the world's gross domestic product (GDP); the precise quantity of money laundered is hard to pin down because it is a covert practice (UNODC, 2022).Financial institutions especially banks are the primary tool used by money launderers to clean up their proceeds (Chukwuemerie, 2006; Ofoeda et al., 2020). Three processes can be used to process money laundering: placement, which involves bringing illicit funds into the legal financial

system; layering, which involves moving the funds around to confuse the situation and detach them from their criminal source; and integration, which involves reintroducing the money into the economy in a way that makes it seem as though it came from legitimate sources.Therefore, it is crucial for financial institutions to implement robust measures and anti money laundering controls to detect and prevent money laundering activities.

Banks are in need of tools to help them comply with legal requirements and minimise reputational and regulatory concerns. Regulatory technology is the tool at hand. It is a branch of fintech that concentrates on technological advancements that speed the completion of financial transactions and make it easier to comply with regulations in a more effective and efficient manner than they can now (Anagnostopoulos, 2018). Financial institutions can employ regulatory technology to automate procedures and adhere to anti-money laundering laws. (Demetis & Angell, 2006). RegTech can save the cost of financial institutions to a great extent. Traditional KYC involves manual labor and is a time-consuming process. For customer due diligence, the bank has to assign an employee to fill the CDD form or conduct a customer interview. With RegTech solution, the customer's identity can be checked by matching it with the database

records. If there is a match, the customer is asked to submit the documents.(Turki et al.2020)

Money laundering is a complex issue that involves a number of transactions, and it takes a while to convert black money into white. Criminals and terrorist organizations are using cheap but effective ways to accomplish their goals. Due to the diversity of the methods used in laundering activities, it is not possible for banks to detect and prevent those activities with outdated KYC and AML methods. That's why they need RegTech solutions to detect and investigate suspicious activities.

AML officers, the bank employees who are dealing with anti money laundering, are essential in identifying money laundering and fulfilling their responsibilities. They are the first to receive information on new money laundering and crime-related newsletters as well as rules, policies, or typologies. Viritha & Mariappan (2017) and Latif & Rahman (2018) claimed that the implementation of anti-money laundering prevention is hampered by a shortage of knowledgeable personnel. Effective personnel management affects anti-money laundering implementation efficacy (Bahrin et al., 2022). Providing pertinent education and training on the newest technology, new financial instruments, rules, and laws, as well as the capacity to spot illicit activity in the digital economy, is essential to maintaining staff knowledge (Vaithilingam & Nair, 2007).

Bankers' awareness and competency are crucial for money laundering to be prevented, but this is dependent on whether or not the bankers know what to look for or what the red flags of money laundering are. That was indeed the case for Allied Irish Bank, which has been penalised €2.3 million by the central bank of Ireland for noncompliance with anti-money laundering (AML) and anti-terror funding legislation. This resulted in an unacceptable risk of its operation being used to launder money and its failure to provide the Commission with suspicious transaction reports. If there is no emphasis on training the competencies of all staff, it will be difficult to monitor and bridge the 'gap' which money launderers will take advantage of. Furthermore, with high staff turnover and movements within banks, it is especially difficult to spread the competency in money laundering prevention, since the process will be a continuous cycle of educating new staff.

Ethical culture is also mentioned in both the Wolfsberg Group and Basel Committee papers in relation to preventing money laundering. Ethical culture is an element of organizational culture that has been shown to influence employee behavior. National integrity system studies repeatedly mention the importance of fostering ethical values in order to prevent corruption. People might fall into a variety of ethical traps that support or condone unethical financial practices. The idea of

ethical traps is defined by Robert Hoyk and Paul Hersey as follows: "The influence of the situation often overpowers the influence of personality." Every one of us has the potential to become unethical, even if we start out with solid ethical ideals (Hoyk & Hersey, 2008). When the victim is unknown, it can be one factor in people's decision to commit or disregard a crime. For the majority of its activities, money laundering has indirect victims. The moral impact of a crime on a person is lessened when they are unaware of its consequences. They do not realise the harm they cause, whether it is a bank employee funnelling dirty money through their system, a politician ignoring the illegal conduct, or an officer taking a bribe. According to Hoyk and Hersey, this is the ethical trap known as the faceless victim.

So this research tries to investigate these two key factors that can strengthen banks' anti-money laundering (AML) efforts: regulatory technology (RegTech), bankers' competency and awareness. It tries to explore how RegTech, with its data analysis and automation capabilities, can augment human expertise in identifying and reporting suspicious transactions. The paper further examines the importance of bankers' knowledge and understanding of ML schemes to effectively utilize RegTech and raise red flags. Also, this research delves into the moderating role of an ethical culture within the bank. A strong ethical culture emphasizes integrity

and compliance, which can influence how bankers apply RegTech and their awareness of ML to suspicious activity.

Literature Review:

Regtech:

The term "regtech" was originated to describe solutions that leverage innovation and technology. According to many earlier studies, businesses can acquire a competitive edge in the future by utilising technology to support regulatory management, comprehend regulatory evolution, and identify chances for innovation.

RegTech refers to the use of technology in regulatory processes (Baxter, 2016). Also Zabelina et al. (2018) defined RegTech as a collection of regulatory technologies that assist organisations in continuously adhering to the ever-changing legal requirements and offer financial institutions dependable, secure, and cost-effective ways to boost their efficiency in that area. Recommendations from financial regulators advocating the use of technology in anti-money laundering efforts to enhance institutional cohesion and coherence sparked the RegTech movement, (Butler & Brooks, 2018). Singh et al. (2022) indicated that employing smart technology solutions can help comply with regulations, decrease risk, and be successful in preventing financial crimes.

RegTech is widely recognized as having significant potential to streamline the process of monitoring and enhancing regulatory compliance (Yang & Tsang, 2018). Nevertheless, there are a limited number of studies that investigate the effectiveness of money laundering prevention in the banking sector of developing countries in relation to RegTech (Turki et al., 2020)

By confirming customer identities and managing transactions, RegTech helps stop money laundering and terrorist financing (Zabelina et al., 2018). A case study was conducted in Bahrain by Turki et al., aimed to test the effectiveness of preventing money laundering in the banking industry using three drivers which are electronic know-your-customer (EKYC), transaction monitoring (TM), and cost and time efficiency (CT) as drivers of money laundering prevention.The results indicated that EKYC technology was not a significant driver of money laundering prevention.

Chen et al. (2018) have identified numerous components of KYC that can be implemented to mitigate the issue of money laundering. RegTech has a tendency to modernize KYC processes, enhance risk mitigation, and support outmoded information technology systems when it is applied to anti-money laundering (Vaithilingam et al., 2015). Kurum (2020) argued that the most effective approach for Financial Institutions to address financial risk and crime is to implement the most advanced technology.

Additionally, there is a robust correlation between the sophistication of money laundering methods and the implementation of comprehensive compliance programs. E-KYC is considered capable of encouraging. Additionally, money laundering-based monitoring techniques have been implemented to supervise money laundering (Chao et al., 2019). Financial institutions can take action to stop money laundering as soon as money laundering activities are discovered. To combat money laundering, governments from a variety of countries implement preventive mechanisms, such as automated monitoring systems (Tertychnyi et al., 2022). Machine learning technology, which is more effective in terms of systems, controls, and practices, can be employed by banks to monitor transactions (Chen et al., 2018).

Another study conducted by Meiryani et al. (2022) on AML-CFT in Indonesian banks discovered that the implementation of RegTech can reduce costs, expedite the process, and aid banks in the monitoring, reporting, and compliance with regulations related to the prevention of money laundering and terrorism financing. In accordance with this argument, this investigation concentrates on the correlation between RegTech and preventing money laundering on, with a specific emphasis on one of the developing nationsWhich is Egypt. Egupt is ranked 81th among 152 countries as a country at risk of money laundering and terrorism financing by the Basel Institute on Governance (2023). So this leads to the first research hypostheis:

H1: Regulatory Technology has significant positive impact on preventing Money Laundering

This study measures RegTech using three variables in consistent with the previous literature: (1) Electronic Know Your Customer (EKYC), Transaction Monitoring (TM), and Cost and Time Efficiency (CT) embedded in RegTech. The respondent's perspective is also taken into account when measuring the efficacy of Preventing Money Laundering (PML), the dependent variable.

Awareness:

Awareness is the ability to acquire precise and comprehensive knowledge of a subject, it is defined by Carden et al., 2022 as the comprehension of an individual's perceptions and thoughts. The government should not be the sole entity responsible for the more effective and efficient prevention of money laundering. It is crucial that there is a robust understanding of anti-money laundering among bankers and customers (Viritha B. &Mariappan V., 2016; Nobanee & Ellili, 2018). Zolkafil et al. (2015) discovered that compliance levels are influenced by awareness of money laundering, as it enables individuals to comprehend the methods used to launder money and the repercussions they have on society and the economy. Nobanee & Ellili (2018) argued that heightened awareness of money laundering threats can lead to more proactive and

effective compliance efforts. A study by the UiTM Institutional Repository (2023) further explored this issue, examining the competency and awareness levels of Malaysian banking compliance officers. In general, the results indicated that compliance officers' lack of awareness will influence the perception of compliance (Zakaria et al., 2022). So, the second hypothesis is developed as:

H2: Awareness has significant positive impact on preventing Money Laundering

Competency:

An individual's capacity to complete tasks is substantially influenced by their level of competence (Ahmad Tarmizi, Zolkaflil et al., 2022). Several studies have emphasized the importance of competency in money laundering prevention. The level of compliance in the implementation of anti-money laundering programs is influenced by competence (Ahmad Tarmizi, Zolkaflil, et al., 2022).

According to the research conducted by Usman Kemal (2014), there is a negative correlation between money laundering prevention and training in institutions. Dusabe (2016) disclosed that individuals employed in the anti-money laundering sector require knowledge and skills to fulfill regulatory obligations. The implementation of an anti-money laundering program can be

adversely affected by a lack of knowledge regarding anti-money laundering obligations and limited resources (Subbotina, 2009). According to Teichman in Zakaria et al. (2022), compliance officers who undergo training that emphasizes criminal perspectives can anticipate and prevent criminal activities. The degree of compliance with anti-money laundering programs is contingent upon the level of competence (Ahmad Tarmizi et al., 2022).

Vaithilingan and Nair (2007) also indicated that in order to sustain and enhance human capital skills, it is necessary to provide ongoing education and training. For instance, this may involve the integration of the most recent financial instruments, regulations, and policies, as well as the capacity to identify and monitor illegal behavior (Ahmad Tarmizi et al., 2022). This leads to the third hypothesis:

H3: Competency has significant positive impact on preventing Money Laundering

Ethical Culture:

Although RegTech provides an extensive range of advantages, the ethical culture of organizations may reduce its influence on the success of AML. A dedication to ethical decision-making and compliance can be fostered by a robust ethical culture that is defined by accountability, transparency, and integrity. Research has demonstrated that organizations with

strong ethical cultures are more likely to adopt and effectively implement RegTech tools. Conversely, a lack of a robust ethical culture may result in the underutilization or misuse of technology, which could impede AML initiatives. The relationship between ethical culture, RegTech and money laundering preventation is complicated and multidimensional, as a robust ethical culture can improve the adoption and effectiveness of RegTech by fostering trust in the technology and motivating employees to use it responsibly. In contrast, RegTech's advantages may be undermined by an environment in which employees are under pressure to manipulate data or make corners, which is a result of a weak ethical culture.

There is litte literature on the impact of the firms' ethics culture on money laundering prevetion. A study done by Jared H. Constantine, 2021 suggested that businesses can implement a variety of strategies to mitigate unethical conduct and avert scandals in order to combat work cultures that prioritize conformity and corruption. Fostering open communication at all levels of the organization is the most critical strategy, as it encourages individuals to report unethical actions. It is imperative to establish and rigorously adhere to a comprehensive code of conduct, as it serves as a formal mechanism for addressing misconduct without fear of repercussions and guides expected behavior. Furthermore, businesses must explicitly define their ethical obligations and underscore that their

objectives transcend mere financial gain. By emphasizing the severe effects of unlawful activities, companies can discourage employees from engaging in unethical behavior and highlight the importance of avoiding money laundering. This leads to these hypotheses:

H4: Ethical Culture has significant positive impact on preventing Money Laundering

H5: Ethical culture significantly moderates relationship between Regulatory technology and preventing Money Laundering

Research Methodology:

The investigation was carried out using a quantitative methodology. Because bank personnel are aware of and knowledgeable about preventing money laundering, this study focused on them. Employees in the banking industry receive frequent education and training regarding the significance of preventing money laundering. As a result, they will be able to identify how regulatory technology affects the fight against money laundering. To adequately represent the population, the study's sample size consists of 130 bank employees from a variety of banking-related professions, with a primary concentration on experts in preventing money laundering.

Descriptive Statistics:

The aim of this research section is to examine the demographic information gathered from the first portion of the questionnaire.

Table (I): Frequency Table for Demographic Variables

Variable	Categories	Frequency	Percentage
Gender	Female	109	76.2
	Male	34	23.8
Firm age	25-34	24	16.8
	35-45	44	30.7
	45-54	41	28.7
	65 and above	34	23.8
Position	Executive Leadership	67	46.9
	Risk Management	9	6.2
	Operations	20	14.0
	Others	47	32.9
Years of Experience in the Banking Industry	1-5 years	7	4.9
	6-10 years	27	18.9
	11-15 years	26	18.1
	16-20 years	13	9.1
	More than 20 years	70	49.0
Size of the Bank	Medium (100-500 employees)	9	6.3
	Large (more than 500 employees)	134	93.7

Source: Calculations based on sample collected through surveys using SPSS 26

The data shows that 76.2% of the respondents were female, while 23.8% were male. This indicates a majority representation of females in the sample. The distribution of firm age indicates that the majority of the respondents' firms fall within the age ranges of 35-45 and 45-54, comprising 30.7% and 28.7% of the sample, respectively. The data suggests that a significant portion of respondents have more

than 20 years of experience in the banking industry, comprising 49.0% of the sample, while fewer respondents have 1-5 years of experience (4.9%).

Confirmatory Factor Analysis:

Confirmatory Factor Analysis (CFA) is employed to validate hypothesized factor structures within observed data. Its primary aim is to confirm whether the number of factors and their associated loadings align with theoretical expectations. CFA assesses model fit, estimates factor loadings, and evaluates construct validity, ensuring that each observed variable accurately reflects the intended latent construct. Additionally, CFA facilitates the comparison of competing models, helping to determine the most appropriate representation of the data's covariance structure. This rigorous approach ensures the reliability and validity of the measurement models used in research.

Table (II): Reliability and Validity analysis

Variables	Items	Loadings	Outer VIF	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Awareness	A1	0.818	2.617	0.868	0.904	0.654
	A3	0.821	3.579			
	A4	0.896	3.666			
	A5	0.666	2.244			
	A6	0.825	3.549			
Competency	C1	0.939	2.255	0.681	0.825	0.617
	C2	0.725	1.814			
	C3	0.665	1.339			

Ethical Culture	**EC1**	0.901	3.639	0.875	0.915	0.731
	EC3	0.896	3.729			
	EC5	0.896	2.556			
	EC6	0.712	1.444	0.605	0.785	0.552
Preventing Money Laundering	**MLP1**	0.857	1.259			
	MLP2	0.652	1.149			
	MLP3	0.706	1.249	0.893	0.921	0.701
Regtech	**RT10**	0.823	2.203			
	RT11	0.842	2.403			
	RT2	0.835	2.891			
	RT6	0.793	2.414			
	RT9	0.891	3.189			

Source: Calculations based on sample collected through surveys using SmartPLS 3

The Cronbach alpha is greater than 0.6 for each variable. As it is a reliability coefficient and a measure of the internal consistency, this shows how the statements are reliable and internally consistent (Taber, 2018). The validity is measured through composite reliability and average variance extracted. As composite reliability is greater than 0.7 and average variance extracted is above 0.5, thus the statements are also valid (Purwanto, 2021). The Outer VIF is a measure of multicollinearity and since each of the remaining statements were found to be less than five, there is no duplication in the meaning of the statements (Hair, 2019). It can be observed, some statements regarding Regulatory technology were eliminated due to the high multicollinearity. All the loadings are required to be higher than 0.6 such that it stays retained (Wong, 2013).

Table (III): Inner VIF values for the variables in the study

	Awareness	Competency	Ethical Culture	Preventing Money Laundering	Regtech
Awareness				2.73	
Competency				4.753	
Ethical Culture				3.61	
Preventing Money Laundering					
Regtech				3.034	

Source: Calculations based on sample collected through surveys using SmartPLS 3

All the VIF values are below five, indicating that there is no severe multicollinearity among the factors. Although the predictors are somewhat correlated, their levels of correlation are within acceptable limits and no corrective measures will be required (Hair, 2019). Thus, the structural equation model assumption is not violated.

Table (IV): Fornell-Larker Criterion for discriminant validity analysis

	Awareness	Competency	Ethical Culture	Preventing Money Laundering	Regtech
Awareness	0.809				
Competency	0.762	0.785			
Ethical Culture	0.733	0.735	0.855		
Preventing Money Laundering	0.737	0.74	0.741	0.743	
Regtech	0.716	0.779	0.728	0.729	0.837

Source: Calculations based on sample collected through surveys using SmartPLS 3

The Fornell-Larcker criterion was employed to establish discriminant validity. In accordance with the recommendation by Afthanorhan et al. (2021), the square root of the Average Variance Extracted (AVE) exceeded the correlation coefficients with other constructs. Therefore, the factors are discriminately valid.

Structural Equation Model

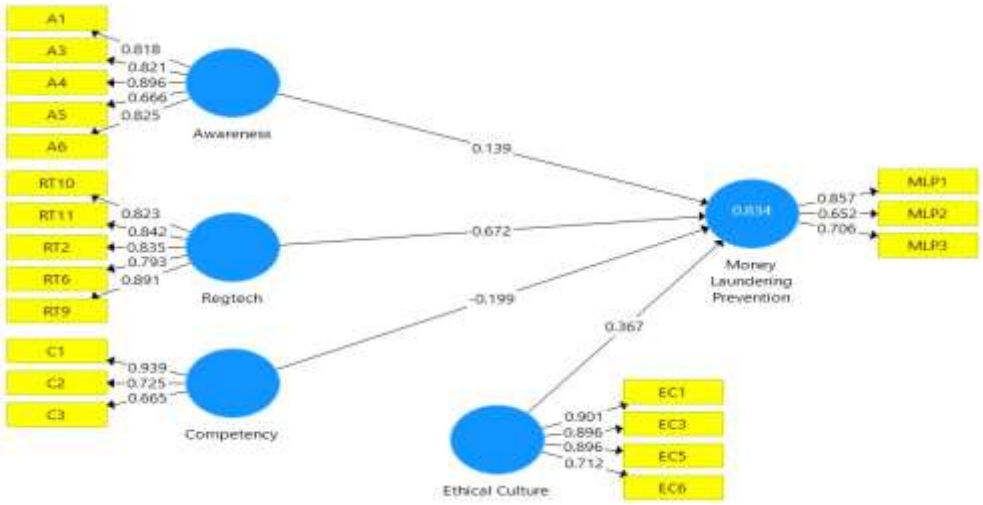

Figure (I): Structural Equation Modelling for the phenomenon
Source: Calculations based on sample collected through surveys using SmartPLS 3

Figure I shows the structural equation model and the relationships between the variables. The model shows how the loadings of each statement is greater than 0.6. It also shows how

awareness, regulatory technology, competency and ethical culture affect the preventing money laundering process.

Table (V): Path coefficients for structural Equation Model

	Original Sample	Standard Deviation	T Statistics	P Values
Awareness -> Preventing Money Laundering	0.139	0.055	2.526	0.012
Competency -> Preventing Money Laundering	-0.199	0.07	2.834	0.005
Ethical Culture -> Preventing Money Laundering	0.367	0.048	7.68	0
Regtech -> Preventing Money Laundering	0.672	0.065	10.368	0

Source: Calculations based on sample collected through surveys using SmartPLS 3

Awareness had positive significant impact on *preventing Money Laundering* at 95% confidence level. At 99% confidence level, ethical culture and regulatory technology had positive significant impact on *preventing Money Laundering*. It is clear that regulatory technology has the highest influence in preventing money laundry. At 99% confidence level, competency have a negative significant impact on prevention of money laundry. The results give an indication that ethical culture may be a moderator in relationship of regulatory technology and *preventing Money* Laundering

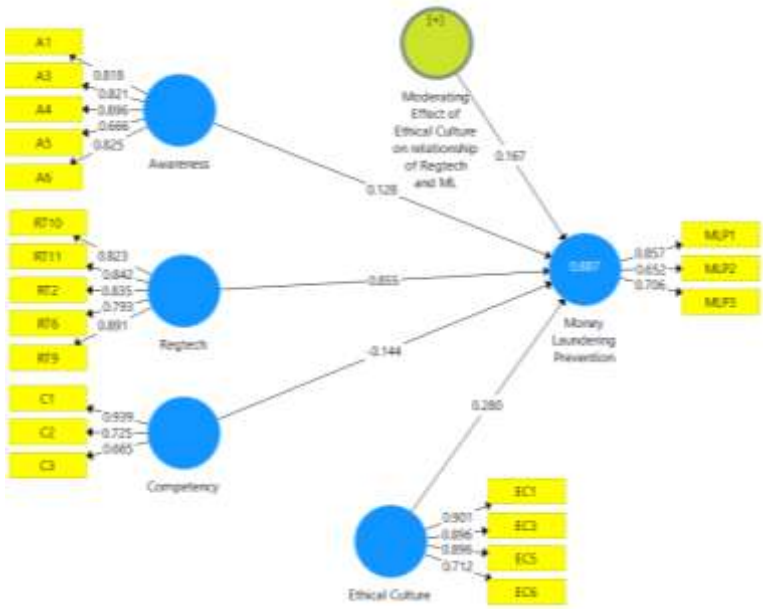

Figure (II): Structural Equation Modelling for the phenomenon
Source: Calculations based on sample collected through surveys using SmartPLS 3

Figure II shows the structural equation model and the relationships between the variables when the moderator was added. It shows how all the factors included along with the moderating effect of ethical culture on the relationship between regulatory technology and Preventing Money Laundering

Table (VI): Path coefficients for structural Equation Model

	Original Sample	Standard Deviation	T Statistics	P Values
Awareness -> Preventing Money Laundering	0.128	0.049	2.641	0.009
Competency -> Preventing Money Laundering	-0.144	0.062	2.319	0.021
Ethical Culture -> Preventing Money Laundering	0.28	0.045	6.165	0
Reg tech -> Preventing Money Laundering	0.855	0.073	11.782	0
Moderating effect of Ethical culture				
Moderating Effect of Reg tech and ML -> Preventing Money Laundering	0.167	0.026	6.538	0

There is a significant positive influence of awareness on Preventing Money Laundering at 99% confidence level. This shows that awareness increase would result in preventing money-laundering activities. Regarding competency, it has a negative significant impact on preventing money laundering. As competency of Banks officers grow, it is likely to know how to manipulate the financial accounts and ease the money laundry, and here comes the importance of the ethical culture of banks. Ethical culture and regulatory technology have positive influence on money laundry at 99% confidence level. Ethical culture significantly moderates the relationship between regulatory technology and money laundry. Therefore, it strengthens the relationship between them. Regulatory technology had higher impact on money laundry when moderator is present as β increased from 0.672 to 0.855.

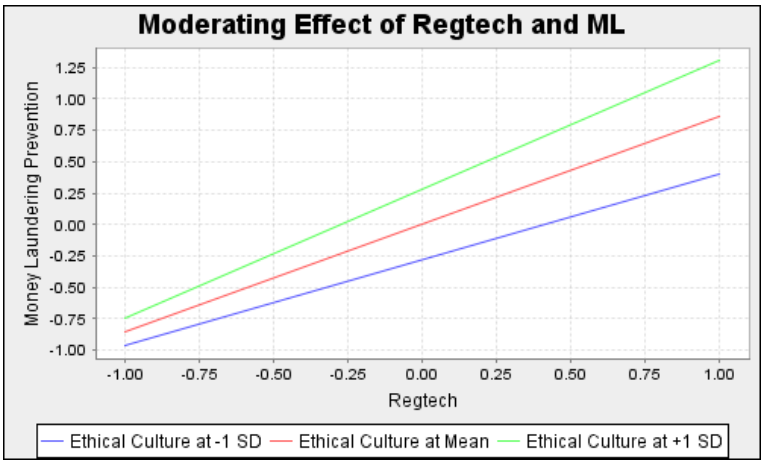

Figure (III): Chart for moderating effect of ethical culture in relationship between regulatory technology and preventing money laundering

The graph suggests that both regulatory technology and ethical culture play significant roles in enhancing money-laundering prevention. Specifically, the combination of high ethical culture and strong regulatory technology implementation leads to the greatest effectiveness in preventing money laundering. Conversely, lower levels of ethical culture diminish the effectiveness of regulatory technology in combating money laundering. Thus, organizations should strive to foster an ethical culture alongside implementing advanced regulatory technologies to maximize their anti-money laundering efforts.

Table (VII): Model Evaluation metrics

	SSO	SSE	Q^2 (=1-SSE/SSO)	R Square	R Square Adjusted
Model without moderators	546	309.445	0.433	0.834	0.83
Model with moderators	546	293.86	0.462	0.887	0.884

The model explains around 83.4% of the variation in preventing money laundering based on awareness, competency, ethical culture and regulatory technology. Adding a moderator to the model improve the model performance, such that 88.7% if variation in preventing money laundering can be explained by the model. Q^2 is a measure of the model's predictive relevance. A Q^2 value greater than zero indicates the model has predictive relevance, while a value less than zero indicates it does not. The Q^2 value for preventing money laundering is 0.462 after adding moderator, indicating the model has predictive relevance for this construct (Purwanto, 2021).

Summary of testing hypotheses

Hypothesis	Decision
Regulatory Technology has significant positive impact on Preventing Money Laundering	Accepted
Awareness has significant positive impact on Preventing Money Laundering	Accepted
Competency has significant positive impact on Preventing Money Laundering	Rejected
Ethical Culture has significant positive impact on Preventing Money Laundering	Accepted
Ethical culture significantly moderates relationship between Regulatory technology and Preventing Money Laundering	Accepted

Conclusion and Discussion

The purpose of this research was to examine the impact of implementing the regulatory technology or RegTech that includes three features: e-KYC, transaction monitoring, also cost

& time and the Anti money laundering (AML) bankers' competency and awareness in preventing the money laundering in Egyptian. It looks at how RegTech can support human skill in spotting and reporting questionable transactions by using its data analysis and automation capabilities. The study goes into more detail on how crucial it is for bankers to comprehend and be aware of ML schemes to use RegTech efficiently and identify warning signs. This study also explored the moderating function of the bank's ethical culture. Integrity and compliance are prioritized in strong ethical cultures, and this might have an impact on how bankers apply RegTech and their knowledge of ML to questionable activities.

According to Table 5, the Awareness variable has a t-value of 2.526 and a p-value of 0.009. It implies that the Prevention of Money Laundering is positively impacted by Awareness. The study's findings align with previous studies undertaken by Viritha and Mariappan, 2017, Dujovski and Mojsoska, 2019, Zakaria et al., 2022 and Veranto Kurniawan, 2023). In expose crime and get ready to cope with it, awareness is a preventative measure that can ultimately help to lower crime (Magalla, 2017). According to Raghavan (2006), bank workers need to incorporate compliance into their everyday job and raise their level of risk-related accountability and awareness (Isa et al., 2015).

Also, table 5 shows that Competency variable has a significant negative impact on preventing money laundering with a p-value of 0.021. The result of this hypothesis is in contrary with previous studies (Usman Kemal, 2014; Dusabe, 2016; Ahmad Tarmizi, Zolkaflil, et al., 2022; Bahrin et al., 2022; and Veranto Kurniawan, 2023) which showed that the ability to detect money laundering operations requires competence, and banks utilize training to continuously improve staff members' money laundering detection skills. This result may be due to some reasons as that competent bankers might be involved in more complex financial operations, making it harder to detect sophisticated money laundering schemes. Or that Competent bankers might face internal pressures to prioritize profitability over compliance, leading to a negative impact on preventing money laundering. Or sometimes Competent bankers might be overconfident in their abilities and overlook subtle signs of money laundering.

Ethical considerations and culture have a significant positive impact on preventing money laundering. As ethical behavior encourages truthfulness, accountability, and transparency in financial transactions, it is crucial for effective AML compliance. Banks can cultivate a culture of integrity by upholding ethical standards, which improves their capacity to recognize and stop money laundering activities (Reidel, 2023). Ensuring ethical behavior guarantees that AML compliance

initiatives are motivated by a dedication to honesty, equity, and conformity to the greatest standards of professional behavior. Financial institutions can retain public trust in the financial system and enhance the overall efficacy of AML compliance by adhering to ethical norms.

Also, the results showed that ethical culture significantly moderates the relationship between regulatory technology and money laundry. Therefore, it strengthens the relationship between them. Regulatory technology had higher impact on money laundry when ethical culture exists in banks.

Research Implications and Future Work

The findings of this study can be used as guidance by banks and regulators to begin adopting Regtech and as ongoing training to raise the understanding and competence of all bank employees. To avoid money laundering, all parties must maintain their collaborative efforts in accordance with the anti-money laundering framework.

We recommend the financial institutions to establish a robust ethical framework for AML compliance as it is crucial to successfully address ethical challenges. This framework ought to provide clear regulations that specify the ethical obligations of staff members. Furthermore, it is crucial to promote an ethical culture and raise understanding of ethical concepts through

thorough instruction and continuing learning. Institutions should shield leaks from penalties by offering secure, open routes for staff members to report unethical activity. Establishing mechanisms for unbiased supervision guarantees compliance with moral guidelines and facilitates the identification of immoral behavior. Finally, it is critical to establish an anonymous hotline where clients, stakeholders, and staff can report suspected violations of ethical standards.

Further research can incorporate other variables in the future to ascertain their impact on the prevention of money laundering. Also, a follow-up study could replicate this one, but it would concentrate on a smaller group of people: the banking employees of a certain number of Egyptian banks, with the goal of determining how responses vary throughout these institutions.

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