Mitigating money laundering through technological and regulatory strategies

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Abstract. The main purpose of this research is to examine the technological and regulatory strategies to mitigate money laundering worldwide. Due to money laundering being a serious financial crime affecting several institutions, economies and countries globally, the researcher intends to gather the technological and regulatory strategies in order to limit and combat money laundering. A mixed research method is used by the researcher to collect both quantitative data through questionnaires and qualitative data through secondary research case studies. Eventually, the data is merged and mutually supported to obtain a suitable interpretation of the overall findings. In this study, there are five different variables which impact the mitigation of money laundering significantly, namely, improve anti-money laundering policy, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence. The quantitative data was collected from registered professional accountants in Mauritius and the qualitative data was collected from five different case studies relating to each of the independent variables mentioned. The relationship between the five independent variables and their influence on the mitigation of money laundering is assessed through the Statistical Package of the Social Sciences (SPSS) software. The findings revealed that all the variables have a significant relationship with the mitigation of money laundering. The conclusion discussed in this study expresses that it is the responsibility of every country to continuously adopt and develop better technological and regulatory strategies in mitigating money laundering.

Keywords: Money Laundering, Improve Anti-Money Laundering, Structured Employee Training, Data Analytics, Suspicious Transaction Reporting, Customer Due Diligence

1 Introduction

For about 2000 years, money laundering has been present over the world and it continues to be prevalent in today’s era where it has become even difficult if not as difficult to mitigate. Based on some government sources, cash between $800 billion and $2 trillion is laundered annually. This statistic already demonstrates the urgent need to find and enforce strategies to mitigate money laundering as much as possible. Figure 1 which shows the increase in economic crime from 2016 to 2018 further reinstates the fact that money laundering only
keeps growing and growing. But what is this inescapable phenomenon known as money laundering?

Money laundering, in its simplest term, is a process which converts money obtained unlawfully into money that is considered legitimate. Such economic crime is generally conducted by concealing the illicit profits from the police force officials through the use of elaborate and complex financial transactions that takes place globally. In this way, offenders are able to spend money without having to worry about being caught since the dirty money has been “washed”. If they would have spent the illegal money as it is, it would have arisen the risk of the police tracking down that unlawful cash transactions and linking those transactions back to the offenders. The money would then have been seized and the criminals would have been sentenced to prison (O’Connell, 2019).

Fig. 1. The Reported Increase In The Rate Of Economic Crime By Region.

The dependent variable of this research study is money laundering. In the book “Lords of the Rim” by Sterling Seagrave, it is said that money laundering originated back when Chinese merchants would conceal their income from the rulers who would snatch their money for themselves. These merchants would then move the money in other far provinces or outside of China and reinvest their smuggled cash in other businesses, a practice which is still used today (KYC-Chain, 2019).

In the early 1900’s, certain historians related money laundering to criminals such as Al Capone who is believed to have hired Laundromats (an intricate system or organisations which assist their clients in hiding money received illegally) to deal with the illegal money and integrate it with revenue from legal businesses (O’Conelle, 2019). Anti-Money Laundering regulations were developed in 1970 in order to unravel laundered money via U.S banks, as part of the Currency and Foreign Transactions Recording Act (which is generally known as the Bank Secrecy Act) (Paxton, 2015).

Nowadays, money laundering still poses as a great problem all over the world. One example can be the funnelling of € 200 billion in 2018 through a local branch in Estonia by Denmark’s largest bank, Danske Bank. Between 2007 and 2015, 15,000 nonresident customers were allegedly engaged in doubtful transactions where the bank thought that their AML policies were mitigating the increased risks denoted by the non-resident customers which were obviously not the case (Kyc-chain, 2019). This only fuels the importance of formulating and enforcing proper technological and regulatory strategies to mitigate money laundering.

This research study comprises of five independent variables namely: Improve AML policies, Structured employee training, Data analytics, Suspicious transaction reporting and,
Customer due diligence. From the first two paragraphs itself, we can note that it is fundamental to strengthen strategies to mitigate money laundering. The first strategy is to improve AML policies. According to Prof. Dr. Brigitte Unger (2020), the European Parliament, the European Commission and others have proposed some measures to improve AML policies which are: Using blacklisting to detect high risk countries, Investigating letterbox or shell companies and Making use of regulations to harmonise European Union (EU) AML policies.

The second strategy is about structured employee training. Every organisation should have a formal training program to educate their employees about the companies’ internal and external AML polices as well as on what actions to take if they come across a scenario of money laundering. Communication will be the key component of this structured training course as it will serve as a way of sharing vital information among the employees, the employers and the authorities (Sherman, 2018).

According to EY Global (2019), data analytics such as Artificial Intelligence (AI), natural language processing, machine learning and cognitive automation can be used to reduce money laundering. These progressive data and analytics methods may enhance the Know Your Customer (KYC) process, improve the authorisations concerning performance screening and observe transactional activity which may help in effectively detect the risks and opportunities of money laundering.

Suspicious Transaction Reporting (STR) can be the fourth strategy in combatting money laundering. The STR is the foundation of the international AML or Combating the Financing of Terrorism (CFT) framework. Since the quality of STRs contrasts considerably between countries, it is crucial to improve the overall effectiveness of STRs (Braun et al., 2016). The suspicion is usually evaluated according to a risk-based approach for transaction and behavioural monitoring, real time payment screening and analysing the previous records of customers. Based on the Financial Intelligence Act (2001), some other factors of STRs are uncommon organisations, familiarity of reporting and record keeping requirements, identification and report threshold.

The fifth strategy to mitigate money laundering is Customer Due Diligence (CDD). This is where a customer life cycle will be thoroughly analysed from the background to the main alterations over time while conducting regular reviews. It is fundamental for companies to know their customers in depth so as to prevent being taken advantage of from money launderers (Low, 2020).

The research study on ‘Mitigating money laundering through technological and regulatory strategies’ will be focused on different cases and scenarios available and present all over the world. Issues and solutions will be taken from various countries to provide a better and more representative insight for this research study.

2. Literature Review

2.1 Money Laundering

After examining some base theories, a general overview of money laundering will be outlined where the main focus will be on the steps used in money laundering. The growth of money laundering is spread over three stages namely: Placement, Layering and Integration. The first stage involving placement is where money earned illegally should be conducted through the financial system as the primary objective of money launderers. This objective can be carried out in various ways, for example: Numerous money orders bought and used as legal cash, Money disbursed via many banks or brokerage accounts, at little amounts, Illegally-obtained
assets hidden in shell companies established by money launderers, and many more (O’connell, 2019).

The second step is layering where money is starting to be moved around fiercely by money launderers, either in a direct or indirect way, into several financial accounts such as a bank or business account. This step is formulated in order to mislead investigators into discovering the genuine source of cash. At this level of money laundering process, cash may be exchanged in larger or smaller quantities by money launderers so as to better evade detection. Usually, money is wired via multiple financial accounts worldwide through the layering stage in order to “rinse” the cash fully (O’connell, 2019).

Integration is the third stage where withdrawing cash from the layering step and using it as authorised currency without attracting attention from law enforcers is the objective. Therefore, from this point, money launderers have the freedom to use the money as they wish since tracing the flow of money has been made complex by adopting this whole three stage money laundering process. However, in order to mitigate money laundering, the measures to be taken by law enforcement investigators are not based on a step-by-step procedure, specifically when dealing with larger amounts. The three stages explained, generally, overlapped or the placement step is even circumvented. This is what turns identifying and mitigating money laundering schemes even more difficult (O’connell, 2019).

Based on Unger et al. (2006), the objective of the study was to present a wide outline of the amounts and effects of money laundering that have been approximated up until now. The major findings was that between €3.2 and €4.2 billion of money is laundered in the Netherlands only, while for laundering purposes from the top 20 countries producing money for laundering, €14 to €21 billion flow into the Netherlands. Moreover, the research concludes that money laundering is a financial crime that can lead to even more criminal activities and thus, raising awareness on money laundering is fundamental. Therefore, the following paragraphs below will highlight the strategies to mitigate money laundering which are: Improve AML policies, Structured employee training, Data analytics, STR, and CDD.

### 2.2 Improve AML policies

Unger (2020) provided an overview of the identification of high-risk jurisdictions, discussed the probabilities to decrease money laundering via letterbox/shell organisations, and eventually, analysed if, instead of directives for AML policy, regulations would be more efficient. In order to identify high-risk countries, the EU methodology was based on the work of the FATF but focused to criteria that are essential in EU legislation. The key finding was that there should be a suggestion for a European intelligence unit for multiple reasons. Some of them are: After the Covid-19 pandemic, online crime and tax evasion will rise; The executive will not be equipped with costly Information Communication & Technology (ICT) specialists due to a lack of means from countries; and For handling internet crimes, the executive in the Member State is not trained enough. The sufficiency of information in the lawful and advantageous ownership registers could be monitored by the European intelligence unit. Moreover, track of modifications in laws of EU Member States concerning money laundering and tax evasion could be kept by the unit and the AML tool proposed by the Combatting Fiscal Fraud and Empowering Regulators (EUCOFFERS) project could be updated.

According to prior studies, the researchers are carrying out the outcome for the relationship between improving AML policies and money laundering. Therefore, this research is conducted to determine the hypothesis of $H_{A1}$.

| $H_{A1}$ | There is a relationship between improving AML policies and the mitigation of money laundering worldwide. |
2.3 Structured Employee Training

Smith (2020) determined the ways by which AML investigators’ Perception of Investment in Employee Development (PIED) from their AML company impacts Affective Organisational Commitment (AOC) inside the AML profession. Moreover, the methods by which the insights of AML investigators concerning PIED and AOC differ by gender, age, size of company, tenure in AML profession, or job level, is examined in the research. A cross-sectional mixed method strategy is used via an online, self-reported survey of 74 participants inside the profession of AML. In addition, from the survey, 15 participants was involved in a semi-structured interview procedure to investigate in more detail about the perceptions and importance of development opportunities of AML investigators in their AML companies and about the ways these opinions affect commitment to the AML company. The outcome obtained was that there was a great favourable correlation between PIED and AOC within the AML career. Furthermore, PIED and AOC were substantially different between job levels, even though there was not huge changes between age, tenure in the AML profession groups, gender, or size of company.

According to prior studies, the researchers are carrying out the outcome for the relationship between structured employee training and money laundering. Therefore, this research is conducted to determine the hypothesis of $H_{A2}$.

| $H_{A2}$ | There is a relationship between structured employee training and the mitigation of money laundering all around the world. |

2.4 Data Analytics

Singh and Best (2019) demonstrated the viability of identifying possible money laundering activities according to visualisation of financial transactions. The objective is the provision of a set of potential fixed trials or examinations that envisage a subgroup of financial transactions (AUSTRAEC, 2014). The use of link analysis (Wasserman and Fraust, 1994) to picture bank transactions impacting an entity is proposed by this research. This can help in detecting irregular transaction patterns which may be present in money laundering. For the authorisation of this strategy, the designing of a prototype application, known as AML ink, has been documented in this study along with feedbacks received from professionals. The stages of task analysis, system development, implementation and testing are included in the involvement of the prototype development approach (Tory and Moller, 2004). The effectiveness of the use of visualisation through data analytics for the determination of doubtful money laundering activities is the conclusion highlighted by this research. In order to demonstrate the implementation of such methods, the practicality of applying cheap, open-source software was also studied.

According to prior studies, the researchers are carrying out the outcome for the relationship between data analytics and money laundering. Therefore, this research is conducted to determine the hypothesis of $H_{A3}$.

| $H_{A3}$ | There is a relationship between data analytics and the mitigation of money laundering worldwide. |

2.5 Suspicious Transaction Reporting

Braun et al. (2016) analysed STR levels based on the evaluation of several factors by combining lawful and economic techniques. The explanation of factors for a particular level
of reporting is less known despite the fact that the amount of these reports is significantly different. Therefore, facilitating the appraisal of STR outlines is the objective of this research. A panel data set containing 54 countries from 2006 to 2012 was set up and the researchers conducted regression analysis to examine the hypotheses. The possibility of countries publishing their STR numbers will be majorly depended upon when selecting the countries. Thus, extremely variable economies from every continent are included in the sample. For example: 28 OECD countries, Some middle-income countries like India, Philippines or Senegal, Large countries like U.S, extremely small countries like Malta, and 9 Jurisdictions categorised as tax havens. The finding obtained was that the number of STR is considered to rise due to the possibility of predicate crimes in national criminal law, along with a consequence system for nonconformity with the requirements under national AML legislation. On the other side, the likelihood of stimulation of over-reporting is because of excessively severe penalty regimes and inadequate training of entities. Therefore, high rates of illegal activities like terrorism and organised crime have been demonstrated by high STR numbers, and short-term raise in the amount of STR is entailed when there is common measurement of countries’ AML framework.

According to prior studies, the researchers are carrying out the outcome for the relationship between data analytics and money laundering. Therefore, this research is conducted to determine the hypothesis of H₄

<table>
<thead>
<tr>
<th>H₄</th>
<th>There is a relationship between STR and the mitigation of money laundering worldwide.</th>
</tr>
</thead>
</table>

2.6 Customer Due Diligence

Mugarura (2014) critically examined CDD to possibly attempt of binding it as a worldwide AML paradigm. The development of systems to handle money laundering has become normal to be undertaken together by either states or regulatory entities. Global AML laws have been greatly increased over the past 20 years to nurture international collaboration against money laundering and its subsequent offenses. In the same manner, local AML laws formulated with additional territorial dimension being adopted by some states can act as prevention against the dangers of money laundering where CDD might be the key to enhance a global AML model. Primary and secondary data sources were used in this study. Examples of primary data were the examination of applicable provision of diverse AML regulation like BSA (1970), MLCA (1986), PATRIOT (2001) Act in the USA, FSMA (2000), and POCA (2002) in the UK. Examples of secondary data were: academic text books, journal papers, electronic sources (websites of AML agencies), policy, and research papers from specialist institutions like FATF. The conclusion of this research was that CDD is a fundamental AML evaluation which requires to be updated and to be carefully applied to relate across the board.

According to prior studies, the researchers are carrying out the outcome for the relationship between data analytics and money laundering. Therefore, this research is conducted to determine the hypothesis of H₅

<table>
<thead>
<tr>
<th>H₅</th>
<th>There is a relationship between CDD and the mitigation of money laundering worldwide.</th>
</tr>
</thead>
</table>

3 Conceptual Framework

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>Research Questions</th>
</tr>
</thead>
</table>


AML Policies: Laws preventing criminals from concealing money obtained illegally as legitimate income.

<table>
<thead>
<tr>
<th>a. Using blacklisting to detect high risk countries.</th>
<th>b. Investigating letterbox or shell companies.</th>
<th>c. Making use of regulations to harmonise European Union (EU) AML policies.</th>
</tr>
</thead>
</table>

What is the impact of diverse AML policies in reducing money laundering worldwide?

Structured Employee Training: A course of study or training that allows an employer to place an employee on a training rate of pay for the duration of the course.

<table>
<thead>
<tr>
<th>a. Formal training programme.</th>
<th>b. Actions to be taken when encountering a case of money laundering.</th>
<th>c. Communication</th>
</tr>
</thead>
</table>

How structured employee training affects the prevention of money laundering worldwide?

Data Analytics: The science of analysing raw data in order to make conclusions about that information.

|-----------------------------|---------------------------------|---------------------|------------------------|

Is there any impact of data analytics on minimising money laundering worldwide?

Suspicious Transaction Reporting: When a transaction is believed to be related to criminal activity based on reasonable grounds.

<table>
<thead>
<tr>
<th>a. Transaction and behavioural monitoring.</th>
<th>b. Real time payment screening.</th>
<th>c. Analysing the previous records of customers.</th>
</tr>
</thead>
</table>

What is the impact of accurate STRs in lowering money laundering worldwide?

Customer Due Diligence: The processes used by financial institutions to collect and evaluate relevant information about a customer or potential customer.

<table>
<thead>
<tr>
<th>a. Qualitative background checks on customers.</th>
<th>b. Quantitative background checks on customers.</th>
<th>c. Conducting regular reviews on customers.</th>
</tr>
</thead>
</table>

Is there any impact of the sufficiency of background checks for CDD in mitigating money laundering worldwide?

4 Research Methodology

In order to produce answers to research questions, a researcher needs to formulate a plan for collecting, measuring and analysing information. This can be represented in a research design. The suitable choice for data collection techniques and analysis procedures will be able to be identified by the researcher by consulting the research onion developed by Saunders, Lewis, & Thornhill (2016). A research onion is commonly used in various areas of study to construct a theoretical research framework. According to Melnikovas (2018), a clear and reasonable research design can be developed by researchers with the help of a research onion. The research onion can be shown in the diagram below as figure 2.

A mixed method research design was used to study the technological and regulatory strategies to mitigate money laundering worldwide. This basic research is based on pragmatism philosophy. A theory and hypotheses are formulated with both an inductive and deductive approach for this cross-sectional study. The quantitative data will focus on
Mauritius. According to Mauritius Institute of Professional Accountants, there are, as of present, 3581 registered professional accountants in Mauritius. The Raosoft Sampling Calculator is adopted to identify the ideal sample size of accountants where the ideal sample size recommended is obtained at 67. It is to be noted that at the end of the data collection, a total of 74 responses were received. For the instrumentation of the qualitative data, 5 case studies worldwide connecting to each of the different independent variables is gathered and examined.

5 Results, Findings and Discussion

5.1 Reliability Test

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Number of Items</th>
<th>Likert Scale</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve AML Policies</td>
<td>5</td>
<td>1 - 5</td>
<td>0.852</td>
</tr>
<tr>
<td>Structured Employee Training</td>
<td>5</td>
<td>1 - 5</td>
<td>0.810</td>
</tr>
<tr>
<td>Data Analytics</td>
<td>5</td>
<td>1 - 5</td>
<td>0.806</td>
</tr>
<tr>
<td>Suspicious Transaction Reporting</td>
<td>5</td>
<td>1 - 5</td>
<td>0.842</td>
</tr>
<tr>
<td>Customer Due Diligence</td>
<td>5</td>
<td>1 - 5</td>
<td>0.886</td>
</tr>
</tbody>
</table>

The purpose of the reliability test is for the evaluation of the dependability of data distributed and for the determination of whether the results obtained are continuously consistent. Thus, the consistency of each variable is measured through the reliability test by using the Cronbach Alpha index that will precisely ascertain if the questions input in the questionnaire are reliable and valid (Creswell, 2014). It is fundamental to follow the policy of Cronbach Alpha where the outcome of the test is specifically mentioned to be in numeric values between 0 and 1 only and where the reliability of the data supplied is significantly considered to be >0.70 or <0.90. A low number of questions leading to poor relation between them are implied for any results below 0.70. On the other hand, a high number of questions leading to an eventual redundancy are associated with any results above 0.90. The reason behind this, based on Creswell (2014), is due to the Cronbach Alpha being deduced primarily according to the length of test and questionnaire data dimensionally.

Based on table 1, the Alpha value for each independent variables, improve AML policies, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence are 0.852, 0.810, 0.806, 0.842, and 0.886 respectively. This signifies that all the independent variables are greater than 0.7 which satisfy the standard range of Cronbach’s Alpha, thus providing acceptable values for proving reliability.

5.2 Normality Test
Based on Creswell (2014), SPSS produce descriptive statistics which can be described as the summarization of the data collected in terms of its central tendency, variability and normality deviation connected to all the variable distribution. Skewness and kurtosis is more emphasized, where the distribution asymmetry is measured by the skewness and the extent to which there is distribution of value around the middle point is measured by the kurtosis. Generally, the normality values are considered as acceptable between -2 and +2, which are also accepted as favorable for the skewness and kurtosis measurements.

According to table 2, it can be observed that all the values of the independent variables and dependent variable are favorable as the statistics of skewness and kurtosis are within the range of -2 and +2. The dependent variable which is money laundering is acceptable as it has -0.285 for skewness and 0.390 for kurtosis. The skewness and kurtosis for improve AML policies are -1.068 and 1.330 respectively, -0.595 and 0.158 respectively for structured employee training, -0.144 and 0.459 respectively for data analytics, -0.155 and -0.053 respectively for suspicious transaction reporting, and -0.255 and -0.072 respectively for customer due diligence. Moreover, the most important in this questionnaire is improve AML policies as it scored the highest value of mean at 19.9459 whereas the lowest value of mean is data analytics at 16.9459.

5.3 Pearson Correlation Coefficient Test

In order to obtain the relationship between two variables such as the dependent and independent variables, the concept of Correlation is utilized through carrying out the Pearson Correlation Coefficient Test where the Bivariate Index measuring the strength and direction of linear relationship between two variables is used. One of some of the fundamental requirements to be adhered to while interpreting the results produced by the test is that the results should be between -1 and +1. If the values are closer to +1, a high positive relationship between the two variables is indicated, thus signifying that when one variable increases, the other variable also increases, and vice versa. On the contrary, a high negative relationship is indicated if the values are closer to -1, thus signifying that when one variable increases, the other variable decreases, and vice versa. Subsequently, there is no relationship if the values are close to 0. Aside from the Pearson Correlation r value, the significance of the relationship can be determined via the value of Sig (2-tailed). There is no significance in the relationship between two variables if the Sig (2-tailed) value is higher than 0.05. On the opposite, the relationship is significant if the value derived is lower than 0.05.

Table 3. Results of Pearson Correlation Test between DV and IVs Correlations. Correlation is significant at the 0.01 level (2-tailed). Source: Primary Data.
Table 3 demonstrates that there is a positive correlation of 0.638 between the DV which is money laundering and the IV which is improve AML policies, as the value is above 0 where it leans towards +1. This can be implied that the improvement in AML policies is able to express the mitigation of money laundering with 63.8%. This positive correlation is indicated to be highly significant because it is supported by Sig (2-tailed) value of 0 which is lower than 0.05.

The second IV which is structured employee training has a correlation coefficient of 0.724 which is considered to be a largely positive correlation. Furthermore, since the Sig (2-tailed) value is 0 which is lower than 0.05, the relationship between structured employee training and money laundering is significant.

There is a largely positive correlation between data analytics and money laundering with data analytics having a correlation coefficient of 0.636 along with a Sig (2-tailed) value of 0 which is lower than 0.05, thus implying a significant relationship between the variables.

A largely positive correlation coefficient of 0.738 for suspicious transaction reporting is shown in table 3 which is the strongest relationship with money laundering among all the IVs. This can signify that the suspicious transaction reporting explains 73.8% towards the mitigation of money laundering where there is a significant relationship between both variables since the significance level of the correlation is 0.

The fifth IV which is customer due diligence has a largely positive correlation coefficient of 0.683. In addition, since the Sig (2-tailed) value is 0, there is a significant relationship between customer due diligence and money laundering.

### 5.4 Multiple Linear Regression Test

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.820*</td>
<td>.673</td>
<td>.649</td>
<td>1.87521</td>
</tr>
</tbody>
</table>

Pallant (2013) explains that the multiple correlation coefficient value obtained from the difference between real and estimate value of the DV is represented by R. This signifies that it is evaluating the quality of prediction of the DV. It is important for the R value to be within the range of -1 to +1, where a positive relationship is implied for values nearer to +1, and a negative relationship is implied for values nearer to -1. Based on table 4, the R value is 0.820
which reveals that there is a positive relationship between the variables due to the value being above 0, thus leaning towards +1. In addition, it is expressed by Pallant (2013) that the coefficient of determination which is the proportion of variance in the DV communicated by the IVs is represented by the $R^2$ value. In table 7, the $R^2$ value is shown to be 0.673 meaning that the five different IVs are able to explain 67.3% of the DV in the research and the remaining 32.7% of the DV can be positively influenced by multiple other factors. Thus, it can be defined that there is a significant correlation between the mitigation of money laundering and the IVs which comprise of improve AML policies, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence.

Table 5. Analysis of Variance (ANOVA). Source: Primary Data.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>491.261</td>
<td>5</td>
<td>98.252</td>
<td>27.941</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>239.117</td>
<td>68</td>
<td>3.516</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>730.378</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: MTotal
b. Predictors: (Constant), DTotal, ATotal, PTotal, TTotal, RTotal

The influence that IVs have on the DV under the regression analysis is determined by the Analysis of Variance (ANOVA). The amount of variance in the DV is resembled in the Regression Sum of Squares, while the Residual Sum of Squares symbolize, for instance similar to the residue of a solution which normally is not taken into consideration after the regression model has been adopted. The Total Sum of Squares embodies the addition of Regression and Residual Sum of Squares which characterize the total sum of variance in the DV (Pallant, 2013).

The abbreviation of df is for ‘degree of freedom’ which is used to address the number of IVs. By subtracting 1 from the number of variables (df=n-1), we can obtain the calculation of df. Table 9 demonstrates that the Regression df is 5 (df: 6-1=5) meaning that the degree of freedom is generated by 6 variables that are the 5 IVs (improve AML policies, structured employee training, data analytics, suspicious transaction reporting, and money laundering), and 1 DV (money laundering). The Residual df is based on the sample size obtained from the total responses of 74 where there is a deduction of the 6 variables from the sample size to receive 68 (74-6=68). The 68 is the residue. The sum of Regression is the Total df and the Residual df is 73 which is 1 less than the sample size of 74 due to the subtracted 1 from the number of variables (df=n-1). According to this analysis of the df, a positive relationship between sample size and df value can be implied, where, as sample size increases, the df value increases as well.

In 1918, Ronald Fisher invented ANOVA where the F represents the name Fisher. The F value is a ratio (F-Ratio) which conveys whether the selected regression model is suitable for the data analyzed. Table 5 depicts 27.941 as the F-ratio which is obtained from the division between the value of Regression of Mean Square with the value of Residual of Mean Square (98.252/3.516=27.941).

The significance level of ANOVA is represented by the Sig. value which should be less than or equal to 0.05 so that the relationship between IVs and DV can be considered as significant and for the null hypothesis to be rejected. This is supported by table 5 where the Sig. value is shown to be 0.000 which is lower than 0.05 indicating a significant relationship between the improvement of AML policies, structured employee training, data analytics, suspicious transaction reporting, customer due diligence and the mitigation of money laundering in Mauritius. Hence, the null hypothesis should be rejected.
6 Qualitative Findings

For the purpose of data collection, 5 case studies from secondary research worldwide were selected, each relating to the independent variables of this study namely, improve AML policies, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence respectively. These secondary research case studies collected will help to better understand the perceptions of the technological and regulatory strategies of mitigating money laundering worldwide. All of the case studies were gathered from recent years ranging from 2019 to 2022 through online journals on websites such as Google Scholar, ResearchGate, Emerald, ScienceDirect, and others.

The collection and analysis of data was conducted by using thematic analysis where themes were identified within the data. The data gathered was manually transcribed into text form and were studied to verify if they match with the research objectives. During the analytical and interpretation process, the data from the secondary research case studies is compared with the primary data obtained from the questionnaire where recurring and/or new themes are produced from the technological and regulatory strategies to mitigate money laundering in Mauritius and worldwide.

6.1 Case Study 1: Improving Anti Money Laundering Policy (2020)

The first case study titled ‘Improving Anti Money Laundering Policy’ by Prof. Dr. Brigitte Unger (2020) is examined and compared with the first independent variable which is ‘Improve AML Policy’. In this case study, four measures, discussed by the European Parliament, the European Commission and others to improve anti-money laundering policy, are evaluated. Such measures are through the identification of high-risk countries via blacklisting, the reduction of laundering via letterbox or shell organizations, the harmonization of EU ANL policies via regulations, and the strengthening of the European executive, for instance, via a European public prosecutor, a European FIU, a European supervisor, or a European police during Covid-19 as well. The link for this case study can be accessed here: http://www.amlfincrime.com/pdf/IPOL_STU(2020)648789_EN.pdf

6.2 Case Study 2: Perceived Investment in Employee Development and its Relationship with Affective Organizational Commitment among AML Investigators (2020)

The second case study titled ‘Perceived Investment in Employee Development and its Relationship with Affective Organisational Commitment among AML Investigators’ by Jamillah Smith (2020) is examined and compared with the second independent variable which is ‘Structured Employee Training’. In this case study, the relationship between the perception of investment in employee development (PIED) from their AML company and affective organisational commitment (AOC) is examined. Moreover, the ways that the point of view of AML investigators concerning the PIED and AOC differ by age, gender, occupation in the AML profession, size of business, and job level among AML professionals is inspected in this case study. The link for this case study can be accessed here: file:///C:/Users/new%20asus/Downloads/p15323coll5_59716.pdf

6.3 Case Study 3: Anti-Money Laundering: Using Data Visualization to Identify Suspicious Activity (2019)

The third case study titled ‘Anti-Money Laundering: Using Data Visualisation to Identify Suspicious Activity’ by Kishore Singh and Peter Best (2019) is examined and compared with
the third independent variable which is ‘Data Analytics’. In this case study, the use of visualisation strategies that may contribute in efficiently identifying patterns of money laundering activities is explored. The methods through which technological and data analytical instruments such as link analysis and a prototype application called AML2ink is demonstrated in this study, where suspicious bank transactions may be detected by link analysis and proof-of-concept purposes can be achieved through AML2ink. The link for this case study can be accessed here: https://doi.org/10.1016/j.accinf.2019.06.001

6.4 Case Study 4: The Impact of Anti-Money Laundering Oversight on Banks' Suspicious Transaction Reporting: Evidence from Italy (2019)

The fourth case study titled ‘The Impact of Anti-Money Laundering Oversight on Banks' Suspicious Transaction Reporting: Evidence from Italy’ by Mario Gara, Francesco Manaresi, Domenico J. Marchetti and Marco Marinucci (2019) is examined and compared with the fourth independent variable which is ‘Suspicious Transaction Reporting’. In this case study, the initial in-depth exploration of the effect of AML inspections on the reporting of suspicious transaction of banks is provided by using intricately detailed data from the Bank of Italy and UIF (the Italian AML authority). Information on on-site inspections by authorities and follow-up actions, along with the quantity and quality of suspicious transactions reports being filed by banks before and after inspections are included in these data. The link for this case study can be accessed here: file:///C:/Users/new%20asus/Downloads/SSRN-id3433072.pdf

6.5 Case Study 5: Interaction effects of professional commitment, customer risk, independent pressure and money laundering risk judgment among bank analysts (2022)

The fifth case study titled ‘Interaction effects of professional commitment, customer risk, independent pressure and money laundering risk judgment among bank analysts’ by Zuraidah Mohd-Sanusi, Yusarina Mat-Isa, AhmadHaziq Ahmad-Bakhtiar, Yusri Huzaimi Mat-Jusoh, Tarjo Tarjo (2022) is examined and compared with the fifth independent variable which is ‘Customer Due Diligence’. In this case study, the direct and indirect effects of professional commitment, customer risk and independence pressure on money laundering risk judgement (that is, customer due diligence and money laundering reporting) among bank analysts is researched. The link for this case study can be accessed here: https://www.emerald.com/insight/content/doi/10.1108/JMLC-05-2021-0046/full/html

7 Hypothesis Testing

| Table 6. Hypothesis Testing Results. Source: Primary Data. |
|------------|------------------|-----------------|
| HYPOTHESES | RESULTS          |
| H1         |                  |
| H01        | There is no relationship between improving AML policies and the mitigation of money laundering worldwide. | Rejected |
| HA1        | There is a relationship between improving AML policies and the mitigation of money laundering in worldwide. | Accepted |
| H2         |                  |
| H02        | There is no relationship between structured employee training and the mitigation of money laundering worldwide. | Rejected |
| HA2        | There is a relationship between structured employee training and the mitigation of money laundering worldwide. | Accepted |
| H3         |                  |
| H03        | There is no relationship between data analytics and the mitigation of money laundering worldwide. | Rejected |
There is a relationship between data analytics and the mitigation of money laundering worldwide. Accepted

There is no relationship between STR and the mitigation of money laundering worldwide. Rejected

There is a relationship between STR and the mitigation of money laundering worldwide. Accepted

There is no relationship between CDD and the mitigation of money laundering worldwide. Rejected

There is a relationship between CDD and the mitigation of money laundering worldwide. Accepted

According to table 6, it is concluded that independent variables such as improve AML policies, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence showed a significant relationship with the mitigation of money laundering worldwide. The methods used to test hypothesis are resulted to the significant relationships. Hence, all the five hypothesis statements are accepted.

8 Recommendations

Based on the article of the Special Issue ‘The Anticorruption Protocol to the United Nations Convention against Corruption (APUNCAC)’, new FATF recommendations have been proposed in order to increase the effectiveness in combatting money laundering and to impose more severe sanctions on this global issue (Yeh, 2022). Thus, such recommendations are presented and further developed in this chapter to accommodate this study which is ‘Mitigating Money Laundering through Technological and Regulatory Strategies’.

The first recommendation is the Beneficial Owner Reporting Rule where the beneficial sender and the beneficial recipient are required to digitally confirm ownership when funds exceeding USD 3000 are transferred. Moreover, individuals assisting with those transactions are required to submit those confirmations to a centralised Financial Crimes Enforcement Network (FINCEN) database (Yeh, 2022).

The second recommendation is a FINCEN database to be created by using the FINCEN of the US Treasury Department as model but where the new centralised FINCEN database is operated by the United Nations. Beneficial owner information would be recorded in this database serving as a central source along with every covered financial transaction, thus facilitating the investigation and prosecution of financial crime (Yeh, 2022).

A third recommendation is about imposing stricter penalties comprising of imprisonment, debarment, and fines for individuals who do not respect the APUNCAC AML rules, and individuals who are cooperative for the isolation of debarred individuals. Arrests are possible if the jurisdiction of any of the 189 nations that are parties to the United Nations Convention against Transnational Organised Crime (UNTOC) are travelled to by suspects. Extradition of a suspect from the jurisdiction of another party can be requested by any party in the context of the requirements of UNTOC being violated. These requirements include the proper identification of customers and maintenance of records for the objective of detecting and preventing money laundering.

We can conclude the recommendations section with a quote reflecting this research by Wang Zhaowen, spokesman for the Bank of China, “The clampdown on money laundering and corruption is the common responsibility of all the countries in the world.”

9 Limitations and Further Research

One limitation is that this research of mitigating money laundering through technological and regulatory strategies merely embraces five IVs including improve AML policies, structured
employee training, data analytics, suspicious transaction reporting, and customer due diligence. These IVs are not enough in evaluating the strategies in reducing money laundering. It is vital to employ more detailed information and thorough research to improve findings for further research. Moreover, the demographic section should comprise of other more precise information such as marital status, income level, employment sector and others in order to properly add value to the subject studied. In addition, much more secondary researches by previous investigators across the years should be included to make sure that there is more significance in the literature review and relevance to future research.

Another limitation is about the sample size of respondents which should be increased to obtain more accurate results for the research. In this study, only 74 respondents were used which is insufficient in providing impressive results to this study. Therefore, future researchers should consider increasing the population so as to obtain a more defined sample size of respondents. A comprehensive conclusion would be allowed to be drawn by the researchers through a larger sample size as well as a more precise presentation of data in the study.

Although, this study focused on the strategies to mitigate money laundering worldwide, the data collected were only from Mauritius through questionnaires and merely a few countries through the case studies. Hence, more countries should be examined by future researchers in order to gain more strategies in the mitigation of money laundering as the issue of money laundering impact the whole world.

A last limitation is about the statistical analysis software and tests via SPSS used in this study. In order to achieve a more plausible, reliable and significant results for this study, future researchers are recommended to use other analytical software as well as conduct more detailed tests analysis. In this way, a more suitable perception on the technological and regulatory strategies to mitigate money laundering can be created and shared with the readers.

10 Conclusion

This research concentrates on the extent of the technological and regulatory strategies containing the improvement of AML policies, structured employee training, data analytics, suspicious transaction reporting, and customer due diligence towards the mitigation of money laundering. During the conduct of this study, it was discovered that these five IVs just mentioned have a positive and significant impact on the alleviation of money laundering. Therefore, it can be expressed that as the level of technological and regulatory strategies increase, the degree of reducing money laundering also increases.

The author of this research study weaves the ending threads of this research by presenting a quote articulated by Janet Reno, while serving as Attorney General of the United States from 1993 to 2001,

“Money laundering is a very sophisticated crime and we must be equally sophisticated.”

Janet Reno

Reference


