



Enhancing Suspicious Transaction Reporting Quality: The Mediating Role of Individual Risk Assessment in Anti-Money Laundering Program Effectiveness

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Abstract

This study examines how the effectiveness of AML programs affects the quality of suspicious transaction reporting, with a specific emphasis on the mediating impact of IRA. While existing AML frameworks frequently use reporting volume as a metric of effectiveness, new evidence reveals that such measurements may not accurately reflect enforcement outcomes. This study uses Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyze survey data from 338 banking professionals across three lines of defense. The findings suggest that the success of the AML program considerably increases reporting quality, both directly and indirectly via IRA. The mediation study reveals that IRA serves as a critical channel for linking organizational capabilities to reporting outcomes. These findings show the necessity of transitioning from volume-based metrics to quality-oriented evaluation and emphasize the impact of risk-based approaches in improving AML effectiveness.

I. Introduction

The growing sophistication of financial crimes has accelerated global efforts to tighten anti-money laundering and counter-terrorism financing (AML/CFT) systems (Adilah et al., 2023; Afriansyah et al., 2023; Jayasekara, 2021; Mekpor, 2019). Within this architecture, suspicious transaction reporting (STR) plays an important role as a major mechanism by which financial institutions contribute to the detection of illicit money flows (Dalla Pellegrina et al., 2020; FATF, 2025b; Jensen et al., 2025). The Financial Action Task Force (FATF) mandates that financial institutions identify and report suspicious transactions, making STR systems a cornerstone of preventive AML/CFT regimes globally.

Despite their critical necessity, the efficacy of STR systems is often debated. A growing amount of literature demonstrates a continuous mismatch between regulatory compliance and actual enforcement outcomes (Gara & Pauselli, 2020; Jensen et al., 2025; Levi, 2020; Unger, 2014). In particular, the number of reported transactions, which is

frequently used as a proxy for compliance, does not always reflect the quality or usefulness of those reports. As shown by Braun et al. (2016), reporting levels vary substantially across jurisdictions, and high volumes of STRs may reflect defensive reporting behavior, inefficient monitoring systems, or poorly calibrated regulatory incentives rather than genuine detection capability.

More recent empirical evidence further challenges the effectiveness of STR-based AML systems. Using cross-country panel data from the European Union, Jensen et al. (2025) find that while STR volumes and money laundering convictions may appear correlated, After controlling for country-specific and temporal factors, this association becomes statistically insignificant. This shows that the observed correlation is more likely false than causal. Furthermore, even when a relationship does exist, it has a sub-linear pattern, indicating that the marginal returns to increasing reporting are falling. These data indicate that just raising the number of STRs does not necessarily increase enforcement outcomes and may instead reflect inefficiencies within AML systems.

Collectively, these results indicate to a fundamental flaw in current AML frameworks: an over-reliance on activity-based measures, notably reporting volumes, as indications of performance. This emphasis risks encouraging excessive or low-quality reporting, thereby overwhelming financial intelligence units and limiting their ability to spot legitimately suspicious activities (Dalla Pellegrina et al., 2022; Takats, 2011). Consequently, there is a growing consensus that the focus of AML research and policy should shift from the quantity of reports to the quality of reporting outputs and the mechanisms that generate them.

In response to these challenges, the Financial Action Task Force has promoted the risk-based approach (RBA) as a core principle of modern AML frameworks (FATF, 2012). The RBA requires financial institutions to identify, assess, and manage risks based on customer characteristics, products and services, geographic exposure, and delivery channels. A key operationalization of this approach is the implementation of Individual Risk Assessment (IRA), which enables institutions to systematically evaluate and prioritize higher-risk profiles (FATF, 2025a). While IRA has become central to AML regulation, empirical evidence on its effectiveness remains limited particularly in improving reporting quality.

From a theoretical perspective, the proposed relationships can be understood by integrating Institutional Theory with the broader compliance literature. Institutional Theory posits that organizations respond to coercive regulatory pressures by adopting structures, routines, and governance arrangements that enhance organizational legitimacy (DiMaggio & Powell, 1983; Oliver, 1991; Scott, 2013). Within the AML context, these institutional responses are reflected in the development of AML programme capabilities, including governance oversight, internal control systems, monitoring infrastructure, and staff competence. However, Institutional Theory also recognises that the formal adoption of organizational structures does not necessarily ensure effective implementation. Organizations may comply symbolically with regulatory expectations while failing to embed those practices into operational decision-making processes (Berthod, 2018; Meyer & Rowan, 1997).

The compliance literature complements this perspective by explaining that regulatory effectiveness depends not only on formal compliance, but also on an organization's ability to operationalise regulatory requirements through effective internal capabilities (Ayres & Braithwaite, 1992; Weske et al., 2018). Accordingly, AML

programme effectiveness should be viewed as an organizational capability developed in response to regulatory pressure, whereas Individual Risk Assessment (IRA) represents the operational mechanism through which that capability is translated into day-to-day risk-sensitive reporting decisions. In this framework, stronger AML programmes enable financial institutions to implement risk-based assessments more effectively, resulting in suspicious transaction reports that are more consistent, complete, timely, and accurate (Braun et al., 2016; Jamil et al., 2023; Pok et al., 2014). This integrated theoretical perspective provides the conceptual foundation for the proposed mediation model by explaining how regulatory pressure is transformed into organizational capability and subsequently operationalised into reporting quality through IRA.

Despite the rising quantity of research on anti-money laundering programs, risk-based techniques, and suspicious transaction reporting, one critical conceptual question remains unanswered. Existing research has shown that effective AML programs lead to better compliance results, and that risk-based approaches increase the detection of higher-risk customers and transactions. Similarly, an increasing number of studies believe that reporting quality is a more reliable measure of AML effectiveness than reporting numbers alone. However, these research streams have generally grown separately, leaving little explanation for the organizational process that converts institutional AML competence into high-quality suspicious transaction reporting. As a result, while past research explains whether AML programs influence reporting results, they provide only a limited theoretical understanding of how this influence is operationalized within financial institutions. This unsolved conceptual gap hampers our understanding of the process by which organizational AML capability is translated into risk-sensitive reporting practices.

To close this gap, this study defines Individual Risk Assessment (IRA) as an organizational capability translation mechanism that connects AML program efficacy and suspicious transaction reporting quality. Rather than perceiving IRA solely as a regulatory requirement or a technical component of the risk-based approach, this study contends that IRA operationalizes institutional AML capabilities in day-to-day reporting decisions. Financial institutions with stronger AML programs are expected to use IRA more successfully, allowing for more consistent, complete, timely, and accurate suspicious transaction reporting. By framing IRA as an operational mechanism rather than simply an intermediary construct, this study presents a mechanism-based explanation of how organizational competence is converted into reporting quality within AML systems.

Empirically, this study examines these relationships using survey data collected from banking professionals representing the three lines of defence within Indonesian financial institutions. Although the empirical setting is drawn from an emerging economy, the proposed conceptual framework offers broader theoretical implications for understanding how AML capability is operationalised through risk-based decision-making. Accordingly, this study makes three contributions to the literature. First, it advances the AML literature by shifting attention from evaluating AML effectiveness primarily through reporting outputs to explaining the organizational process that generates reporting quality. Second, it extends the application of Institutional Theory and compliance literature by demonstrating how regulatory-driven organizational capability is translated into effective reporting practices through Individual Risk Assessment. Third, it provides empirical evidence supporting the role of IRA as the organizational capability translation mechanism linking AML programme effectiveness with suspicious transaction

reporting quality, thereby offering a more comprehensive explanation of AML effectiveness in practice.

II. Theoretical Framework and Hypothesis Development

A. AML Program Effectiveness and Suspicious Transaction Reporting Quality

The performance of suspicious transaction reporting (STR) is intimately related to the internal capacities of financial institutions. While regulatory frameworks impose reporting duties, previous research consistently reveals that compliance outcomes rely substantially on organizational capabilities rather than formal norms alone. (Bolton et al., 2016; Cindori, 2013; Gara et al., 2019; Gara & Pauselli, 2020). In particular, the quality of STR (reflected in consistency, completeness, timeliness, and accuracy) is shaped by the strength of internal AML systems, including governance, monitoring, and human expertise (Minto, 2024; Oztas et al., 2024).

From an internal control perspective, organizations with stronger control environments produce more reliable and higher-quality reporting outputs (Doyle et al., 2007; FATF/OECD, 2014; FCA, 2026). Empirical studies in financial reporting similarly show that robust internal controls and governance mechanisms reduce errors and improve reporting quality (Skaife et al., 2007). These insights are directly applicable to AML contexts, where transaction monitoring and reporting rely on complex internal processes.

In the AML literature, deficiencies in internal systems such as inadequate training, weak monitoring infrastructure, or unclear procedures, have been associated with both under-reporting and excessive low-quality reporting (Braun et al., 2016; Dalla Pellegrina et al., 2022; Takats, 2011). Excessive reporting, in particular, may reflect defensive compliance behavior rather than effective detection, leading to inefficiencies in financial intelligence units (FIUs). This aligns with broader evidence that high reporting volumes do not necessarily translate into better enforcement outcomes. These findings from previous literatures suggest that improving STR quality requires strong internal AML capabilities that enable institutions to detect and report suspicious activities effectively.

H1: AML program effectiveness positively influences suspicious transaction reporting quality.

B. AML Program Effectiveness and Individual Risk Assessment Implementation

The implementation of risk-based approaches in AML frameworks requires substantial organizational capability. Although regulators mandate the adoption of risk-based approaches, including Individual Risk Assessment (IRA), their effectiveness depends on the ability of institutions to operationalize these requirements (FATF/OECD, 2014; FCA, 2026; Jamil et al., 2023).

According to Institutional Theory, organizations respond to regulatory pressures through processes of institutional isomorphism, adopting formal structures to gain legitimacy (DiMaggio & Powell, 1983). However, such adoption may remain symbolic unless supported by internal capabilities. In regulatory compliance contexts, the concept of “decoupling” suggests that organizations may formally adopt policies without effectively implementing them in practice (Berthod, 2018; Meyer & Rowan, 1997).

In AML systems, this implies that IRA implementation is contingent upon the effectiveness of AML programs, including governance, systems integration, and staff

competence. The risk-based approach requires institutions to integrate multiple data sources, apply risk scoring methodologies, and continuously update risk profiles which are tasks that demand strong internal coordination and technical capacity (Demetis, 2018; FATF, 2012).

Empirical research also supports this view. Studies on AML compliance indicate that institutions with more developed systems and expertise are better able to implement risk-based monitoring and detection mechanisms (Ogbeide et al., 2023; Takats, 2011). Conversely, weak systems may lead to superficial or ineffective implementation of risk assessment tools. Therefore, AML program effectiveness can be expected to play a critical role in enabling the implementation of IRA.

H2: AML program effectiveness positively influences the implementation of individual risk assessment.

C. Individual Risk Assessment and Suspicious Transaction Reporting Quality

The risk-based approach represents a shift from rule-based compliance toward risk-sensitive monitoring and decision-making. By focusing on higher-risk customers, transactions, and channels, Individual Risk Assessment (IRA) aims to improve the efficiency and effectiveness of AML systems (FATF, 2025b; FATF/OECD, 2014).

From an economic perspective, risk-based approaches enhance resource allocation by reducing noise and focusing attention on high-risk signals (Becker, 1968; Polinsky & Shavell, 2000). In AML contexts, this translates into more targeted monitoring and improved detection of suspicious activities. By incorporating multiple risk dimensions (such as customer profiles, geographic exposure, and product risk) IRA enables financial institutions to refine their reporting processes.

However, the effectiveness of IRA depends on its proper implementation. Poorly calibrated risk models may lead to biased or inconsistent reporting, while well-designed systems can significantly enhance reporting quality. Prior studies suggest that risk-based monitoring improves the relevance and usefulness of STR by reducing false positives and increasing the precision of detection (Dalla Pellegrina et al., 2018, 2022; Takats, 2011).

Despite its importance, empirical evidence on the direct relationship between IRA and STR quality remains limited. This study addresses this gap by examining whether IRA contributes to improving reporting quality in practice.

H3: Individual risk assessment positively influences suspicious transaction reporting quality.

D. The Mediating Role of Individual Risk Assessment

While AML program effectiveness is expected to directly influence reporting quality, its impact may also operate through intermediate mechanisms. One such mechanism is the implementation of Individual Risk Assessment (IRA), which translates organizational capabilities into operational decision-making processes.

This relationship can be conceptualized as a capability-to-outcome transformation process, where organizational capabilities enable the effective use of regulatory tools, which in turn produce improved outcomes. In this framework, AML program effectiveness provides the structural foundation for implementing IRA, while IRA operationalizes risk-based decision-making in reporting processes.

This perspective addresses a critical gap in the literature. Existing studies have largely focused on macro-level determinants of STR or regulatory design, with limited attention to the internal mechanisms linking organizational capabilities and reporting outcomes (Ferwerda & Reuter, 2022; Gara et al., 2019; Unger, 2014). Moreover, recent evidence suggests that increasing STR volumes alone does not improve enforcement outcomes, highlighting the need to understand the mechanisms that generate high-quality reporting (Dalla Pellegrina et al., 2022; Jensen et al., 2025; Takats, 2011). By introducing IRA as a mediating variable, this study provides a more nuanced understanding of how AML systems function in practice, linking internal organizational capacity with regulatory effectiveness.

H4: Individual risk assessment mediates the relationship between AML program effectiveness and suspicious transaction reporting quality.

III. Methodology

A. Research Design and Sample

This study adopts a quantitative research design using survey data collected from banking professionals directly involved in Anti-Money Laundering (AML) functions. A purposive sampling strategy employing a key informant approach was adopted to ensure that responses were obtained from individuals possessing direct knowledge and practical experience of AML implementation within their respective institutions. Eligible respondents were required to be actively involved in organisational units responsible for AML implementation across the three lines of defence, including operational units (first line), compliance and risk management (second line), and internal audit (third line). Furthermore, respondents were instructed to complete the questionnaire based on their respective organisational roles, responsibilities, authority, and operational functions in AML implementation. This sampling strategy was considered appropriate because the constructs examined in this study (AML programme effectiveness, Individual Risk Assessment (IRA), and suspicious transaction reporting quality) require specialised organisational knowledge that is not uniformly possessed by all bank employees (Hair et al., 2022).

To enhance data quality and minimise potential common method bias and social desirability bias, several procedural remedies were incorporated into the survey design. First, respondents were assured that all responses would remain anonymous and confidential, thereby reducing evaluation apprehension and encouraging honest assessments (Podsakoff et al., 2003). Second, all measurement items were adapted from established AML literature and carefully worded to minimise ambiguity and inconsistent interpretation. Third, rather than asking respondents to evaluate hypothetical situations, the questionnaire required respondents to assess organisational practices following the implementation of Individual Risk Assessment (IRA), thereby reducing retrospective recall bias and improving response consistency.

A total of 338 valid responses were obtained, comprising 34.02% respondents from the first line of defence, 35.08% from the second line, and 30.18% from the third line. This distribution provides perspectives from all organisational layers responsible for AML implementation and strengthens the validity of the findings by capturing assessments from practitioners directly engaged in AML governance, risk management, compliance, and internal audit activities.

B. Empirical Strategy and Identification

This study adopts an embedded hierarchical component model (HCM) estimated via the repeated indicator approach to capture the inherently multidimensional nature of AML program effectiveness (AMLPE), individual risk assessment (IRA), and reporting quality (STRQR). This specification is theoretically warranted because each construct represents an integrated system of interrelated dimensions (e.g., governance, controls, systems, and human capabilities for AMLPE) that cannot be meaningfully reduced to a single first-order factor without loss of conceptual fidelity (Hair et al., 2019; Sarstedt et al., 2019). Embedding the higher-order constructs directly in the structural model allows the analysis to test relationships at the level at which theory is articulated (system → mechanism → outcome), while preserving the contribution of underlying dimensions. Consistent with PLS-SEM guidelines for reflective-reflective HCMs, we assess both indicator loadings and second-order weights, alongside reliability, convergent validity, and discriminant validity, ensuring that the higher-order constructs are statistically well-identified and empirically distinct. This approach therefore balances parsimony and theoretical richness, enabling a rigorous examination of how organizational capacity is operationalized through risk-based mechanisms to influence reporting outcomes.

All constructs are measured using a 10-point Likert scale (1 = very low, 10 = very high). The study employs a reflective-reflective hierarchical component model (HCM), where each higher-order construct is formed by multiple first-order dimensions.

Table 1. Operationalization of Variables

Construct	Dimension	Code	Description	Number of Item's	Scale
AML Program Effectiveness (AMLPE)	Active Supervision	ACTSPV	Oversight by senior management and board in AML implementation	5	Likert 1-10
	Policies & Procedures	PROCPOL	Clarity and effectiveness of AML policies and procedures	5	Likert 1-10
	Internal Control	INCTRL	Strength of internal controls in AML processes	5	Likert 1-10
	Information System	MIS	Effectiveness of transaction monitoring systems	5	Likert 1-10
	Human Resources & Training	HRTR	Competence and training of AML personnel	5	Likert 1-10

Construct	Dimension	Code	Description	Number of Item's Question	Scale
Individual Risk Assessment (IRA)	Customer Profile	CSTPR	Risk profiling based on customer characteristics	4	Likert 1-10
	Product	PRDCT	Risk associated with financial products/services	4	Likert 1-10
	Geographic	AREA	Risk related to location or jurisdiction	4	Likert 1-10
	Service Delivery Channel	SVDEL	Risk from service delivery channels	4	Likert 1-10
STR Reporting Quality (STRQ)	Consistency	CONS	Consistency in identifying suspicious transactions	4	Likert 1-10
	Completeness	CMPLT	Completeness of reported information	4	Likert 1-10
	Timeliness	TIME	Timeliness of reporting	4	Likert 1-10
	Accuracy	ACCUR	Accuracy and reliability of reports	4	Likert 1-10

The indicators associated with AMLP and STRQ are designed to capture respondents' perceptions of changes in effectiveness following the implementation of IRA. Respondents were asked to evaluate these dimensions by comparing current conditions with those prior to the adoption of individual risk assessment practices. This within-respondent comparison allows the analysis to capture perceived improvements in AML effectiveness while mitigating individual-specific bias.

C. Model Specification, Measurement Model, Estimation Method and Model Evaluation

To examine the relationships among AML program effectiveness, individual risk assessment, and reporting quality, this study specifies the following structural model:

$$IRA = \beta_1 AMLP + \zeta_1$$

$$STRQ = \beta_2 AMLP + \beta_3 IRA + \zeta_2$$

where **AMLP** represents AML program effectiveness, **IRA** denotes the implementation of individual risk assessment, and **STRQ** captures suspicious transaction reporting quality.

The indirect (mediated) effect is defined as:

$$AML P \rightarrow IRA \rightarrow STRQ = \beta_1 \times \beta_3$$

This specification allows the assessment of both the direct and indirect effects of AML program effectiveness on reporting quality. All constructs are modeled as reflective latent variables within a reflective-reflective hierarchical component model (HCM). Higher-order constructs are formed by their respective first-order dimensions using the repeated indicator approach. The model is estimated using PLS-SEM with SmartPLS 4.1.1.8.

This approach is suitable given the study's focus on prediction, the presence of hierarchical constructs, and the assessment of mediation effects (Hair et al., 2021; Sarstedt et al., 2014). Significance levels are obtained through bootstrapping (5,000 resamples). The measurement and structural models are evaluated following established PLS-SEM guidelines (Hair et al., 2021), including: (i) indicator reliability and internal consistency; (ii) convergent and discriminant validity; (iii) path significance and coefficient of determination (R^2).

The structural model was intentionally specified to examine the proposed organisational mechanism linking AML programme effectiveness, Individual Risk Assessment (IRA), and suspicious transaction reporting quality. Accordingly, the analysis focuses on testing the theoretically derived relationships rather than developing a fully predictive model incorporating all potential organisational determinants. While additional organisational characteristics may also influence reporting quality, these factors fall outside the primary theoretical scope of the present study and are therefore identified as opportunities for future research.

D. Mediation Testing

The mediating role of IRA is evaluated using a bootstrapping procedure, focusing on the significance of the indirect effect ($\beta_1 \times \beta_3$). Conceptually, IRA represents the operationalization of the risk-based approach, translating organizational AML capabilities into risk-sensitive reporting practices. In this context, AML program effectiveness provides the structural and procedural foundation (e.g., governance, systems, and expertise), while IRA functions as the mechanism that embeds risk-based decision-making into reporting processes. Following established mediation analysis procedures (Hair et al., 2021), mediation is assessed based on:

1. the significance of the indirect effect
2. the significance of the direct effect (β_2)

The mediation type is interpreted as:

- partial mediation if both direct and indirect effects are significant
- full mediation if only the indirect effect is significant

This approach enables a rigorous assessment of whether the impact of AML program effectiveness on reporting quality operates through IRA as an intermediate mechanism.

IV. Results

A. Measurement Model Assessment

1. Indicator Reliability and Second-Order Construct Evaluation

The reliability of the measurement model was assessed by examining both the outer loadings of indicators and the outer weights of first-order dimensions within the hierarchical component model. The results are presented in Table 2.

Table 2. Indicator Loadings and Outer Weights (Second-Order Model)

Indicator / Dimension	Construct	Loading	Weight
ACTSPV	AML	0.910	0.194
HRTR	AML	0.957	0.216
INCTRL	AML	0.967	0.221
MIS	AML	0.932	0.221
PROCPOL	AML	0.960	0.206
AREA	IRA	0.940	0.252
CSTPR	IRA	0.947	0.270
PRDCT	IRA	0.965	0.269
SVDEL	IRA	0.952	0.261
CONS	STRQ	0.917	0.281
CMPLT	STRQ	0.927	0.260
TIME	STRQ	0.914	0.266
ACCUR	STRQ	0.944	0.273

Source: Author's own work

The results indicate that all indicators exhibit strong outer loadings, with values exceeding the recommended threshold of 0.70 and most above 0.90. This confirms that the indicators reliably represent their respective first-order constructs.

In addition, the outer weights of the first-order dimensions are all statistically significant and relatively balanced across constructs. For AML program effectiveness (AML), the dimensions of internal control (INCTRL), management information systems (MIS), and human resources and training (HRTR) show slightly stronger contributions, suggesting that operational and system-related capabilities play a central role in shaping overall AML effectiveness.

For individual risk assessment (IRA), the weights are relatively evenly distributed across dimensions, indicating that risk assessment is implemented as an integrated process rather than being dominated by a single risk factor. Similarly, the STR quality

construct (STRQ) shows a balanced contribution across customer, product, geographic, and delivery channel risks, reflecting the multidimensional nature of reporting quality. Overall, these findings support the validity of the hierarchical component model and confirm that the higher-order constructs are well represented by their underlying dimensions.

2. Reliability and Convergent Validity

The reliability and convergent validity of the constructs were further assessed using Cronbach's alpha, composite reliability, and average variance extracted (AVE). The results are presented in Table 3.

Table 3. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
AML	0.970	0.977	0.894
IRA	0.965	0.974	0.905
STRQ	0.944	0.960	0.856

Source: Author's own work

All constructs demonstrate high internal consistency, with Cronbach's alpha and composite reliability values well above the recommended threshold of 0.70. The relatively high reliability values (above 0.90) indicate strong internal consistency among indicators, suggesting that the constructs are measured with a high degree of precision.

Furthermore, all constructs exceed the AVE threshold of 0.50, confirming adequate convergent validity. The high AVE values observed for IRA (0.905) and AML (0.894) indicate that a substantial proportion of variance in the indicators is explained by the underlying constructs. These results collectively confirm that the measurement model is both reliable and valid, providing a strong foundation for subsequent structural analysis.

3. Discriminant Validity

Discriminant validity was assessed using both the heterotrait-monotrait ratio (HTMT) and the Fornell-Larcker criterion to ensure robustness of the measurement model.

Table 4. Discriminant Validity Assessment Using HTMT and HTMT Inference

Construct	HTMT	95% CI (Lower)	95% CI (Upper)
AML - IRA	0.865	0.815	0.905
AML - STRQ	0.916	0.879	0.951

IRA – STRQ	0.885	0.844	0.922
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Source: Author's own work

Table 5. Discriminant validity: Fornell-Larcker Criterion

Construct	AMLP	IRA	STRQ
AMLP	0.945		
IRA	0.839	0.951	
STRQ	0.879	0.845	0.925

Source: Author's own work

Discriminant validity was assessed using both the heterotrait-monotrait ratio (HTMT) and the Fornell-Larcker criterion. As presented in Table 4, most HTMT values fall below the conservative threshold of 0.90. The highest HTMT value is observed between AML programme effectiveness (AMLP) and suspicious transaction reporting quality (STRQ) (HTMT = 0.916), which slightly exceeds the conservative guideline. This result is theoretically understandable because AML programme effectiveness represents the organisational capability underpinning suspicious transaction reporting, whereas reporting quality constitutes one of its primary organisational outcomes. Consequently, a relatively high degree of conceptual association between these constructs is expected without necessarily indicating inadequate discriminant validity.

To provide a more rigorous assessment, HTMT inference was examined using bootstrapped confidence intervals following the recommendation of (Henseler et al., 2015). The 95% confidence interval for the HTMT estimate between AMLP and STRQ ranges from 0.879 to 0.951, remaining below the critical value of 1.00. This result confirms that the two constructs remain empirically distinguishable despite their strong conceptual association. Furthermore, the Fornell-Larcker criterion (Table 5) consistently supports discriminant validity, as the square roots of the AVE for all constructs exceed their corresponding inter-construct correlations. Collectively, these findings provide robust evidence that the proposed constructs exhibit satisfactory discriminant validity, supporting the validity of the measurement model for subsequent structural analysis.

B. Structural Model Results

The structural model was evaluated to examine the relationships among AML program effectiveness (AMLP), individual risk assessment (IRA), and suspicious transaction reporting quality (STRQ). The results of the path analysis are presented in Table 6, while the overall structural model is illustrated in Figure 1.

Table 6. Structural Model Results

Path	Coefficient (β)	t-value	p-value
AMLP → IRA	0.839	37.293	0.000
AMLP → STRQ	0.574	9.136	0.000

IRA → STRQ	0.363	5.552	0.000
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Source: Author's own work

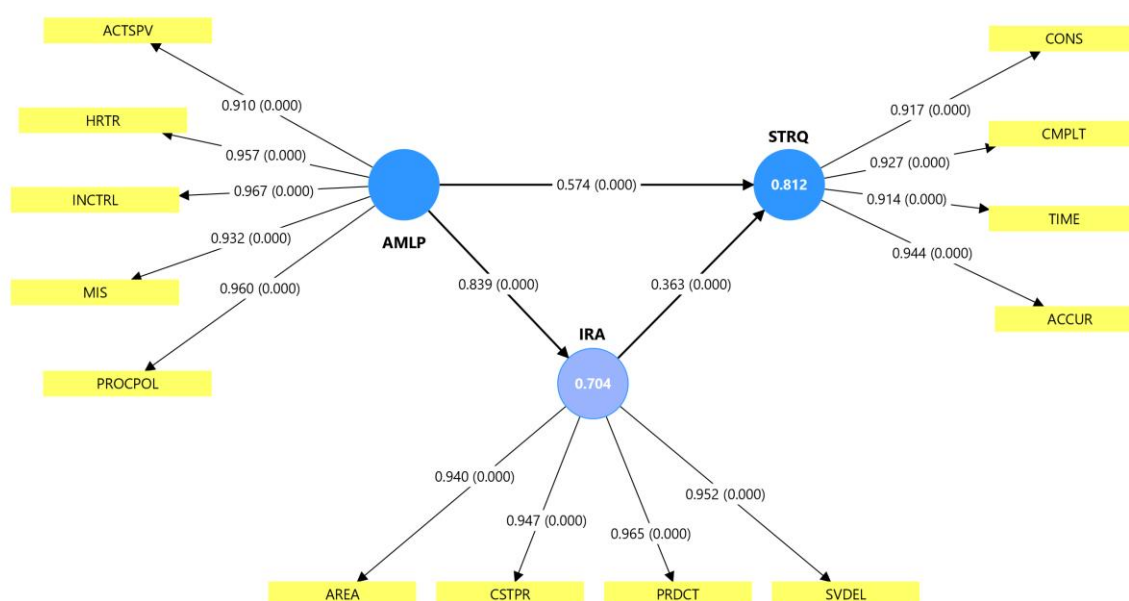


Figure 1. Structural Model with Path Coefficients

Source: Author's own work

The results as seen on Table 6 and Figure 1 indicate that AML program effectiveness has a strong and highly significant effect on individual risk assessment ($\beta = 0.839$, $p < 0.001$). This finding suggests that the implementation of risk-based approaches is largely driven by the strength of institutional AML capabilities, including governance, internal control, and monitoring systems. In other words, IRA does not operate independently, but is strongly embedded within the broader AML framework.

Furthermore, AML program effectiveness exhibits a positive and significant direct effect on STR reporting quality ($\beta = 0.574$, $p < 0.001$). This implies that stronger AML programs contribute directly to improving reporting outcomes, likely through better procedures, enhanced monitoring systems, and more competent personnel. At the same time, individual risk assessment is also found to have a significant positive effect on STR quality ($\beta = 0.363$, $p < 0.001$).

This indicates that the implementation of risk-based practices plays an important role in improving the relevance, accuracy, and consistency of suspicious transaction reporting. Importantly, the magnitude of the coefficient for IRA → STRQ is comparable to that of AMLP → STRQ, suggesting that risk-based mechanisms are not merely complementary but represent a substantial pathway influencing reporting quality.

Taken together, these findings suggest that the relationship between AML program effectiveness and reporting quality operates through both direct and indirect pathways. While AMLP directly enhances reporting quality, it also strongly influences the implementation of IRA, which in turn contributes to improved reporting outcomes.

This pattern indicates the presence of a potential indirect mechanism linking AML capabilities to reporting performance. However, the existence and significance of this

indirect effect require formal testing, which is examined in the mediation analysis presented in the subsequent section.

C. Model Explanatory Power

1. Coefficient of Determination (R^2)

The explanatory power of the structural model was assessed using the coefficient of determination (R^2). The results are presented in Table 7.

Table 7. Coefficient of Determination (R^2)

Construct	R^2
IRA	0.704
STRQ	0.812

Source: Author's own work

The results showed in Table 7 indicate that AML program effectiveness explains approximately 70.4% of the variance in individual risk assessment (IRA). This suggests that the implementation of risk-based approaches is largely determined by the strength of institutional AML capabilities, reinforcing the central role of governance, internal controls, and monitoring systems in shaping risk assessment practices. More importantly, the model explains 81.2% of the variance in STR reporting quality (STRQ), indicating a high level of explanatory power. This finding suggests that the combined influence of AML program effectiveness and IRA provides a comprehensive explanation of reporting quality within financial institutions.

From a substantive perspective, this high explanatory power implies that reporting quality is not driven by isolated or random factors, but rather by a systematic interaction between organizational capacity and risk-based mechanisms. This reinforces the conceptual argument that AML effectiveness operates through an integrated framework rather than through independent components.

2. Effect Size (f^2)

To further evaluate the relative contribution of each exogenous construct, effect sizes (f^2) were examined. The results are presented in Table 8.

Table 8. Effect Size (f^2)

Path	f^2
AML _P → IRA	2.379
AML _P → STRQ	0.519
IRA → STRQ	0.208

Source: Author's own work

The effect size results in Table 8 reveal a clear pattern in the structural relationships. The effect of AMLP on IRA is particularly large ($f^2 = 2.379$), indicating that AML program effectiveness is the dominant driver of risk assessment implementation. This finding is consistent with the strong path coefficient observed in the structural model and highlights the foundational role of institutional capacity. In contrast, both AMLP and IRA exhibit moderate effect sizes in influencing STR reporting quality. This suggests that while AML program effectiveness plays a direct role, the contribution of IRA is equally meaningful in shaping reporting outcomes. These findings indicate that reporting quality is influenced by both structural capacity and operational mechanisms, rather than being dominated by a single factor.

The combination of strong explanatory power and meaningful effect sizes provides further support for the presence of a structured relationship within the model. In particular, the strong influence of AMLP on IRA, coupled with the significant contribution of IRA to STR quality, suggests the existence of an indirect pathway through which AML program effectiveness may influence reporting outcomes. This potential mechanism is formally examined in the mediation analysis presented in the following section.

D. Mediation Analysis

The mediating role of IRA in the relationship between AML program effectiveness (AMLP) and suspicious transaction reporting quality (STRQ) was examined using a bootstrapping procedure. The results of the direct, indirect, and total effects are presented in Table 9.

Table 9. Mediation Analysis

Effect	Coefficient	t-value	p-value
Direct (AMLP → STRQ)	0.574	9.136	0.000
Indirect (AMLP → IRA → STQ)	0.305	5.710	0.000
Total Effect	0.879	45.95	0.000

Source: Author's own work

The results in Table 9 indicate that the indirect effect of AML program effectiveness on STR reporting quality through IRA is positive and statistically significant ($\beta = 0.305$, $p < 0.001$). This confirms that IRA serves as a meaningful pathway through which AML capabilities influence reporting outcomes. At the same time, the direct effect of AML program effectiveness on STR quality remains significant ($\beta = 0.574$, $p < 0.001$). This suggests that the relationship between AMLP and STRCR is not fully explained by the mediator.

The coexistence of significant direct and indirect effects indicates that IRA plays a partial mediating role in the relationship between AML program effectiveness and reporting quality. From a substantive perspective, this finding implies that AML program effectiveness influences reporting quality through two complementary pathways. First, there is a direct pathway, where stronger AML frameworks improve reporting outcomes through enhanced governance, monitoring systems, and organizational processes. Second, there is an indirect pathway, where AML program effectiveness strengthens the

implementation of risk-based assessment, which in turn improves the relevance, accuracy, and consistency of suspicious transaction reporting.

These findings provide a mechanism-based explanation of AML effectiveness. Rather than treating AML programs and risk-based approaches as separate or independent elements, the results demonstrate that IRA functions as an operational mechanism that translates organizational capacity into reporting outcomes. In this sense, AML program effectiveness does not only influence reporting quality directly, but also indirectly by enabling more effective risk-based decision-making within financial institutions. Overall, the mediation results highlight that improving the effectiveness of AML systems requires not only strengthening institutional frameworks but also ensuring that these frameworks are effectively operationalized through risk-based mechanisms.

V. Discussion

This study provides new evidence on how AML program effectiveness translates into reporting quality, moving beyond conventional approaches that rely primarily on reporting volume as an indicator of effectiveness. The findings highlight that the relationship between AML capabilities and reporting outcomes is not merely direct, but operates through an identifiable mechanism namely individual risk assessment (IRA).

A. Reframing AML Effectiveness: From Volume to Quality

A key implication of this study is the need to reconsider how AML effectiveness is conceptualized and measured. Existing regulatory and empirical approaches have often relied on the volume of suspicious transaction reports as a proxy for effectiveness. However, prior studies have questioned the validity of this assumption, suggesting that higher reporting volumes may reflect defensive compliance behavior rather than genuine detection capability (Braun et al., 2016; Dalla Pellegrina et al., 2022; Jensen et al., 2025; Takats, 2011).

The present findings reinforce this critique by showing that reporting quality is systematically shaped by internal organizational capacity and the implementation of risk-based mechanisms. This suggests that effectiveness should not be evaluated based on how much is reported, but rather on how well reporting reflects underlying risk conditions.

Beyond supporting previous critiques of volume-based evaluation, these findings offer a broader conceptual perspective on AML effectiveness. High reporting volumes may indicate extensive compliance activity, yet they do not necessarily demonstrate an institution's capability to distinguish genuinely suspicious transactions from routine financial behaviour. Reporting quality, by contrast, reflects the effectiveness of the organisational processes underlying risk identification, assessment, and reporting decisions. From an institutional perspective, reporting quality represents the observable outcome of internal organisational capability rather than merely an administrative reporting output. This distinction helps explain why financial institutions operating under the same regulatory framework may exhibit markedly different reporting performance despite facing identical compliance obligations (Teece, 2007). Consequently, evaluating AML effectiveness through reporting quality provides a more meaningful assessment of how regulatory expectations are translated into operational practice.

B. AML Program Effectiveness as Institutional Capacity

The strong relationship between AML program effectiveness and IRA highlights the role of institutional capacity as a prerequisite for effective AML implementation. This finding aligns with insights from Institutional Theory, which emphasize that formal compliance structures do not automatically translate into effective outcomes unless they are supported by internal organizational capabilities (Jamil et al., 2023; Sathye, 2008).

In this context, AML programs can be understood as enabling conditions that shape how institutions interpret and respond to regulatory requirements. Without sufficient organisational capability (including effective governance, robust internal controls, integrated information systems, and competent personnel) risk-based approaches are likely to remain symbolic manifestations of regulatory compliance rather than mechanisms that genuinely improve reporting quality.

These findings also refine the application of Institutional Theory within the AML context. Institutional Theory suggests that organisations facing coercive regulatory pressures tend to adopt formal governance structures to achieve legitimacy (DiMaggio & Powell, 1983). However, the present findings indicate that regulatory compliance alone is insufficient to improve reporting quality unless those formal structures are transformed into operational capabilities. In other words, AML programme effectiveness should not be viewed merely as the existence of policies, procedures, or governance arrangements, but as the institution's capability to embed these elements into routine organisational practices. This interpretation extends the compliance literature by demonstrating that organisational capability serves as the critical link between regulatory expectations and effective risk-based implementation.

C. IRA as a Transmission Mechanism

The most important contribution of this study lies in demonstrating that IRA functions as a transmission mechanism linking organizational capability to reporting outcomes. While prior literature acknowledges the importance of risk-based approaches (Barney & Clark, 2007; Dalla Pellegrina & Masciandaro, 2008; FATF/OECD, 2014), empirical evidence on how these approaches improve reporting quality has been limited. The mediation results show that IRA is not simply an additional compliance requirement, but a mechanism through which AML capabilities are translated into more effective reporting practices. By enabling institutions to prioritize high-risk transactions and reduce informational noise, IRA improves the precision and relevance of suspicious transaction reports.

This mechanism-based explanation clarifies why financial institutions operating under similar AML regulatory frameworks may nevertheless produce substantially different reporting outcomes. The variation is attributable not merely to differences in formal compliance, but to differences in how effectively organisational capabilities are operationalised through Individual Risk Assessment. It is not the formal adoption of AML policies alone that matters, but the extent to which these policies are operationalized through risk-sensitive processes.

More broadly, these findings contribute to the growing shift in AML research from examining direct compliance outcomes toward understanding the organisational processes that generate those outcomes. Rather than treating Individual Risk Assessment merely as a regulatory obligation, this study demonstrates that IRA functions as the

capability translation mechanism through which organisational AML resources are converted into higher-quality reporting practices. This perspective helps reconcile why financial institutions operating under similar regulatory standards frequently exhibit different reporting performance. The difference lies not only in the formal design of AML programmes, but also in the effectiveness with which those programmes are operationalised through structured, risk-based assessment processes. Consequently, the present findings extend existing AML compliance research by highlighting that organisational capability alone is insufficient unless it is translated into operational decision-making mechanisms that directly influence reporting quality.

D. Implications for the AML Effectiveness Debate

These findings contribute to a broader debate on the effectiveness of AML regimes. Current evaluation frameworks often emphasize compliance indicators and reporting outputs, yet may fail to capture the underlying processes that generate these outputs. The results suggest that AML effectiveness should be assessed along two dimensions:

1. Output quality: the accuracy, completeness, and relevance of reported transactions
2. Operational mechanisms: the processes through which institutions identify and prioritize risks

By integrating these two dimensions, this study proposes a more comprehensive perspective for evaluating AML effectiveness. Rather than treating reporting outputs as the sole indicator of compliance success, the proposed framework recognises that reporting quality and the organisational processes generating those reports should be evaluated simultaneously. This perspective shifts the focus of AML effectiveness assessment from measuring reporting activity toward understanding the organisational capability that underpins meaningful reporting outcomes.

Conceptually, this perspective has broader implications for the development of AML evaluation frameworks. Existing regulatory assessments frequently distinguish between technical compliance and effectiveness, yet empirical evaluation often continues to rely heavily on observable reporting outputs. The present findings suggest that organisational capability and its operationalisation through Individual Risk Assessment constitute essential intermediate processes that should also be considered when evaluating AML effectiveness. Incorporating these process-oriented dimensions would provide regulators with a more informative assessment of institutional performance by identifying not only whether suspicious transaction reports are submitted, but also whether they result from effective risk-sensitive organisational practices. This perspective is also consistent with the FATF emphasis on effectiveness, which recognises that AML systems should be evaluated not only by the existence of regulatory frameworks but also by their ability to produce meaningful operational outcomes (FATF/OECD, 2014).

E. Policy Implications

The empirical findings provide practical implications for both regulators and financial institutions by demonstrating that improvements in reporting quality depend not only on regulatory compliance, but also on the organisational capability to operationalise risk-based decision-making through Individual Risk Assessment. First, regulatory evaluation should place greater emphasis on the quality of suspicious transaction reports rather than relying predominantly on reporting volume as an indicator of AML effectiveness. The

present findings demonstrate that reporting quality better reflects the effectiveness of organisational risk assessment and decision-making processes than reporting frequency alone. Consequently, regulatory performance indicators should increasingly capture the usefulness, completeness, consistency, timeliness, and actionability of suspicious transaction reports.

Second, although Individual Risk Assessment is a regulatory requirement within the risk-based approach, its effectiveness depends fundamentally on organisational capability. Regulatory expectations should therefore be accompanied by initiatives that strengthen governance arrangements, internal controls, analytical infrastructure, information systems, and professional competency. Without these supporting capabilities, IRA risks becoming a procedural compliance exercise rather than an effective mechanism for improving reporting quality.

Third, financial institutions should view investments in AML capability not merely as compliance costs but as strategic investments that enhance the quality of organisational risk assessment and reporting decisions. Strengthening analytical capability, data integration, staff competency, and internal governance enables institutions to translate regulatory expectations into more effective reporting practices, thereby improving the overall effectiveness of their AML programmes.

these policy implications suggest that future AML reforms should move beyond strengthening regulatory requirements alone and place greater emphasis on developing the organisational capabilities necessary to operationalise those requirements effectively. Such an approach would better align regulatory compliance with functional effectiveness, ultimately improving the quality and usefulness of suspicious transaction reporting as a key component of national AML regimes.

F. Limitations and Future Research

Several limitations should be acknowledged when interpreting the findings of this study. First, the analysis is based on cross-sectional survey data, which limits the ability to draw definitive causal conclusions regarding the relationships among AML programme effectiveness, Individual Risk Assessment (IRA), and suspicious transaction reporting quality. Although the proposed structural relationships are theoretically grounded in Institutional Theory and the compliance literature, future longitudinal research would provide stronger evidence regarding the temporal dynamics through which organisational capability is translated into reporting quality.

Second, this study relies on perception-based assessments obtained from knowledgeable AML practitioners rather than objective organisational performance indicators. To minimise potential response bias, respondents were purposively selected using a key informant approach, ensuring that only individuals directly responsible for AML implementation completed the questionnaire according to their organisational roles, responsibilities, authority, and operational functions. Nevertheless, future studies could strengthen the evidence by combining perceptual measures with objective indicators, such as supervisory assessments, suspicious transaction report outcomes, or regulatory enforcement data.

Third, although the proposed model explains a substantial proportion of the variation in reporting quality, it focuses primarily on the organisational mechanism linking AML programme effectiveness and reporting quality through Individual Risk Assessment.

Other organisational and institutional characteristics—including organisational size, governance structure, regulatory maturity, technological capability, and employee experience—may also influence these relationships and warrant further investigation as control variables or boundary conditions.

Finally, the empirical analysis is limited to the Indonesian banking sector. While Indonesia provides an appropriate setting due to the mandatory implementation of Individual Risk Assessment, institutional, regulatory, and organisational characteristics may differ across jurisdictions. Future research should therefore examine the proposed framework in other financial sectors and cross-country settings to assess its broader applicability and external validity.

VI. Conclusion

This study examines how Anti-Money Laundering (AML) program effectiveness influences the quality of suspicious transaction reporting (STR), particularly through the mediating role of Individual Risk Assessment (IRA). Using survey data from banking professionals and a PLS-SEM approach, the findings demonstrate that AML effectiveness improves reporting quality both directly and indirectly through IRA. Stronger AML programs enhance governance, systems, and institutional capabilities, while IRA serves as a critical operational mechanism for translating these capabilities into more consistent, complete, timely, and accurate reporting. These findings highlight the importance of shifting AML performance evaluation from reporting volume to reporting quality and integrating risk-based practices into institutional compliance frameworks.

From a policy perspective, effective AML implementation requires more than formal regulatory compliance; it depends on financial institutions' ability to operationalize risk-based approaches through adequate governance, technological systems, and professional expertise. Although the findings are based on the Indonesian banking sector, the proposed framework offers broader theoretical insights into the relationship between organisational AML capabilities, IRA, and reporting quality. However, variations in regulatory environments and institutional characteristics may affect its applicability across jurisdictions. Future study should therefore validate and extend this framework across different countries, financial sectors, and regulatory contexts.

VII. Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used “ChatGPT OpenAI 5.2” and “DeepL Write” in order to translate and improve the clarity of the writing. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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