
Determinants of Early Financial Reporting in Indonesia's Financial Sector: The Role of RegTech and Institutional Type

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ABSTRACT

This study examines the drivers of early financial reporting across Indonesia's financial institutions. It highlights the influence of institutional type and technological adoption. While digital tools like RegTech are often promoted as solutions for timely compliance, our findings reveal that institutional characteristics, particularly being a financing institution, are far more decisive. Entities in the financing sector, not finance sector as a whole, are over 30 times more likely to report early with a probability increase of more than 50 percentage points compared to other sectors. In contrast, factors such as RegTech adoption, firm size, and IT infrastructure do not exhibit significant influence on reporting timeliness. These results suggest that organizational alignment with regulatory expectations and internal governance practices play a more critical role than digital maturity alone. Despite high levels of technology adoption, early reporting behavior remains uneven which shows reinforcing the notion that technology is not a standalone solution. The logistic regression model used in this study demonstrates strong predictive ability which emphasizes the importance of sectoral identity in shaping reporting outcomes. Policymakers are encouraged to move beyond one-size-fits-all digital mandates and instead develop targeted strategies that address the specific institutional contexts of financial entities



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1. INTRODUCTION

Indonesia's financial sector is confronted with even greater pressures to file financial reports in a timely, even early, and accurate manner. These pressures emerge from both regulators and investors who are concerned about transparency and good corporate governance, aligned with the progress of information technology in the financial sector. As stated by Kim et al. (2013), with advancements in technology and increased scrutiny on financial reporting practices, the importance of timely financial

reporting has become even more apparent. The timely release of financial statements is essential for stakeholders to fathom a company's financial information, thus allowing stakeholders to react quickly (Ozer et al., 2023).

In the framework of agency theory, lags in audited reports are often interpreted as managerial actions to delay the disclosure of adverse information (Wahjono, 2024). However, in Indonesia's capital market, such lags can have legal and economic implications, including administrative sanctions and trading suspensions from the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX) (Otoritas Jasa Keuangan, 2023).

In response to these issues, financial institutions have begun to adopt and invest in advanced information technology, referred to as Regulatory Technology or RegTech (Charoenwong, 2024). These innovations include automated reporting systems, real-time data validation and cloud-based integration, which are theoretically envisioned to improve efficiency and reduce reporting delays. However, there is still no strong empirical evidence on the extent to which RegTech adoption actually contributes to the timeliness of financial reporting, particularly in the Indonesian financial institutional context.

This paper will assess the determinants of financial reporting timeliness in the Indonesian financial sector, focusing on 2023 as the observation period. This study analyzes the effect of RegTech adoption and financial sectoral characteristics on reporting compliance and timeliness using a logistic regression (logit) approach. The subject of analysis includes various types of financial sectors, namely banking institutions, insurance institutions, financing institutions, fintech companies, capital markets, and other financial institutions. Therefore, through this analysis, we aim to provide insights into how RegTech adoption and institutional characteristics influence reporting timeliness, enabling policymakers and industry stakeholders in formulating strategies to enhance regulatory compliance and digital transformation in Indonesia's financial sector.

Literature Review and Hypothesis Development

Early financial reporting has become an increasingly important dimension of financial disclosure quality as regulatory authorities and market participants demand faster access to reliable information. In the financial sector, reporting timeliness is closely linked to transparency, regulatory compliance, and the effectiveness of supervisory oversight. Recent studies emphasize that early reporting—beyond merely meeting statutory deadlines—signals stronger internal controls, higher governance standards, and superior organizational readiness (Özer et al., 2023). This distinction is particularly relevant in emerging economies such as Indonesia, where financial institutions operate under rapidly evolving regulatory frameworks and increasing digitalization pressures.

The literature highlights that financial institutions are not homogeneous in their reporting behavior. Institutional theory suggests that sector-specific regulations, supervisory intensity, and organizational mandates shape compliance outcomes in systematic ways (Page, 2014; Panda & Leepsa, 2017). Empirical evidence indicates that differences across subsectors—such as banking, financing, insurance, capital markets, and fintech—translate into varying reporting processes, compliance costs, and incentives for early disclosure (Bimo et al., 2019; Özer et al., 2023). Financing institutions, in particular, are often subject to more standardized reporting formats and tighter monitoring, which may encourage faster internal consolidation of financial data and earlier submission. As a result, institutional characteristics remain a central factor in explaining disparities in reporting behavior across the financial sector.

In parallel with institutional factors, technological advancement has been widely promoted as a key enabler of more efficient compliance processes. Regulatory Technology (RegTech) has emerged

as a prominent innovation aimed at enhancing regulatory compliance through digital solutions such as electronic know-your-customer systems, biometric identification, electronic signatures, and automated data management platforms (Charoenwong et al., 2024). Theoretically, these tools reduce manual intervention, lower error rates, and streamline reporting workflows, thereby improving both accuracy and speed. However, empirical findings remain inconclusive, especially in emerging markets. While some studies document efficiency gains from digital compliance tools, others argue that technology adoption alone does not automatically translate into improved reporting timeliness without adequate organizational integration and process reengineering (Arner et al., 2017; Hannan et al., 2023).

The effectiveness of RegTech adoption is closely tied to the broader concept of IT infrastructure readiness. Prior research emphasizes that robust IT infrastructure—such as reliable data centers, system interoperability, and operational continuity—forms the backbone of successful digital transformation (Marangunić & Granić, 2015). Inadequate infrastructure may constrain data processing capacity and undermine the potential benefits of advanced digital tools. Studies on information systems and financial reporting suggest that strong IT foundations support faster data aggregation, reduce system downtime, and enhance reporting reliability, particularly under tight regulatory deadlines (Kim et al., 2013; Maswanganyi et al., 2024). Consequently, IT readiness is increasingly viewed as a necessary, though not sufficient, condition for achieving early reporting outcomes.

Firm-level characteristics also play an important role in shaping reporting behavior. Firm size, commonly proxied by total assets, is frequently associated with reporting timeliness due to differences in resource availability. Larger institutions typically have greater financial capacity to invest in compliance personnel, internal control systems, and advanced information technologies, which may facilitate earlier reporting (Musleh Alsartawi, 2018). However, the literature also cautions that size can introduce organizational complexity, coordination challenges, and bureaucratic delays, potentially offsetting these advantages (Bimo et al., 2019). As such, the relationship between firm size and early reporting remains empirically ambiguous and context-dependent, warranting its inclusion as a control factor rather than a primary determinant.

Methodologically, studies examining reporting timeliness increasingly employ logistic regression models when the outcome variable is binary, such as early versus non-early reporting. This approach allows researchers to estimate the likelihood of early reporting while accounting for multiple institutional and organizational characteristics simultaneously (Kim et al., 2013; Özer et al., 2023). By integrating institutional type, digital adoption, IT readiness, and firm size within a single empirical framework, the literature underscores the importance of adopting a multifaceted perspective to explain persistent disparities in early financial reporting across financial institutions. The hypotheses are:

H1: Institutional type significantly affects the likelihood of early financial reporting.

H2: Adoption of RegTech tools positively influences the probability of early financial reporting.

H3: IT infrastructure readiness improves the likelihood of early financial reporting.

H4: Larger firm size increases the probability of early financial reporting.

2. METHOD

This study investigates the determinants of early financial reporting among financial institutions in Indonesia using cross sectional data from the 2023 fiscal year. The methodological framework

consists of variable construction, model specification, transformation for interpretability, and validation through diagnostic measures.

The binary dependent variable, $Timely_i$, captures whether an entity submitted its 2023 financial report earlier than the average industry lead time.

$$Timely_i = \{0 \text{ otherwise } 1 \text{ if } lead\ time_i > lead\ \bar{time}\}$$

The lead time is calculated as the difference between the report submission date and the regulatory deadline with 43 days representing the average submission gap across the financial sector in 2023. The main explanatory variables are grouped into technological, sectoral, and control dimensions: $RegTech_i$: A composite score (0–4) representing the adoption of regulatory technology tools.

$$RegTech_i = eKYC_i + Biometric_i + eSignature_i + DataWarehouse_i$$

Each component is a binary indicator (1 = implemented, 0 = not implemented).

$Financing_i$ and $Banking_i$: Dummy variables identifying the sectoral classification of entity i :

$$\begin{aligned} Financing_i &= \{1 \text{ if entity is a financing institution}\} \\ Banking_i &= \{1 \text{ if entity is a bank institution}\} \end{aligned}$$

Entities not classified as either serve as the reference group (e.g., insurance, capital market, fintech). $Asset_i$: Total assets of the entity, representing organizational size. In robustness checks, log-transformed asset values are used to address scale distortion.

$DataCenter_i$: Number of data center facilities operated by the institution, serving as a proxy for IT infrastructure readiness.

A logistic regression model is employed to estimate the probability that an entity submitted its financial report early.

$$Pr(Timely_i = 1) = \frac{1}{1+e^{-z}}$$

Where the linear predictor z is defined as:

$$z_i = \beta_0 + \beta_1 DataCenter_i + \beta_2 Asset_i + \beta_3 RegTech_i + \beta_4 Financing_i + \beta_5 Banking_i$$

The model parameters β_j are estimated via maximum likelihood.

To improve interpretability, logit coefficients are exponentiated.

$$OR_j = e^{\beta_j}$$

This transformation allows the effect of each variable to be interpreted as the multiplicative change in odds associated with a 1 unit increase in the predictor.

To assess substantive significance, average marginal effects (AME) are computed:

$$AME_j = \frac{1}{n} \sum_{i=1}^n \hat{p}_i (1 - \hat{p}_i) \cdot \beta_j$$

Where \hat{p}_i is the predicted probability for observation i . For binary variables, AME represents the average change in predicted probability when the variable changes from 0 to 1.

3. RESULTS AND DISCUSSION

Table 1. summarizes the descriptive statistics. Timely indicates early financial reporting relative to the financial sector average. Data Center proxies IT readiness, while Asset represents firm size. RegTech is a composite score of four digital compliance tools. Financing and Banking are sectoral dummies identifying financing and bank institutions, respectively.

Table 1. Descriptive Statistic

Variable	Obs	Mean	Std. dev.	Min	Max	Indicator
Timely	41	0.4634146	0.5048545	0	1	1 if the entity submitted financial reports earlier than the industry average lead time (>43 days before deadline); 0 otherwise
Data Center	41	1	1.183216	0	4	Proxy for IT infrastructure readiness
Asset	41	2.11e+08	5.08e+08	580387	2.17e+09	Proxy for entity size
Regtech	41	3.853659	0.357839	3	4	sum score of 4 RegTech components dummy (e- KYC, biometric verification, electronic signature system, data warehouse)
Financing	41	0.2439024	0.4347694	0	1	1 if entity is classified as a financing institution; 0 otherwise
Banking	41	0.2439024	0.4347694	0	1	1 if entity is classified as a banking institution; 0 otherwise

(Source: Processed by authors, 2026)

After outlining the descriptive characteristics of the sample, the study advances to a baseline logit

estimation that examines how institutional attributes and digital readiness shape the likelihood of early financial reporting.

Table 2. presents the estimated log-odds of early financial reporting using a logistic regression model. The coefficient for Financing (3.49, $p = 0.006$) indicates that entities classified as financing institutions have significantly higher odds of reporting early compared to the reference group. Specifically, holding other variables constant, the log-odds of timely reporting increase by 3.49 units for financing institutions, suggesting a substantial positive association. Other predictors—including Data Center (coef = 0.43), Asset (coef ≈ 0), RegTech (coef = 0.92), and Banking (coef = -0.88)—do not exhibit statistically significant relationships (all $p > 0.1$) with the likelihood of timely reporting. This implies no evidence that IT infrastructure, entity size, RegTech adoption, or bank classification affect the odds of early reporting in this model. The constant term (-5.02) shows the baseline log-odds of early reporting when all predictors are zero.

Table 2. Logit Regression Results

Variable	Coef.	Std. err.	z	P> z
Data Center	0.4330782	0.5524255	0.78	0.433
Asset	1.56e-09	1.31e-09	1.19	0.235
Regtech	0.9231522	1.398599	0.66	0.509
Financing	3.48947	1.261335	2.77	0.006
Banking	-0.8793381	1.387477	-0.63	0.526
_cons	-5.016378	5.534732	-0.91	0.365

(Source: Processed by authors, 2026)

For ease of interpretation, the logit coefficients are expressed as odds ratios, which provide a clearer indication of how each predictor influences the probability of early financial reporting. Table 3. shows the odds ratios from the logistic regression estimating the likelihood of early financial reporting. The only statistically significant predictor is Financing (OR = 32.77, $p = 0.006$) which points out that entities classified as financing institutions are over 32 times more likely to report on time compared to the reference group, holding all else constant. Other predictors which are Data Center (OR = 1.54), RegTech (OR = 2.52), Asset (OR ≈ 1), and Banking (OR = 0.42) have no statistically significant effect on the odds of early reporting ($p > 0.1$). It suggests limited influence in this sample. The constant term (OR = 0.0066) shows the baseline odds of timely reporting when all predictors are at zero. This result points out a very low base probability in the absence of observed characteristics.

Table 3. Odds Ratio Version of Regression Results

Variable	Coef.	Std. err.	z	P> z
Data Center	1.541997	0.8518383	0.78	0.433
Asset	1	1.31e-09	1.19	0.235
Regtech	2.517213	3.520572	0.66	0.509

Financing	32.76858	41.33216	2.77	0.006
Banking	0.4150576	0.5758829	-0.63	0.526
_cons	0.0066285	0.0366869	-0.91	0.365

(Source: Processed by authors, 2026)

Beyond relative likelihood measured by odds ratios, average marginal effects are presented to illustrate how changes in each variable translate into changes in the predicted probability of early financial reporting, *ceteris paribus*.

Table 4. reports the average marginal effects (AME) of each predictor on the probability of early financial reporting. The variable Financing shows a statistically significant and substantial marginal effect ($dy/dx = 0.533$, $p < 0.001$). It points out that being a financing institution increases the probability of timely reporting by approximately 53 percentage points, holding other variables constant. Other variables including RegTech ($dy/dx = 0.14$), Data Center (0.07), Banking (-0.13), and Asset (effectively zero) exhibit no statistically significant marginal effects ($p > 0.1$). It points out limited predictive power on reporting timeliness in these samples.

Table 4. Average Marginal Effects (Model OIM)

Variable	dy/dx	Std. err.	z	P> z
Data Center	0.0661922	0.0825764	0.80	0.423
Asset	2.39e-10	1.89e-10	1.26	0.207
Regtech	0.1410957	0.211319	0.67	0.504
Financing	0.5333347	0.1257174	4.24	0.000
Banking	-0.1343991	0.2089961	-0.64	0.520

(Source: Processed by authors, 2026)

Finally, the model is subjected to a series of diagnostic tests to assess its overall fit and predictive performance, including goodness-of-fit measures, classification metrics, and checks for potential multicollinearity. Table 5. reports no multicollinearity detected among predictors. The model is statistically significant (LR $\chi^2 = 17.54$; $p = 0.0036$) with moderate explanatory power (Pseudo $R^2 = 0.3098$). Goodness of fit is also satisfactory (Pearson $\chi^2 = 39.16$, $p = 0.2887$). From the model, it also shows strong classification performance.

Table 5. Model Diagnostics

Test Type	Statistic/Result	Interpretation
Multicollinearity	No high correlation observed among independent variables (checked via model note)	No multicollinearity issue detected.
Model Significance	LR $\chi^2(5) = 17.54$; prob > χ^2	Statistically significant overall.

	= 0.0036	
Pseudo R ²	0.3098	Indicates moderate explanatory power
Goodness of Fit (Pearson)	chi ² (35) = 39.16; prob > chi ² = 0.2887	No evidence of poor fit; model fits the data well
ROC Curve (AUC)	0.8565	Strong classification ability
Classification Accuracy	78.05% correctly classified	Strong overall prediction performance
Sensitivity	63.16%	The model correctly identifies 63% of early reporters
Specificity	90.91%	The model correctly identifies 91% of non early reporters

(AUC = 0.8565; accuracy = 78.05%) with sensitivity of 63.16% and specificity of 90.91%

(Source: Processed by authors, 2026)

To evaluate more “how well the model's predicted probabilities align with actual reporting outcomes”, Figure. 1. plots each entity’s observed timeliness against its predicted probability from the logistic model. While Figure. 1. illustrates prediction-level agreement, Figure. 2. will offer a summary measure of the model’s overall classification performance using the ROC curve. Beyond classification accuracy, Figure. 3. will visualize the substantive influence of sectoral identity on the predicted probability of timely reporting.

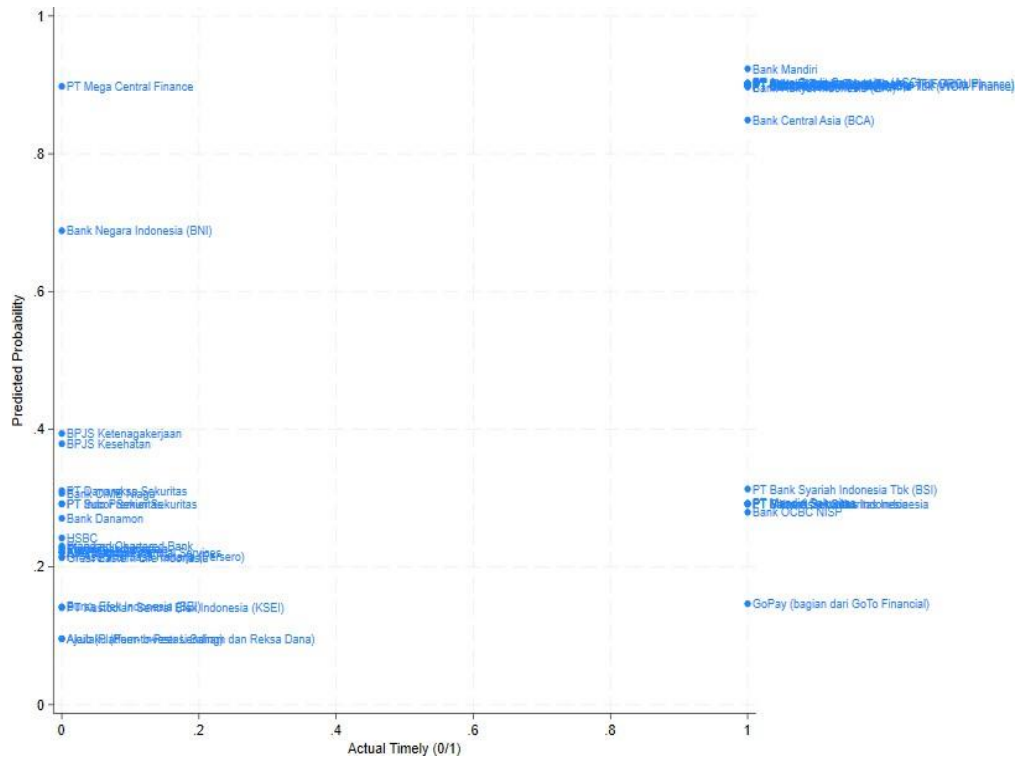


Figure 1. Predicted Probability and Actual Timeliness of Financial Reporting Among Financial Institutions

Figure 1. is a scatterplot that compares each institution’s actual timeliness (0 = not early, 1 = early) with its predicted probability of early financial reporting derived from the logistic regression model. Institutions appearing close to (1, 1) on the plot—such as Bank Mandiri, BCA, Adira Finance, WOM Finance, FIFGROUP, BAF, ACC, Mandiri Tunas Finance, BCA Finance, Indomobil Finance, and Sumit Otto Finance—were correctly predicted to submit reports early, while those near (0, 0)—such as Ajaib from fintech sector and KSEI from capital sector—were correctly predicted as not early. A few notable cases, such as Bank Negara Indonesia (BNI) from the banking institution and PT Mega Central Finance from the financing institutions, exhibit high predicted probabilities despite being classified as not timely, suggesting instances of misclassification or unobserved influencing factors. Overall, the clustering around the diagonal extremes supports the model’s strong classification ability, which is further corroborated by the ROC AUC value of 0.8565 and an overall classification accuracy of 78.05%.

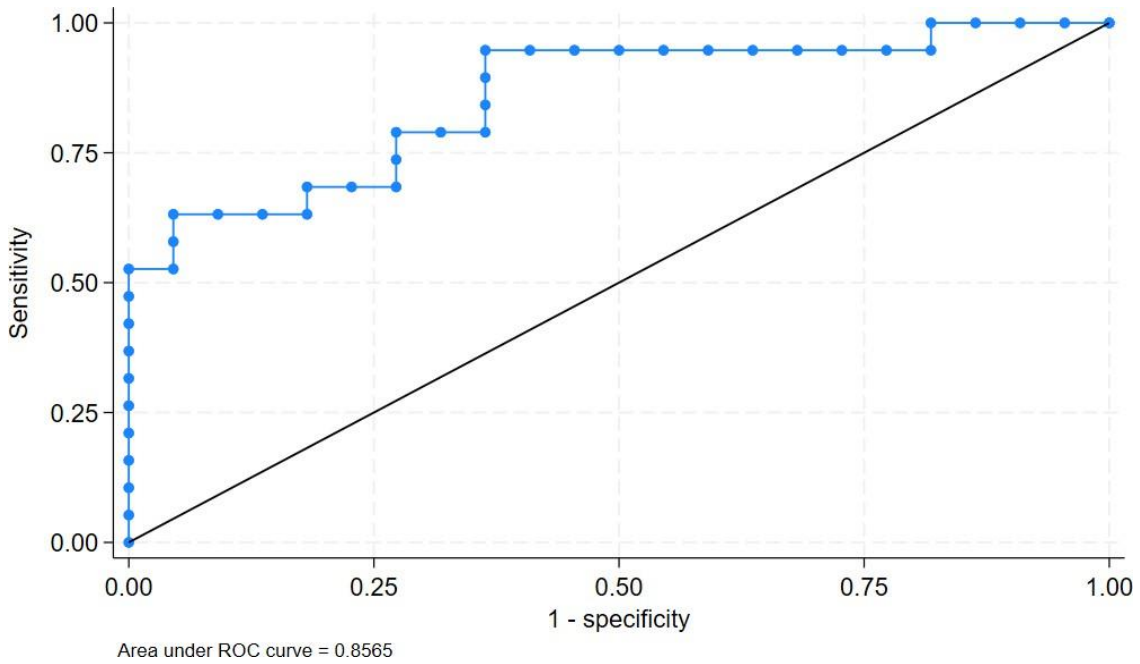


Figure. 2 Receiver Operating Characteristic (ROC) Curve of the Logit Model Predicting Timely Financial Reporting

Figure 2. is the Receiver Operating Characteristic (ROC) curve that is used to evaluate the classification performance of the logistic regression model predicting timely financial reporting. The model achieves an Area Under the Curve (AUC) of 0.8565 which shows a strong level of discrimination. This points out that the model is able to correctly distinguish between early and non early reporting entities approximately 86% of the time. The curve lies well above the 45-degree reference line. This demonstrates that the model performs substantially better than random chance. The strong AUC score also reinforces the model’s effectiveness in identifying firms that are likely to submit financial reports earlier than the average lead time.

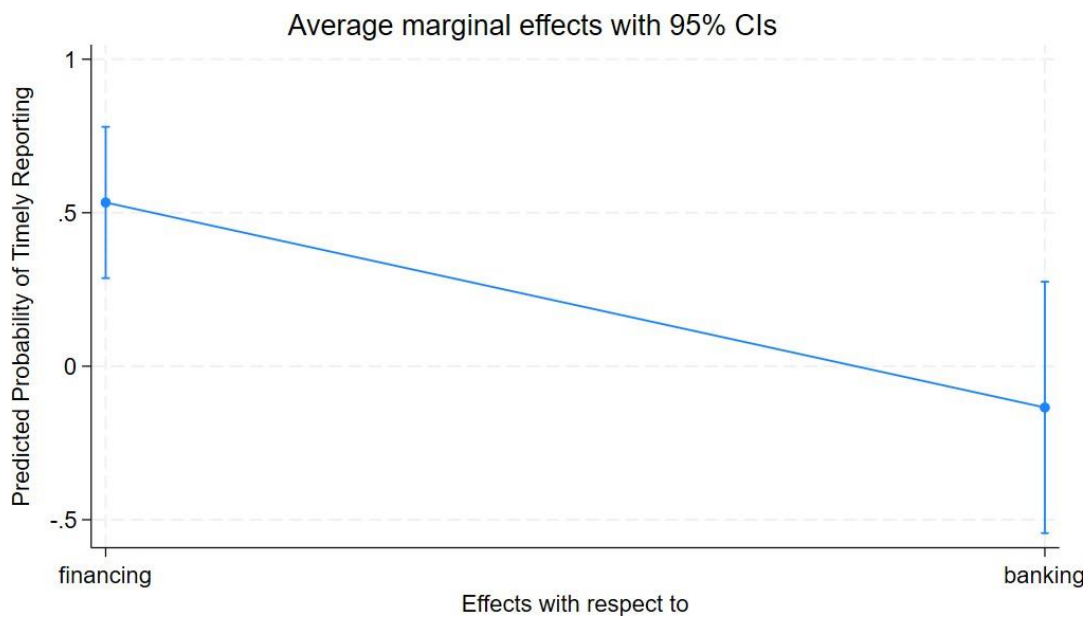


Figure 3. Marginal Effects Plot

Figure 3. presents the average marginal effects of institutional sector type—specifically financing institutions and bankings—on the predicted probability of early financial reporting. The effect of being a financing institution is both statistically significant and substantively large: holding other variables constant, financing institutions are on average 53.3 percentage points more likely to submit financial reports earlier than the industry benchmark ($p < 0.001$). In contrast, the marginal effect of being a bank is negative (−13.4 percentage points) and statistically insignificant ($p = 0.520$) shows no meaningful difference from the baseline category (which are reference groups: capital markets, insurance, or fintech firms). This result is particularly notable given the common assumption that banks due to their heavy regulatory oversight and digital infrastructure, would lead in timely reporting, although that in this model timely isn't always early. Instead, the finding implies that institutional structure and regulatory alignment, rather than technological capacity alone, may be more influential drivers of compliance timeliness. The plotted 95% confidence intervals reinforce the robustness of the financing institutions' effect while highlighting the uncertainty surrounding the banking coefficient.

4. CONCLUSION

The logistic regression analysis of early financial reporting within Indonesia's financial sector reveals that institutional type, specifically being a financing institution, is the predominant driver of early reporting compliance. Financing institutions exhibit odds of early reporting more than 30 times higher and an increase in predicted probability of approximately 53 percentage points compared to their counterparts. In contrast, RegTech adoption and IT infrastructure readiness do not show statistically significant effects on early reporting outcomes, and banking institutions do not differ meaningfully from other sectors such as capital markets, insurance, or fintech.

These findings indicate that beyond technological readiness, underlying institutional structures, governance arrangements, and regulatory alignment exert a stronger influence on financial reporting behavior. The strong predictive performance of the model further emphasizes that sectoral identity and organizational characteristics are central to understanding variations in reporting timeliness. Overall, the results challenge the assumption that digital transformation alone can ensure timely compliance and highlight the need for a more institutionally grounded policy approach.

From a policy perspective, regulators should prioritize addressing sectoral disparities in reporting timeliness through tailored supervision and incentives, particularly for sectors lagging behind financing institutions. Efforts to promote RegTech should shift from mere adoption toward effective integration with internal processes and capacity building. Strengthening governance and compliance culture remains essential, especially in institutions where early reporting is not yet embedded as a norm. Additionally, targeted support for smaller and mid-sized institutions, combined with the use of predictive analytics to identify reporting outliers, can enhance the effectiveness of regulatory oversight and improve overall compliance performance.

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