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Real-Time Financial Reporting in Indonesian Banks: Impact of XBRL and AIS with IT Governance Moderation

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Abstract. This study investigates the impact of eXtensible Business Reporting Language (XBRL) implementation and Accounting Information Systems (AIS) effectiveness on real-time reporting in Indonesian national banks, with Information Technology (IT) governance as a moderating factor. Using Structural Equation Modeling-Partial Least Squares (SEM-PLS) analysis on data from 258 bank employees, we found that both XBRL implementation ($\beta = 0.206$, $p < 0.05$) and AIS effectiveness ($\beta = 0.276$, $p < 0.05$) positively influence real- time reporting. Contrary to expectations, IT governance did not significantly moderate these relationships. The study introduces novel dimensions of Big Data and Computer Assisted Audit Techniques (CAATTs) to the real-time reporting construct, enhancing its relevance in the contemporary digital landscape. These findings contribute to the understanding of real-time reporting enablers in the banking sector of developing economies and suggest that banks should prioritize XBRL implementation and AIS effectiveness to enhance their real-time reporting capabilities.

Keywords: XBRL Implementation, Accounting Information System Effectiveness, Information Technology Governance, Real Time Reporting XBRL Implementation, Accounting Information System Effectiveness, Information Technology Governance, Real Time Reporting

1. Introduction

The contemporary business landscape, characterized by rapid product cycles and intense global competition, necessitates swift analysis of accurate, real-time information for effective decision-making (Sahay & Ranjan, 2008). Businesses are undergoing a significant transformation into the "present economy," which is characterized by real-time operations and instantaneous economic activity. This shift is distinguished by a significant speedup in how companies gauge performance, evaluate results, and make strategic choices (Vasarhelyi & Alles, 2008).

The current economic climate demands a shift in Accounting Information Systems (AIS) towards real-time reporting. This method offers significant advantages over traditional periodic reporting (Real-time & Better, 2005). In the past, businesses relied on financial and non-financial reports produced on a quarterly or yearly basis. However, the increasingly competitive business environment now necessitates more current data, allowing leadership to swiftly capitalize on opportunities and tackle challenges as they arise.

A variety of supporting technologies can facilitate the implementation of real-time reporting, including process management tools, mobile platforms, cloud-based systems, data analytics, and integrated enterprise software (ERP). To assess and promote technology adoption, organizations can leverage the Technology Acceptance Model (TAM) as a framework. User perceptions of the benefits of technology and influencing the willingness to utilise technology is the relationship between the TAM and this research. The quality of information systems usually leads to improved organisational performance and decision making (Ali et al., 2016). Furthermore, stated by (Susanto et al., 2013), the correct system is a system that is appropriate and can be used by system users to improve control, efficiency and speed.

Phenomena such as in the Netherlands, (Nicoletti & Nicoletti, 2018) calls the peer-to-peer (P2P) lending and securities crowdfunding (SCF) fintech industry replacing the role of banks in lending because P2P has implemented information technology and the use of android which can speed up transactions. Previous research submitted by (Belfo & Trigo, 2013) in qualitative research stated that accounting is still lacking a response from current technology. The technological solutions highlighted in this study also point to potential areas for future research in AIS (Prasetyo, 2022). These technologies encompass web services, mobile platforms, cloud computing, environmental monitoring, data analytics, enterprise software integration, process management, automated auditing tools, and big data analytics.

To tackle the complexities of implementing real-time reporting in AIS, several technological approaches can be employed (Kusumathias et al., 2023). These include process management and activity monitoring systems, mobile technologies, cloud-based solutions, business intelligence tools, and comprehensive enterprise architecture and application integration strategies (Trigo et al., 2014).

Implementing eXtensible Business Reporting Language (XBRL) can expedite the financial reporting process, thereby enhancing the promptness of delivering financial information (Rupang et al., 2019). XBRL implementation was found to provide benefits to regulators (Ilias et al., 2014; Ilias & Abdul, 2016). The effectiveness of a company's Information Technology Governance, as measured by the IT Governance Index (CGI), substantially influences how quickly and efficiently the organization can deliver Corporate Internet Reporting (CIR) (Darmawan, 2021). TAM aims to establish basic assumptions that are able to predict, and explain the behaviour that drives the use of evolving technologies ((Surendran, 2012); (Park et al., 2009); (Venkatesh and Bala, 2008); (Alomary and Woollard, 2015)). This approach also examines how organizations adopt or resist new technologies, focusing on behavioral patterns within the corporate structure ((Surendran, 2012); (Park et al., 2009); (Venkatesh and Bala, 2008)). To align with the objectives of the TAM, the researcher introduces information technology governance as a moderating factor. This is done to assess how it

might enhance the impact of technology use on Real Time Reporting practices.

Research such as Seele (2016) found a positive impact of XBRL implementation on real-time reporting, especially in developed countries. XBRL enables better data integration and efficiency in reporting, but these studies mainly focus on the context of developed economies. In contrast, this research will extend the study to the Indonesian banking sector, which is part of the developing world. This is important as different economic conditions and technological infrastructure in developing countries may affect the outcome of XBRL implementation. Effective AIS can improve the accuracy and efficiency of financial reporting. However, as noted by Devi et al. (2020), there is still debate on how much impact AIS can have on real-time reporting, especially in developing countries. Weill and Ross (2004) suggest that effective IT governance can strengthen the link between technology and business outcomes. However, there is little research examining the moderating role of IT governance in the context of real-time reporting in the emerging banking sector. This study will explore that role, providing new insights into how IT governance can influence the relationship between XBRL implementation, AIS effectiveness, and real-time reporting.

The theoretical framework used in this research is the Technology Acceptance Model (TAM), which explains how perceived usefulness and ease of use influence technology acceptance by individuals. TAM is highly relevant for understanding the factors that influence the adoption of information technology in the banking environment, particularly in the context of XBRL and AIS implementation.

This research aims to examine and analyze the impact of XBRL implementation and the effectiveness of accounting information systems on real-time reporting, as well as how information technology governance can moderate the influence of XBRL implementation and the effectiveness of accounting information systems on real-time reporting. The focus of this research on Indonesian national banks is based on the importance of the banking sector as the backbone of the country's economy. National banks play a key role in financial stability and the provision of financial services. Therefore, improving reporting efficiency and transparency through technologies such as XBRL and AIS is crucial for enhancing the performance and accountability of these banks. This research will not only provide theoretical insights but also practical recommendations for national banks to optimize the use of technology in their reporting systems.

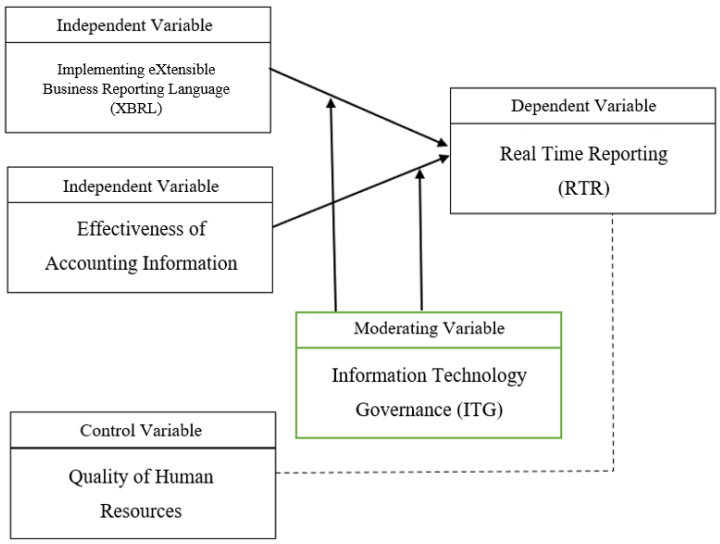

Fig 1. Research Framework

2. Research Methodology

This study falls under the category of quantitative research, as it involves testing predefined hypotheses through empirical methods. This research is a causal research, where researchers test the effect of one or more IV on the DV by hypothesis examination. The XBRL Implementation and AIS effectiveness acts as IV, while the DV is represented by Real Time Reporting, and the moderating variable is represented by Information Technology Governance. The data collection strategy uses the survey method. The study uses survey questionnaires to get direct feedback from individuals employed by different departments of traditional commercial banks. Descriptive and verification statistical methods are used to look at the data collected with the SEM-PLS method to test the hypothesis. This research focuses on employees of the National Bank of Indonesia as its primary subjects of study.

Data collection in this research was conducted through a survey using questionnaires distributed to employees of national banks in Indonesia. The XBRL Implementation (X1) was measured by examining the reporting format and its accessibility, based on references from (Beerbaum & Puaschunder, 2019; Seele, 2016)). The effectiveness of Accounting Information Systems (AIS) (X2) was measured through system quality, information quality, service quality, net benefits, and user satisfaction, based on references from (DeLone & McLean, 2003, 2004; Jaafreh, 2017; Marlina, 2017). IT Governance (M) was measured through strategic alignment, value delivery, risk management, resource management, and performance measurement, based on references from Bailey & Becker (2014). Real-Time Reporting (Y) was measured using several dimensions including mobile devices, cloud computing, enterprise architecture, enterprise application integration, business intelligence, business process management, big data, and computer-assisted audit techniques (CAATTs), based on references from Belfo & Trigo (2013). Quality of Human Resources (C) was measured by Individual Expertise based on references from Sari et al. (2023).

Table 1. Operational and Definition of Variable

Variables	Dimension
Real Time Reporting (Y) Reference: (Belfo & Trigo, 2013)	*Mobile Devices*
	Cloud Computing
	Enterprise Architecture
	Enterprise Application Integration
	Business Intelegence
	Business Process Management
	Big Data
	Computer Assisted Audit Tools dan Techniques (CAATTs)
XBRL Implementation (X1) Reference : (Beerbaum & Puaschunder, 2019; Seele, 2016)	Reporting format and language
	Accessibilities
Effectiveness of Accounting Information Systems (X2) Reference : (DeLone & McLean, 2003, 2004; Jaafreh, 2017; Marlina, 2017)	System Quality
	Information Quality
	Service Quality
	Net Benefit
	User Satisfaction
Information Technology Governance (M) Reference : (Bailey & Becker, 2014)	Strategic alignment.
	Value delivery.
	Risk management.
	Resource management.
	Performance measurement.
Quality of Human Resources (C) Reference :	Individual Expertise

Variables	Dimension
(Sari et al., 2023)	

The SEM-PLS method was used due to its ability to test causal relationships at the latent variable level with reflective indicators, as well as its combination of path analysis and factor analysis as suggested by Yamin (2022). This method is also effective for predictive models that measure causal effects at the latent variable level with reflective indicators. This method suits predictive models measuring causal effects at the latent variable level, using reflective indicators (Borsboom, 2008).

A sample size of 258 participants was selected based on the recommendation of Hair Jr et al. (2021), who suggest that for SEM-PLS analysis, the minimum sample size is 220 participants. The use of this sample size is expected to provide more accurate and reliable results in statistical analysis, as well as cover sufficient variation from the studied population. This sample size also allows for better generalization of research results to the broader population.

To ensure the validity and reliability of the constructs used in this research, several steps were taken. Convergent validity testing was conducted using Average Variance Extracted (AVE) values, which are expected to be above 0.5, thus ensuring that the indicators for each construct have good internal consistency. Additionally, discriminant validity testing was applied using the Fornell-Larcker criterion to ensure that each construct correlates more strongly with its own indicators compared to other constructs. In terms of reliability testing, Cronbach's Alpha (CA) and Composite Reliability (CR) values were used with thresholds above 0.6 and 0.7 respectively to ensure that the constructs have high internal reliability. Lastly, the questionnaire was first pilot-tested on a small sample to ensure clarity of questions and consistency of answers before being used on the entire research sample. This approach ensures that the validity and reliability of the constructs used in this research can be ascertained, making the research results more trustworthy and dependable.

3. Result and Discussion

3.1. Results

In this study, we leverage a quantitative approach with SEM-PLS to explore the connections between variables. Ensuring the accuracy (validity) and consistency (reliability) of our measures is crucial. Details on these aspects can be found in Table 2.

Table 2. Recapitulation of Data Quality Testing Results

Variable	Testing				
	Convergent Validity Test (> 0,5)	Fornell-Larcker	Cronbach's Alpha (CA) (0.6)	Composite Reliability (CR) (>0.70)	Description
XBRL Implementation (X1)	0,750	0,866	0,952	0,960	Valid and Reliable
AIS Effectiveness (X2)	0,699	0,836	0,973	0,975	Valid and Reliable
Information Technology Governance (M)	0,675	0,822	0,970	0,972	Valid and Reliable
Real Time Reporting (Y)	0,620	0,787	0,972	0,974	Valid and Reliable

The data quality analysis in Table 2 confirms the reliability of our measures. All constructs boast a CR exceeding 0.7 and a CA exceeding 0.6, indicating consistent measurement across indicators. This translates to both validity and reliability for the studied variables. Consequently, the entire questionnaire effectively captures the intended constructs of XBRL implementation, AIS

effectiveness, information technology governance, and real-time reporting. Interestingly, Table 2 also reveals AIS Effectiveness as the most dominant variable with a particularly high CA of 0.973.

Table 3. R-Square and Adjusted R-Square Test Results

Dependent Variable	R Square	Adjusted R-Square
Real Time Reporting (Y)	0,889	0,886

Source: data processed in 2024

Table 3 shows that the Adjusted R-square value for the Real Time Reporting variable (Y) is 0.886. This suggests that 88.6% of the variance in real time reporting can be accounted for by the XBRL implementation variable and the effectiveness of AIS, as moderated by information technology governance. The remaining 11.4% likely due to influences outside the scope of this study. The study found the PLS model has consistently lower errors, suggesting strong predictive capability. This allows us to move on to testing their research questions.

Table 4. Hypothesis Test

Hypothesis	Predictions	Related	Path Coefficient	T Statistics	P Values	Conclusion
1	Positive	X1 -> Y	0,206	2,319	**0,010**	Supported
2	Positive	X2 -> Y	0,276	2,957	**0,002**	Supported
3	Negative	M*X1 -> Y	-0,065	0,849	**0,198**	Not Supported
4	Positive	M*X2 -> Y	0,082	1,144	**0,127**	Not Supported

Our analysis of Table 4 shows that the effect of implementing XRBL (X1) on Real-Time Reporting (Y) is significant. The p-value (0.010) being lower than 0.05 indicates a strong connection between X1 and Y. In other words, our findings support the idea that X1 influences Y. This indicates that XBRL implementation positively influences real time reporting. Improved XBRL application leads to enhanced real time reporting, while decreased XBRL usage results in diminished real time reporting capabilities.

AIS Effectiveness (X2) has a positive and statistically significant effect on Real Time Reporting (Y). This means that companies with more effective AIS tend to have better real-time reporting. The strength of the effect is measured by the path coefficient, which is 0.276. The data suggests a positive correlation between the effectiveness of the AIS and real time reporting. As the AIS becomes more effective, there's a corresponding improvement in real time reporting. Conversely, a decrease in the system's effectiveness leads to a decline in Real Time Reporting performance.

The study examined how implementing XRBL (a specific format for financial data) affects how quickly companies can report their finances (real-time reporting). They also considered how well companies manage their information technology (IT governance) might influence this effect. The results showed a weak influence (coefficient of -0.065) - meaning good IT governance might slightly reduce the positive effect of XRBL on real-time reporting. However, with a t-value of 0.849 and a p-value of 0.198, this influence isn't statistically significant (essentially not strong enough to be sure it's not random). In simpler terms, while the study suggests some link between XRBL, IT management, and faster reporting, the connection is too weak to definitively say how IT governance affects the impact of XRBL. Contrary to expectations, information technology governance was not found to enhance the positive effect of XBRL implementation on achieving real-time reporting.

The study looked at how effective AIS (X2) affect how quickly companies can report their finances (real-time reporting) (Y). They also considered how well companies manage their information technology (IT governance) (M) might influence this effect. The results showed a slightly positive influence (coefficient of 0.082) - meaning good IT governance might slightly boost the positive effect of effective AIS on real-time reporting. However, with a t-value of 1.144 and a p-value of 0.127, this influence isn't statistically significant. In other words, it's not strong enough to be

certain it's not just a random coincidence. So, while there's a hint that IT management might play a role, the study can't definitively say that effective AIS leads to faster reporting even more so with good IT governance. As such, even with strong IT governance, the effectiveness of the AIS doesn't necesly lead to improved real-time reporting

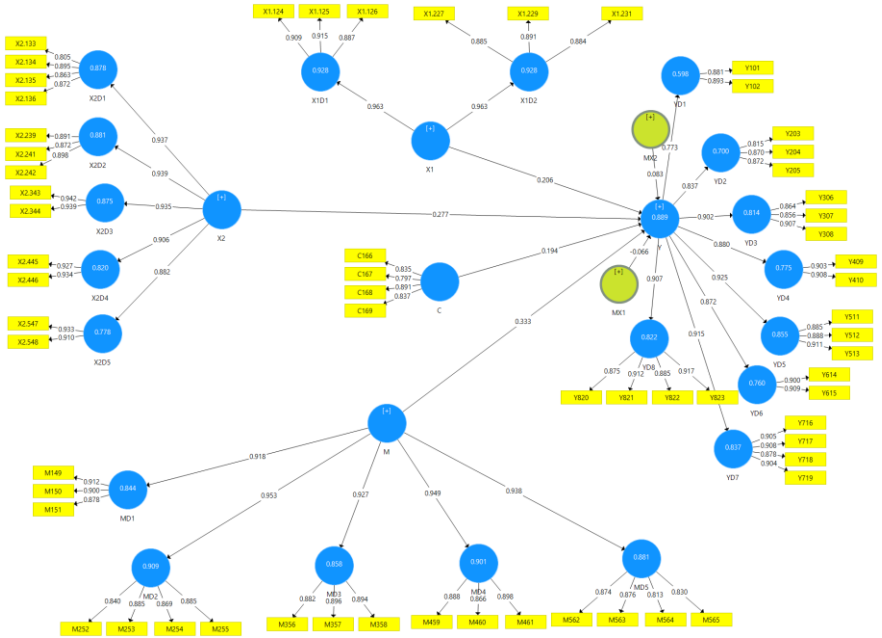

Fig. 2 : Full Model Structural (PLS Algorithm)

Table 5. t Test (Sensitivity Test)

Hip.	Relationship	Model 1 =Real Time Reporting (8 dimensions)				Model 2 =Real Time Reporting (6 dimensions)			
		Path Coefficient	T Statistics	P Values	Decision	Path Coefficient	T Statistics	P Values	Decision
1	X1 -> Y	0,206	2,319	0,010	Supported	0,203	2,141	0,016	Supported
2	X2 -> Y	0,276	2,957	0,002	Supported	0,276	2,885	0,002	Supported
3	M*X1 -> Y	-0,065	0,849	0,198	Not Supported	-0,064	0,847	0,199	Not Supported
4	M*X2 -> Y	0,082	1,144	0,127	Not Supported	0,081	1,143	0,127	Not Supported
Adjusted R-Square		0,889				0,888			
Significance Level *5%, **10%									

Source: data processed in 2024

A sensitivity analysis summarized in Table 5 examines the robustness of two models as follows:

The results of this study show that XBRL implementation has a positive and statistically significant impact on real-time reporting. Specifically, the path coefficient (β) for XBRL implementation is 0.206, with a t value of 2.319 and a p value of 0.010 ($p < 0.05$). The significant implementation of XBRL on real-time reporting indicates that the adoption of this technology can improve transparency and efficiency in financial reporting. XBRL allows companies to present financial information more consistently and quickly, which is very important in today's dynamic and technology-oriented business environment.

In addition, the effectiveness of Accounting Information Systems (AIS) also shows a positive and statistically significant effect on real-time reporting. The path coefficient for AIS effectiveness is 0.276, with a t value of 2.957 and a p value of 0.002 ($p < 0.05$). This indicates that the more effective the AIS, the better the real-time reporting. The positive and significant impact underscores the

importance of reliable and efficient information systems in supporting accurate and timely reporting. A sound accounting information system not only automates accounting processes but also ensures data integrity and supports data-driven management decisions.

Yet, the moderating effect of IT governance on these relationships was not found to be significant. For the interaction between IT governance and XBRL implementation, the path coefficient was -0.065, with a t-value of 0.849 and a p-value of 0.198 ($p > 0.05$). Similarly, for the interaction between IT governance and AIS effectiveness, the path coefficient was 0.082, with a t-value of 1.144 and a p-value of 0.127 ($p > 0.05$). These results reveal that IT governance does not significantly increase or decrease the impact of XBRL implementation or AIS effectiveness on real-time reporting. This could be due to other reasons such as the bank's internal policies, the level of staff training and understanding of IT, and the readiness of the bank's IT infrastructure.

Adjusted R Square of the first model that uses Real Time Reporting variable measured by 8 dimensions is 88.9%, higher than the second model that uses Real Time Reporting variable measured by 6 dimensions, which is 88.8%. indicates that the addition of 2 dimensions with a total of 8 indicators, namely the Big Data and CAATTs dimensions, substantially contributes to Real Time Reporting. The Adjusted R-square value of company performance after adding these 2 dimensions increased by 0.1%, which was 0.889%.

As a consequence, banks and companies in other sectors looking at implementing XBRL and improving the effectiveness of AIS should bear in mind that while these two factors may prove to be meaningful, good IT governance also needs to be recognized as part of a broader information technology strategy.

3.2. Discussions

XBRL implementation (X1) has a positive and statistically significant impact on real-time reporting (Y). This means companies using XBRL report their finances faster, and this effect is unlikely due to chance (p-value = 0.010 < 0.05). The finding was similar to what other researchers have found (Seele, 2016) which states that the variable XBRL implementation is shown to have a positive impact on real time reporting in several ways. Studies suggest that XBRL can lead to more reliable and accurate financial reporting (higher quality) (Vincent Tawiah, 2022). Interestingly, this effect seems to be even more pronounced in developing economies compared to developed ones (Vincent Tawiah, 2022). XBRL implementation has a positive effect on financial statements for several reasons. Firstly, XBRL facilitates access to financial information, especially for international investors, by applying universal information identification standards. This finding is similar to previous findings in developing countries such as Malaysia (Ilias et al., 2014), which have shown that XBRL promotes the efficiency and transparency of financial reporting. The adoption of XBRL enables easier and faster integration of financial data, resulting in more accurate and timely information. In the case of conventional banks in Indonesia, these outcomes provide an indication that the adoption of advanced reporting technologies can provide significant benefits, including improved operational efficiency and reliability of financial statements.

Second, XBRL goes beyond efficiency. It accelerates data processing and automates tasks, leading to a smoother analysis process and ensuring high-quality information for informed corporate decisions. Third, XBRL enables cost savings, faster, more reliable data input, and better quality analysis for decision-making. Fourth, XBRL plays a key role in enhancing transparency and financial reporting quality for listed companies. This standardized language streamlines financial statements, allowing a wider range of investors to assess a company's health and make informed investment choices. Interestingly, a recent sensitivity test showed that incorporating 'novelty' as a dimension in XBRL applications can further strengthen this positive impact (path coefficient of 0.203 to 0.206).

The study found a positive effect (coefficient of 0.276) of effective Accounting Information Systems (AIS) (X2) on how quickly companies report their finances (real-time reporting) (Y). This

means companies with more effective AIS tend to report their finances 27.6% more quickly on average. The results are statistically significant (p-value = 0.002 < 0.05), meaning it's very unlikely this is just a random coincidence. Likewise, (Devi et al., 2020a) states that the AIS Effectiveness variable has been shown to positively relates with real time reporting in several ways. The benefit of the effectiveness of AIS on real time reporting is that AIS can improve the timeliness of corporate financial reporting. The sensitivity test results show that after adding the two dimensions of novelty, the value remains the coefficient path of 0.276 on the effect of AIS effectiveness towards real time reporting. This affirm that effective accounting information systems are key to supporting real-time reporting. This finding is in consonance with Prasetyo (2022) study in Indonesia, which points out the importance of effective information systems for fast and accurate financial reporting. The effectiveness of AIS ensures that financial data can be accessed and reported in a timely manner, improving the quality and reliability of financial information.

The study investigated how a company's use of XBRL affects how quickly they report finances (real-time reporting), considering how well they manage their information technology (IT governance). They found a weak negative influence (coefficient of -0.065). This means good IT governance might slightly reduce the positive effect of XBRL on real-time reporting. However, with a t-value of 0.849 and a p-value of 0.198, this influence isn't statistically significant. This might be due to the discrepancy in IT governance implementation or the organizational context in Indonesia is distinct from other countries, so the role of IT governance is not seen as significant. The sensitivity test results show that after adding two dimensions of novelty, there is a decrease in the path coefficient value from -0.064 to -0.065 on the contribution of information technology governance as moderating the implementation of XRBL on real time reporting. There may be several potential explanations why IT governance does not moderate this connection. First, the quality of IT governance in conventional banks in Indonesia may vary considerably. Different banks may implement IT governance in different ways, leading to inconsistent and insignificant impact of IT governance as a moderator. Secondly, operational and regulatory conditions in Indonesia may diverge from other nations where IT governance shows a significant moderating effect. For instance, factors such as underdeveloped technology infrastructure or unsupportive regulations may reduce the effectiveness of IT governance as a moderator. Third, internal factors such as organizational culture, management commitment, and employee technical competence may have a more dominant role in influencing the effectiveness of XBRL implementation and real-time reporting compared to IT governance.

The study looked at how effective Accounting Information Systems (AIS) (X2) affect how quickly companies report their finances (real-time reporting) (Y), while also considering how well they manage their information technology (IT governance) (M). They found a weak positive influence (coefficient of 0.082) from IT governance. This means good IT governance might slightly enhance the positive effect of effective AIS on real-time reporting. However, with a t-value of 1.144 and a p-value of 0.127, this influence isn't statistically significant. The sensitivity test results show that after adding two dimensions of novelty, there is an increase in the path coefficient value of 0.081 to 0.082 on the role of information technology governance as moderating the effectiveness of AIS on real time reporting. Organizations may place more attention on improving accounting information systems (AIS) or other areas of operations that are considered more vital to real-time reporting, notably data quality and processing speed, making the role of IT governance less significant. The level of technology readiness and employee training probably have a stronger impact on AIS effectiveness than IT governance. If employees are unprepared or poorly trained, then IT governance will not be able to significantly improve AIS effectiveness. Management support for the use and development of AIS may be more influential in ensuring the success of real-time reporting. Without strong management support, IT governance may not be able to function effectively as a moderator.

The results of interviews with respondents said that information technology management has not been fully implemented in accordance with the needs of better information systems and the use of

adequate resources. Therefore, information technology governance has not fully helped the application of new technologies in the banking system so that adjustments are still needed. To ensure that IT governance can moderate the effect of AIS effectiveness on real-time reporting, it is important to design governance that not only focuses on strategic aspects, but also ensures that AIS function properly and support real-time reporting needs. Banking reporting has a cut of time, which is the next day the entry into the GL is at night. The bank has many products, e.g. Mortgages, credit cards, personal loans, savings, all have their own Transaction Processing (TP) with XBRL attached to each TP, but when integrated into a report it will be generated must be H + 1 tomorrow for decision making. Reports that can be generated in real time end of day only for customer records, but for global reporting records cannot be real time. For overall reporting, it takes time because in the bank there is a Global Customer Number (GCN) that combines 5 products into 1 process in the Integrated Commercial Bank Report (LBUT) which takes time to process. Even with good information technology governance, the application of XBRL and the effectiveness of the AIS cannot strengthen real-time reporting because each business and product works independently with its own governance and information system, no matter how good the governance is, it will not have an effect because information technology governance functions at the level so that no leaks occur, no problems occur, including cyber security, in each information system that functions to maintain real-time transaction processing. The application of XBRL and the effectiveness of AIS cannot strengthen real-time reporting, because: (1) XBRL is one language for transaction processing that cannot be changed to align with GCN in real time. (2) XBRL has many businesses, business diversity and product diversity that require each trade processing centre where XBRL and SIA effectiveness will be real at the time of the system, while for incorporation into overall reporting, information technology governance cannot be done in real time because it is processed at night for tomorrow's reporting.

The research found that IT governance does not significantly moderate the relation between XBRL implementation, AIS effectiveness, and real-time reporting in contrast to previous studies (e.g., (Darmawan, 2021)). This perhaps reflects the unique challenges faced by banks in Indonesia in implementing effective IT governance practices or the possibility that there are other factors that are more salient in this context. Other developing country studies such as the study by Devi et al. (2020) also point to differences in the impact of AIS on real-time reporting, which may be due to differences in technological infrastructure and economic conditions. Effective implementation of XBRL can improve information quality and decision-making efficiency, which will in turn improve bank performance. Bank managers should instead focus on improving their accounting information systems (AIS) to achieve better real-time reporting. In addition, even though IT governance does not significantly moderate this relationship, it is still important to ensure that good IT governance practices are in place to support the adoption of new technologies.

4. Conclusions and Further Works

This study provides empirical evidence for the positive effects of XBRL implementation and AIS effectiveness on real-time reporting in Indonesian national banks. Our findings demonstrate that both XBRL and effective AIS are crucial in enabling timely and accurate financial reporting. However, the lack of significant moderating effect from IT governance suggests a need for further investigation into the role of governance structures in facilitating real-time reporting.

The study contributes to the literature by extending the application of the Technology Acceptance Model to real-time reporting in a developing economy context. It also introduces novel dimensions of Big Data and CAATTs to the real-time reporting construct, reflecting the evolving nature of financial reporting in the digital age.

Practically, these results suggest that bank managers in Indonesia should focus on implementing XBRL and enhancing their AIS to improve real-time reporting capabilities. However, they should also reassess their IT governance structures to ensure they effectively support these technological

implementations.

Limitations of this study include its cross-sectional nature and focus on a single country. Future research should consider longitudinal designs to capture the long- term effects of XBRL and AIS implementations, and expand the scope to other developing economies for comparative analysis.

Despite these limitations, this study provides valuable insights into the enablers of real-time reporting in the banking sector of developing economies, offering a foundation for further research and practical application in this crucial area of financial management.

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