Examining XBRL Early Adopters: A Study of Determinants and Value Relevance

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Abstract—**In 2015, Indonesia began implementing XBRL as one of its financial reporting formats. Based on the technology organization environment (TOE) model and signaling theory, this study examines the factors that determine early adopters in the early phase (2015 and 2016) of XBRL in Indonesia. Furthermore, this study examines the benefits of applying XBRL to the value relevance of earnings. The sample of this study is 360 firms listed on the Indonesia Stock Exchange. We find that in the early phase there were 298 firms using XBRL from the total sample and by 2016 that figure had decreased to 133, perhaps indicating a negative market reaction to XBRL. By using logistic regression, we find that a firm's size and profitability are the firm's financial characteristics that determines XBRL early adoption. The composition of financial reporting expertise on the board also determine XBRL early adoption. We also find that there is no effect of XBRL adoption on the value relevance of earnings.**

Keywords—*XBRL adoption, determinants, value relevance, firm characteristics, board characteristics*

I. Introduction

Since the introduction of extensible business reporting language (XBRL) in 1999, as a new technology used in the financial reporting process, XBRL's implementation has grown globally [1]. XBRL has been implemented in many countries either mandatorily or voluntarily. The mandatory application has been implemented by stock market regulators in America, some European countries such as Belgium, France, Germany, the U.K. and some Asian countries such as China, Japan, Korea, and India. In Indonesia, the Indonesian stock exchange began developing XBRL and plans to start implementing it as one of the financial reporting formats for the companies listed on it [2].

However, the adoption of new technology into the financial reporting process is something that can be disruptive, risky, and costly and the promised benefits cannot be taken for granted [3]. Thus, the decision to implement a new technology should be considered by the company, especially for technologies that are not required by regulators or for voluntary adoption.

In Indonesia, in the early phase of implementation, XBRL has been adopted by many firms for financial statements in 2015. However, by 2016 the number of companies implementing XBRL has declined. According to technology organization environments (TOE) model, the adoption of a new technology depends on the company's condition and support from top management [4]. Based on the TOE model, this research explores what factors determine a company's decision favoring early adoption of XBRL. Besides, factors determining that decision are also examined concerning the benefits of implementing XBRL. While the Indonesian stock exchange hopes that XBRL will make financial statements more relevant, it is unclear *ex-ante* whether using XBRL will achieve that objective [5].

The benefits of XBRL are still debatable and questionable: Will XBRL have a significant impact on financial statements users. Janvrin [6] and Efendi, Park, & Subramaniam [7] suggest that the implementation of XBRL disclosure provides benefits to users of financial statements, particularly for investors, because XBRL reports more incremental information than traditional HTML formats. This fact indicates that XBRL can improve the relevance of accounting information. However, Dhole et al. [5] examined the impact of XBRL's implementation and found that it has no effect on the relevance of the value of accounting information or it does not make financial reports more informative. Furthermore, in line with Dhole, et al. [5], Blankespoor, et al. [8] found lower market depth and higher bid-ask spreads after XBRL was mandated.

This study makes several contributions. First, we address new issues concerning the implementation of XBRL in Indonesia that are still not mandatory in an emerging country. Existing XBRL research mostly covers the impact of XBRL implementation on developed countries that have required XBRL [5, 9, 10]. Second, this research tries to integrate TOE to see the factors that determine the adoption of XBRL by the company. Prior research has focused only on the characteristics of the company [11]. So, we contribute to the identification of antecedents of XBRL early adoption. Third, it extends the literature on the impact of XBRL early

adoption, especially regarding the value relevance of accounting information.

The sample for this research is 360 firms registered in 2015–2016 on Indonesia stock exchange selected by the purposive sampling technique. This 2015–2016 election marked the initial year of XBRL implementation in Indonesia. By using logistic regression, we found that a firm's size and profitability are the characteristic factors that influence a company's decision to adopt XBRL. Meanwhile, judging from board team characteristics, the financial expert composition is a factor affecting XBRL adopters, too. Lastly, XBRL supposedly improves the transparency and accuracy of financial statement processing [12], enhancing the value relevance of earnings after the adoption of XBRL, but we find no evidence that XBRL can make such an improvement.

This study provides regulatory implications to further encourage the implementation of XBRL Indonesia and can socialize it massively so that XBRL can deliver the expected benefits. Besides, this study also provides implications for future researchers who want to discuss similar issues.

The remainder of this paper proceeds as follows: section 2 contains a literature review and hypothesis development. Section 3 discusses the research methodology. Section 4 presents empirical results, and section 5 contains a discussion about the findings. The last section provides a conclusion and summary.

II. LITERATURE REVIEW

A. Overview

In the early phase of XBRL adoption, we try to examine the factors that determine XBRL, early adopters. Then, we test the benefits of XBRL adoption in making accounting information more relevant. We integrate the Technology Organization Environment model and signaling theory to examine the factors that determine XBRL early adopters and the impact on value relevant to accounting information. First, we describe the development of XBRL and its benefits. Then we integrate theories and prior research to formulate hypotheses.

B. eXtensible Business Reporting Language (XBRL)

In 2009, the SEC mandated that firms must tag their primary financial statements, schedules, company identification information, and footnote disclosures using XBRL. XBRL is an electronic communication language universally used for business information exchange, and useful in the preparation process, analysis, and accuracy of various parties providing and using business information [2]. It allows the firm to report their financial/non-financial data in a standardized format [11]. All financial facts in financial statements are tagged to identify each item of data using machine-readable XBRL elements defined in its taxonomies that can make it easier for users to read the financial statements [13].

C. Technology Organization Environment Model and XBRL Early Adopters

Awa et al. [4] improve the theoretical strength of the environmental-organization-technological framework (TOE). This framework identifies three elements of the company that affect the implementation process of new technologies: a) the environmental context consists of multiple stakeholders such as industry, customers, competitors, suppliers, governments and communities. They can play a role in influencing how the company interprets the need for innovation, its ability to acquire the resources, to achieve innovation, and to execute it. These stakeholders can be a barrier or a supporter of technological innovation; b) the organizational context is the form of scope, size, and managerial structure. Available resources such as human and manpower skills and then experience have been considered as indicators of organizational prowess that can affect the implementation of XBRL [14]. This statement is supported by Angeles [15] that reveal top executives can provide a boost to major organizational change; c) technological contexts provide relevant internal and external technology in companies, this includes the practice and the availability of the latest equipment that can support the implementation of new technologies in the company. The TOE framework includes environmental, organizational and technological factors can affect the process of XBRL implementation as a new technology. It is important to be emphasized by the company in XBRL implementation and adaptation of new projects [14].

D. Signaling Theory and Value Relevance on XBRL Adoption

The correlation of signaling theory with this research is that firms give positive signals to the company's investors who have applied XBRL to create more comparable financial statements and that the company has applied the latest technology in its financial statements to facilitate decision making by information users. With the benefits of XBRL, when a company implements XBRL as one of its financial statement formats, it can be seen as giving a positive signal to the management team's market for transparency, thereby increasing the market valuation of the XBRL adopters [3].

In Kargin [16], value relevance is conceptualized as an accounting information ability in explaining firm value based on the market value that is useful for investors making investment decisions. The value relevance is related to how the information in the financial statements can influence investors' decisions and is reflected by market value [17]. Research suggests that XBRL in financial reporting provides many benefits. The automation of information permits a quicker and more accurate business decision making for investors [2]. Yao [18] shows a relationship between the application of XBRL with the accuracy of analyst predictions. By using XBRL, information can be accessed publicly [19], so it can reduce information asymmetries [9] and makes the accounting information in financial statements be more relevant.

E. Hypotheses Development

1) XBRL adoption Determinants

In this research, there are two essential characteristics that describe the determinants of XBRL adoption: the company's financial characteristics and the characteristics of the company's board. The company's financial characteristics are determined by its size, growth, profitability, and leverage, while the characteristics of its board are determined from the key person who has financial reporting or IT capabilities. The impact of gender is also considered.

Some literature suggests that firm size is a major factor affecting technology adoption [20]. Efendi et al. [21] revealed that larger companies tend to adopt technology earlier than small companies, such as the "just in time and business to the business system" and larger companies allow for voluntary adoption of XBRL [22]. It supported by Premuso [23] that found that firm size was associated with the early and voluntary XBRL decisions because larger companies need to prepare, collect, analyze and present financial data in new formats such as XBRL. Consistent with TOE theory, size of the organization is effective in accepting innovation and technology [24]. We, therefore, test the following hypothesis:

Hypothesis 1a: There is a positive relationship between firm size and XBRL early adoption.

Companies with higher growth opportunities usually disclose more [25]. Hence, companies will try to adopt the same level of disclosure as others within the same industry because if a company does not practice the same level of disclosure, it may be perceived by stakeholders as hiding bad news based on signaling theory [26]. Consistent with signal theory, companies will try to provide positive signals by providing more and easier information disclosure by using XBRL, thereby reducing information asymmetries to attract investors. Therefore, based on Efendi's study [21], this study incorporates PER as a proxy to consider its effect on a company's growth rate. PER is measured using the company's stock market price divided by the company's EPS. We therefore test the following hypothesis:

Hypothesis 1b: There is a positive relationship between firm growth and XBRL early adoption.

Signal theory explains the effect of profitability on XBRL. More profitable companies are expected to provide more information with more disclosure that can signal competitive advantage to the company [27]. Therefore, profitable corporate managers tend to adopt XBRL voluntarily to improve accounting transparency. Signaling theory predicts that firms with higher quality will choose accounting policies that can demonstrate superior quality, while companies with lower quality will seek to limit access to accounting information [28]. Therefore, using XBRL will signal that the company has a high-quality operation. We, therefore, test the following hypothesis:

Hypothesis 1c: There is a positive relationship between firm profitability and XBRL early adoption.

Healy and Palepu [29] revealed that companies seeking to issue debt or equity securities must have an incentive to provide voluntary disclosure. If the manager wants to improve his credibility with the rating agency, then the company will try to give a positive signal. This is because companies with high debt levels seek to reduce information asymmetries by providing greater informative disclosure [11]. We, therefore, test the following hypothesis:

Hypothesis 1d: There is a positive relationship between firm leverage use and XBRL early adoption.

Consistent with an organizational factor in TOE theory, available resources such as manpower skills and experience have been considered as determinate to adopt new technologies such as XBRL. It can be seen from executive financial reporting when involved in decision making. Their competencies view XBRL as an innovative financial reporting technology, so they may be expected to encourage XBRL adoption [4]. However, if an executive with financial reporting competence has little information, is not enthusiastic or conservative in his view of the benefits of XBRL, then he may hesitate to promote the adoption of this technology [30, 31]. Then, the hypothesis will be:

Hypothesis 1e: There is a positive relationship between the directors who have higher financial reporting competencies and XBRL early adoption.

Information system competence is an essential matter in the choice to adopt information technology innovation such as XBRL [3]. When managers responsible for adoption decisions perceive significant benefits from technology, managers (executives) are more likely to adopt XBRL [31]. Then Boritz et al., [3] also argue that the competence of information systems is positively correlated with the adoption of XBRL. Kollman et al. [32] suggest that IT experience affects the process of innovation, such as e-business, ERP, and XBRL, etc. While experience is the basis to create and develop knowledge for IT experts. Then, we formulate this following hypothesis:

Hypothesis 1f: There is a positive relationship between directors who have higher IT competencies and XBRL early adoption.

By age and sex, decision-makers influence on the tendency to seek and try something new [4]. Cai et al. [33] revealed that men still hold a better attitude toward the use of technology than women. Abdolmohammadi et al. [1] support this research by stating that gender has a significant influence on the involvement of the internal audit function in the implementation of XBRL. Thus, we formulate the following hypothesis:

Hypothesis 1g: There is a positive relationship between a director's gender and XBRL early adoption.

2) Value Relevance Accounting Information

Given the benefits of XBRL, when a company implements it as one of its financial statement formats, a positive signal to the management team's market for transparency is given, thereby increasing the market value of XBRL adopters [3]. According to Gu (2002), a stock's price or return can represent vthe alue of the company. Cao [16] discloses that accounting information is statistically related to the market value of the stock, so it is predicted to be value-relevant. Based on Chilvarind's study [34], the relevance of the value of accounting information in the period after XBRL implementation has increased compared to the period before the implementation of XBRL. Then, we formulate this following hypothesis:

H2 : There is a positive relationship between a key person's gender and XBRL adoption

III. RESEARCH METHODOLOGY

A. Overview

The initial objective of this paper is to examine the factors that determine XBRL's early adopters and the impact of valuing the relevance of earnings. We choose companies listed on the BEI and then identified which ones had adopted XBRL. After that, we analyzed them to see what factors influenced the adoption of XBRL based on the TOE model, as well as its impact on the value relevance of earnings by using predetermined variables and measurements.

B. Research Method

This research uses the quantitative method with an empirical approach. We used secondary data that was derived from the company's annual report and the Indonesia stock exchange website. The initial sample consisted of 1,110 Indonesian companies listed on the Indonesia stock exchange in 2015 and 2016. In the sample calculation process, we excluded 178 firms from the financial sector as they operate in an environment where XBRL implementation has been required by the financial services authority and the Bank of Indonesia since 2013, rather than being implemented voluntarily. We also eliminated 94 firm-years that did not have the required data information, obtaining a final sample of 720 companies, summarized in Table I.

TABLE I. SAMPLE SELECTION

Details	Sample
Initial sample from the Indonesia stock exchange (Firm years)	1,060
Less :	
Finance Sector	(178)
Missing data observations	(94)
Outliers	(68)
Final sample	720

TABLE II. DETAILED SAMPLE

Sector	Total Sample
Agriculture	18
Mining	37
Basic Industries	57
Machinery	33
Consumer Goods Industry	31
The property, real estate, and building construction	49
Infrastructure and transportation	36
Service, trade, and investments	99
Total sample	360

Table II provides a detailed sample from eight sectors. Of the 360 firms per year, the most heavily sampled sectors were service, trade, and investment, of which are 99 large firms. The agricultural sector consists of 18 firms; mining, 37; basic industries, 57; machinery, 33; consumer goods; 31; property, real estate, and building construction, 49; and infrastructure and transportation, 36.

C. Data Analysis

We used logistic regression to establish the determinants of XBRL adoption and linear regression to determine the value relevance of earnings. Data analysis was performed using STATA 14 software.

First, we examined Hypothesis 1a through Hypothesis 1g that investigate the determinants of XBRL adoption in 2015 and 2016. We estimated the logistic regression model as follows:

$$ADOPT_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 GROWTH_{it} + \beta_3 PROF_{it} + \beta_4 LEV_{it} + \beta_5 FREXP_{it} + \beta_6 ITEXP_{it} + \beta_7 GENDER_{it} + e_{it} \quad (1)$$

Second, in line with the test above, we also investigated Hypothesis 2 (H2) that examined the impact of XBRL adoption due to gender. We estimated the linear regression model as follows:

$$CAR_{it} = \beta_0 + \beta_1 ADOPT_{it} + \beta_2 UE_{it} + \beta_3 ADOPT * UE_{it} + e_{it} \quad (2)$$

The dependent variable reflects the adoption of XBRL and the relevance of the value of accounting information. The adoption (dummy) variable of XBRL ($ADOPT_{it}$) consisted of two groups, 1 if the company is XBRL early adopters and 0 otherwise. In the second model, the variables of value relevance of accounting information (CAR_{it}) were measured by cumulative market-adjusted abnormal returns two months after the issuance of modified annual financial statements [5].

Size, growth, leverage, profitability, financial reporting expert, IT expert, and gender were independent variables in the first model. Size, growth, leverage and profitability variables were based on Ragothaman [11] that used these variables as a determinant of the adoption of XBRL. However, the size measurement in the previous study was measured by the market value of equity in year t stated in logarithm terms, while the size in this study was measured by using total assets in year t stated in logarithm terms. Variables used in this study are financial reporting expertise (FR EXP), IT expertise (IT EXP), and gender, modified from Boritz, et al. [3], which is different from Boritz [3]. In Boritz, et al. [3], the variable measurement used a dummy variable while in this research is based on the percentage of the board that has the competency in FR/IT and also considers gender. Detailed measurement of variables can be seen in Table III.

IV. RESULTS

This section begins by analyzing the descriptive statistics for the sample. It then gives the estimation results for the model (Table IV).

A. Descriptive statistics

Table IV gives the descriptive statistics for all variables. The percentage of XBRL adopters in 2015 is 82.8% of the total 360 firms. Total XBRL adopters in 2015 included 298 firms. In 2016, the percentage declined to 36.9% or 133 firms.

B. Pearson Correlation Matrix

A Pearson correlation test was performed to see the relationship between variables, and to perform a multicollinearity test. To avoid multicollinearity, these coefficients should be < 0.8. The correlation test results between the variables for model 1, can be seen in Table V.
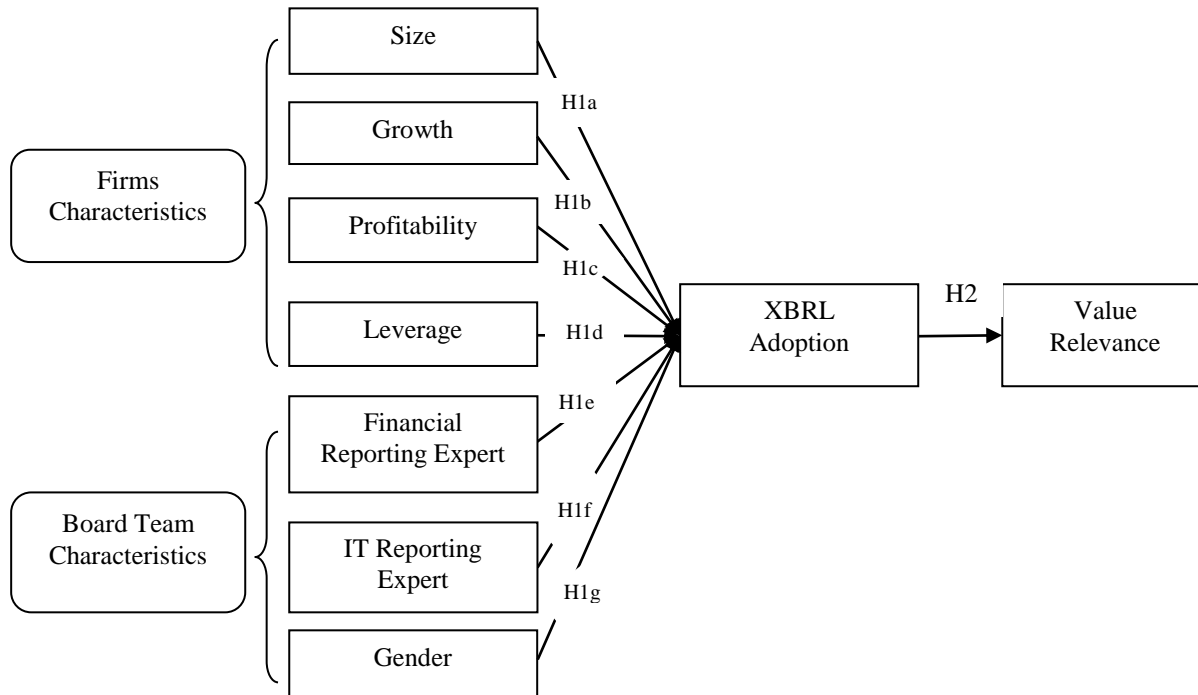
Fig. 1. Framework of study

TABLE III. MEASUREMENT OF VARIABLES

Variables	Measurements
ADOPT	XBRL adopters equal to 1 if the firm is XBRL early adopters and 0 otherwise
SIZE	Ln. total asset
GROWTH	Price earning ratio
LEVERAGE	Debt to equity ratio
PROFITABILITY	Return on assets
FR EXP	Financial reporting expert: percentage of board directors that have an academic degree in accounting or professional certification (e.g., CPA, CA, and other accounting-related certifications).
IT EXP	Information technology expert: percentage of board directors team that has an IT/IS related academic degree.
GENDER	Percentage of men on the board of directors team.
CAR	Cumulative market-adjusted abnormal return two months after the financial statement has been published.
UE	Unexpected earnings. Annual change in the earnings per share.

TABLE IV. DESCRIPTIVE STATISTICS

VARIABLES	2015 (N=360)		2016 (N=360)		All Years (N=720)	
	Mean	St.Dev	Mean	St.Dev	Mean	St.Dev
SIZE	8521812	190000000	8637238	19400000	8579525	19200000
GROWTH	2.340	1.190	2.462	1.254	2.401	1.223
PROF	2.187	13.630	2.323	11.512	2.255	12.607
LEV	1.128	1.771	0.139	1.017	0.494	1.576
CAR	-0.016	0.195	0.014	0.240	-0.001	0.219
UE	-26.109	156.330	11.628	188.503	-7.241	174.072
UE*ADOPT	-22.502	139.948	4.390	75.163	-9.056	113.053
FREXP	0.280	0.214	0.277	0.213	0.279	0.213
ITEXP	0.029	0.091	0.027	0.078	0.028	0.085
GENDER	0.890	0.161	0.890	0.161	0.890	0.161
Variable-dichotomous	Coding	% of the sample	Coding	% of the sample	Coding	% of the sample
ADOPT	1	82.8%	1	36.9%	1	59.9%

SIZE : firms' total assets; GROWTH: price per earnings ratio of the firms; PROF: firms' profitability, defined by return on assets; LEV: firms' leverage, debt to equity ratio; CAR: cumulative abnormal returns, defined by cumulative difference of firms' abnormal returns and market abnormal returns for two months after financial statement was published; UE: unexpected earnings, defined by annual change of earnings per share; UE*ADOPT: impact of XBRL adoption on value relevance of earnings; FREXP: financial reporting expertise, defined by the percentage of total financial reporting experts on the board; ITEXP: information technology expertise, defined by the percentage of total information technology experts on the board; GENDER: percentage of male in the board team; ADOPT: dummy variable equals 1 if the firm is an XBRL adopter.

TABLE V. PEARSON CORRELATION MATRIX FOR MODEL 1

	ADOPT	SIZE	GROWTH	PROF	LEV	FREXP	ITEXP	GENDER
ADOPT	1.00							
SIZE	0.47	1.00						
GROWTH	0.01	-0.05	1.00					
PROF	0.07	0.01	0.20	1.00				
LEV	0.21	0.43	-0.04	0.03	1.00			
FREXP	0.08	0.02	0.03	-0.02	0.00	1.00		
ITEXP	0.00	0.01	0.07	-0.08	0.00	0.05	1.00	
GENDER	0.03	0.00	0.02	0.00	0.04	-0.04	-0.08	1.00
See Table III for variable definitions								

Table VI illustrates the correlation test results between variables for model 2. Table VI and Table VI presents that all of the coefficients are greater than 0.8. It indicates that there is no multicollinearity in these models.

C. Determinants of XBRL adopters

Table VII reports the estimation results of model 1, which addresses research question 1 that tests the determinants for XBRL early adoption. Firm size (SIZE) for XBRL early adopters in 2015 is positive to XBRL adoption with a probability value of 0.04 ($p \leq 0.05$). Profitability (PROF) is positive for XBRL early adoption with a probability value of 0.014 ($p \leq 0.05$). Financial reporting expertise (FREXP) is also positively significant for firm growth (GROWTH), leverage (LEV), Information Technology Expert (ITEXP) and the gender of a board member (GENDER), having no effect on XBRL early adopters. In 2016, there was no relationship between SIZE, GROWTH, PROF, LEV, FREXP, ITEXP, and GENDER as evidenced by probability values higher than 0.05.

D. Value Relevance of XBRL Adoption

Table VIII reports for estimation results of model 2, which addresses research question 2 that examines the value relevance of earnings after XBRL early adoption. Table V shows that there is no correlation between the adoption of XBRL (ADOPT * EU) with the profit relevance (CAR) indicating probability values greater than 0.05. Only unexpected earnings are positively significant with value relevance of earnings ($p \leq 0.1$).

TABLE VI : PEARSON CORRELATION MATRIX FOR MODEL 1

	CAR	ADOPT	UE	UE*ADOPT
CAR	1.00			
ADOPT	-0.15	1.00		
UE	0.09	-0.07	1.00	
UE*ADOPT	0.06	-0.06	0.65	1.00
See Table III for variable definitions				

TABLE VII : ESTIMATION RESULTS FOR DETERMINANTS OF XBRL EARLY ADOPTION

Variables	Expected Sign	2015 (N=360)	2016 (N=360)	All Years (N=720)
		Logistic Regression	Logistic Regression	Logistic Regression
SIZE	+	0.040*** (-2.05)	0.938 (0.08)	0.000*** (10.69)
GROWTH	+	0.120 (1.56)	0.246 (1.16)	0.537 (0.62)
PROF	+	0.014*** (2.45)	0.714 (0.37)	0.064* (1.85)
LEV	+	0.663 (-0.44)	0.134 (1.50)	0.670 (0.43)
FREXP	+	0.038*** (2.07)	0.218 (1.23)	0.015** (2.43)
ITEXP	+	0.788) (0.27)	0.720 (0.36)	0.996 (0.01)
GENDER	+	(0.958) (0.05)	(0.553) (0.59)	0.414 (0.82)
Adjusted R^2		0.1053	0.0104	142.80

a. SIZE: firms' total assets; GROWTH: price per earnings ratio of the firm; PROF: firm profitability, defined by return on assets; LEV: firm leverage, debt to equity. ratio; FREXP: financial reporting expertise, defined by the percentage of total financial reporting on the board; ITEXP: information technology expertise, defined by the percentage of total information technology experts on the board; GENDER: percentage of males on the board; ADOPT: dummy variable equals 1 if the firm is an XBRL adopter.
b. *p < 0.10
c. ** p < 0.05
d. ***p < 0.01

TABLE VIII. ESTIMATION RESULTS IMPACTING XBRL ADOPTION ON VALUE-RELEVANCE OF EARNINGS

VARIABLES	EXPECTED SIGN	2015 (N=360)	2016 (N=2016)	All Years (N=720)
ADOPT	+	0.985 (-0.02)	0.338 (-0.96)	0.544 (0.61)
UE	+	0.071* (1.81)	0.091* (1.70)	0.001** (-3.19)
ADOPT*UE	+	0.147 (1.46)	0.415 (0.82)	0.175 (1.36)
Observations		360	360	720
Adjusted R^2		0.0013	0.0030	0.0171

[a.] ADOPT: dummy variable equals 1 if the firm is an XBRL adopter; UE: unexpected earnings, defined by annual change of earnings per share; UE*ADOPT: impact of XBRL adoption on value relevance of earnings

[b.] $*p < 0.10$

[c.] $** p < 0.05$

[d.] $***p < 0.01$

V. DISCUSSION

This section explains the results of the hypothesis that has been presented in the previous section and how the results are following existing theories of previous research results.

A. Determinants of XBRL adopters

Hypothesis 1a (H1a) suggests that there is a positive relationship between firm size and the decision to adopt XBRL early. Hypothesis 1a is supported and in line with our prediction. Efendi et al. [21] indicate that a firm's decision to adopt XBRL depends on its size. Early adopters of XBRL have a larger size on average than those who do not. This finding is in line with TOE theory, which states that large firms are more likely to adopt new technologies faster than small ones [4]. Perhaps smaller firms are slower to adopt technology than larger ones because of their resistance to change [4]

Hypothesis 1b (H1b) suggests that there is a positive relationship between firms' growth and decisions of the firm to adopt XBRL. Hypothesis 1b is not supported, indicating that there is no relationship between growth and early adopters of XBRL.

Hypothesis 1c (H1c) suggests that there is a positive relationship between a firm's profitability and its decision to adopt XBRL. Hypothesis 1c is supported. This result is also in line with Maddah [35]. It indicates that early adopters of XBRL have higher profitability than those who do not. Greater profitability makes firms with more resources adopt new technology, and profitable corporate managers tend to adopt XBRL voluntarily to improve accounting transparency [27].

Hypothesis 1d suggests that there is a positive relationship between leverage and early adopters of XBRL. Hypothesis id is not supported. The results indicate that there is no relationship between leverage and the decision to adopt XBRL. So, leverage is not variable that determines adoption by firms.

Hypothesis 1e (H1e) suggests that there is a positive relationship between FREXP and the decision to adopt XBRL. It indicates that firms with higher board composition on FREXP are more likely to adopt XBRL earlier than those with less. It is in line with theory TOE that states that firms with support from directors are more likely to adopt new technologies because of their competencies as innovative financial reporting technologies [4].

Hypothesis 1f is rejected. There is no relationship between composition information and technology expertise. This outcome may be because there is no significant component of IT expertise on the board. Only a few firms have an IT expert on their board, and they are insignificant in quantity.

Hypothesis 1g is also rejected, indicating that there is no relationship between gender composition of the board team does not determine the adoption of XBRL. It may be because, on average, Indonesian boards are dominated by men. Almost all boards of Indonesia's publicly listed companies have all-male compositions.

B. Value relevance of earnings after XBRL adoption

After testing the variable that can determine XBRL early adopters, we examine the impact of XBRL adoption in value relevance of earnings. The results are shown in Table V. Hypothesis 2 suggests that early adopters of XBRL have value relevance for earnings. Hypothesis 2 is not supported. There is no relationship between the adoption of XBRL and value relevance of earnings. The results indicate that XBRL does not make financial statements more informative, and are in line with research from Dhole et al. [5] which XBRL and their value relevance of earnings. Because there is no effect in value relevance of earnings, it may cause firms that adopt XBRL earlier to try note to adopt it in the future. This fact is evidenced by the reduction of adopters of XBRL in the second phase in 2016. The number of companies adopting XBRL decreased by 44.6% in 2016 based on this research sample. This result can also occur because of the lack of knowledge of financial statement users about XBRL so that users of financial statements do not utilize XBRL optimally. So, regulators might provide more massive socialization and training on XBRL. Thus, either companies or other users of financial statements can be aware of the benefits of XBRL. So, they can use XBRL optimally. Or, perhaps the market has judged that XBRL itself is suboptimal and thus its use has been rejected. Only time will tell.

VI. CONCLUSION

The Indonesia stock exchange began to socialize the XBRL taxonomy in 2015 and planned to make XBRL one of its annual financial reporting formats. This study examined the factors that determine XBRL early adoption. Then, it tested the impact of XBRL implementation on the value relevance of earnings.

From the data analysis, we found that firms' size, profitability, and percentage of people with IT expertise on the board of directors are factors that determine XBRL early adoption. We also found that XBR does not affect the value relevance of earnings. It indicates that XBRL does not make financial reports more informative.

One limitation of this study is the short period (the initial two years) considered after XBRL's initial adoption, so the results of this study are insufficient to deduce the benefits of XBRL. Also, this study only examines some of the characteristics of a company and it board. Future research can perceive the impact of longer time use of XBRL as well as use other determinants that could affect companies that adopt XBRL. Nevertheless, this study may provide regulatory implications that further encourage the implementation of XBRL Indonesia and might socialize it massively so that XBRL can deliver the expected benefits, if indeed the market deems that such benefits really exist. In addition, this study also provides implications for future research that will discuss similar issues dealt with in this study.

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