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# Information Technology Governance and Electronic Financial Disclosure

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**Abstract.** This study set out to link two fundamental topics of corporate governance: Information technology governance (ITG) and the level of electronic financial disclosure (EFD). The paper aimed to examine the extent of ITG in the UAE listed firms, the level of EFD by UAE listed firms and the association between the two variables. The researchers collected data from a sample of 103 firms listed in the financial stock markets of the UAE for the years 2016- 2017. A regression analysis was used to test the relationship between the dependent and independent variables. Consequently, the study found a positive and significant relationship between ITG and EFD. From a practical perspective, this paper is aimed at the board of directors and executive managers, as IT governance is their responsibility. Furthermore, from a theoretical perspective, this paper offers a unique point of view, which adds to the literature review discussing IT governance mechanisms, and EFD. The study would also be of interest to the international investment community, regulators, policy makers and governments in the UAE, the Middle East as well as the other GCC countries.

**Keywords:** Information Technology Governance, Electronic Financial Disclosure, UAE.

## 1 Introduction

Disclosure is a term that frequently changes among researchers. Clinch and Verrecchia define voluntary disclosure as a firm's policy to disclose information that depends both on the characteristics of the economy and the ex-post realization of the information before its disclosure; therefore, possessing an endogenous disposition. Based on Yang et al (2016), several studies have recognized that one of the key determinants of a firm's voluntary disclosure strategy is corporate governance (CG), and it is associated with the dissemination of management earnings forecasts, earnings press releases, and corporate restructuring disclosure to decision-makers.

Recently, electronic financial disclosure (EFD) has been perceived as one of the most important platforms used by firms in communicating information to stakeholders (Drake et al, 2017). A pioneering study by Lymer et al, (1999) describes EFD as the public reporting of financial and operating data by a business enterprise through Internet-based communications media. Due to its low cost, managers are able to disclose accurate and relevant information more frequently through EFD. This helps firms to adhere to the principles of corporate governance by enhancing transparency and reducing information asymmetry and agency related costs.

Another significant corporate governance issue currently faced by the modern firm is related to Information Technology Governance (ITG). Previous research shows that information technology has a direct effect on corporate governance (Farhanghi et al.,

2013). According to the website of the IT Governance Institute (ITGI) (2018), ITG is a subset of corporate governance which focuses on information technology systems, and how their performances are measured, and risks managed. McCollum (2006) claims that the Sarbanes-Oxley Act of 2002 has alerted the board of directors to their firm's need to prioritize Information technology governance. Therefore, due to the critical need of ITG, Huff et al. (2005) demands that an IT expert should be appointed to the board to provide diverse views based on practical experience or background they have in the field of information technology. Moreover, since information technology is a part of corporate governance, Damianides (2005) argues that the reliability and the level of financial disclosure is greatly influenced by a strictly governed IT environment. Therefore, it would be interesting to examine the level of EFD from an IT governance perspective.

Consequently, this paper aims to link two fundamental topics of corporate governance: modern disclosure practices and IT Governance. The study was undertaken to address the following main research questions. First, what is the extent of Information Technology Governance (ITG) by UAE listed firms? What is the level of Electronic Financial Disclosure (EFD) by UAE listed firms? Finally, what is the relationship between ITG and the level of Electronic Financial Disclosure in the UAE?

### **1.1. Why UAE?**

The United Arab Emirates is used as a context of this study for several reasons. Firstly, the UAE considers infrastructure and technology as a highly significant basis of social and economic development (Arafat, et al., 2018) as it is moving from an undiversified oil dependent economy to a diversified non-oil dependent economy. The UAE is, therefore, viewed as the financial hub of the region with a perfect legal system and a good investment environment. In 2014, the UAE's Telecommunication and Regulatory Authority (TRA, 2014) published their fifth sector annual review stating that 85 % of the country's population regularly uses the Internet.

Hussainey and Alfiriji (2012) believe that the UAE, especially Dubai, is the destination of choice for international investors due to three main reasons: speed, culture and governance, as the UAE has initiated the application of international standards of corporate governance in 2010 in an attempt to merge with the global economy (Hasan, 2012). Consequently, as a financial hub which attaches great importance to technology and foreign investments, the UAE provides a unique and interesting context to study the relationship between ITG and EFD.

This paper is written with the board of directors and executive managers in mind, because IT governance is in due course their responsibility. Moreover, to the best of the researcher's knowledge negligible studies have examined the level of EFD in the UAE; thus, contributing knowledge to the literature related to electronic disclosure, ITG, and the UAE. Despite the study having significance to the UAE business environment, it can provide contributions to the Middle Eastern countries, mainly the Cooperation Council for the Arab States of the Gulf (GCC countries), as they share comparable economic, political and social environments. Moreover, the paper offers implications for firms considering IT-experienced nominations to their boards.

## **2 Literature Review**

### **2.1. Electronic Financial Disclosure**

The fundamental theory that underlies the disclosure practices of firms in relation to corporate governance is the agency theory. The agency theory involves the conflicts of interest resulting from the differences between the interests of shareholders and that of managers (AbuGhazaleh, 2012). The relevant literature presents arguments stating that managers have incentives to make investment decisions that reduce the risk of losing their jobs or increase their compensation (Hussainey and Alfiriji, 2012). In turn, this conflict between managers and shareholders gives rise to monitoring costs and other costs by the agent to assure the shareholders that there will be no harm to their interests (Al-Sartawi, 2016).

Fama and Jensen (1983) argue that the responsibility of the board of directors in an agency framework is to solve agency issues between managers and shareholders by suggesting a fixed compensation, and replacing managers that do not create value for the shareholders (Carter et al, 2003). According to Healy and Palepu (2001), corporate governance plays a crucial role in reducing the information gap between the firm and investors who are less informed than the managers. So, to reduce this information gap (asymmetry) and the related agency costs, firms need to disclose accurate, transparent and timely information to the public (Bushee et al, 2009). This could be achieved through electronic financial disclosure (EFD).

Poon and Yu (2012) defined EFD as the use of the firms' websites to disseminate both financial and non-financial information. The advancement in broadband technology has significantly increased accessibility to the Internet. It is now cheaper, easier, and much quicker for people to communicate globally. Thus, traditional financial reporting is becoming less effective compared to the usage of electronic financial disclosure. Almilia (2009) stated that electronic-based reporting removes the restrictions of paper-based reports. As a result, traditional paper-based corporate reporting has become less effective for decision makers. Similarly, Keliwon et al. (2018) differentiate between electronic financial disclosure and the traditional reporting in terms of the methods of reporting information. EFD considers all information that could boost the performance of firms through the internet, including financial and non-financial information, aside from the information contained in annual reports. While traditional reporting concentrates only on the information in annual reports.

Several studies have investigated the determinants and the level of electronic financial disclosure (Al-Sartawi, 2017; Ekramy, 2017), however no study has used IT governance as a determinant beforehand.

## **2.2. Information Technology Governance**

Grais and Pellegrini (2006) claim that there is no particular recipe for the perfect corporate governance plan. However, there are basic principles that constitute what is considered as good corporate governance such as having defined duties and expectations for board members, disclosure and transparency requirements, welldefined shareholder rights, and mechanisms to ensure compliance and hold board members accountable. From this point of view, ITG is perceived as a significant issue faced by firms because the board of directors is used as an internal governance mechanism that reduces agency conflicts and costs.

Rau (2004) defines IT governance as the way senior management interacts and communicates with IT leaders to ensure that technology investments enable the achievement of business strategy in an effective and efficient manner. Likewise, Li et al, (2007) describe IT governance as leadership, organizational structures, and control processes which ensure that the IT of the firms is able support and expand the company and achieve its objectives. Nolan and McFarlan (2005) regard ITG as "a vital asset that requires intense board-security and assistance". Therefore, as ITG

increases the firms' responsiveness to stakeholders, it can be applied to electronic financial disclosure.

Moreover, along with Nolan and McFarlan (2005), Andriole (2009) recommends that an ITG group of expert independent directors need to be appointed to the board, as in the case with the audit committee, due to economic and regulatory matters related to the Sarbanes-Oxley compliance and corporate governance. Thus, these directors are required to be experts in IT, and understand the dynamic potential of information technology in changing the business environment. This notion is supported by the resource dependence theory, which states the importance of the board of directors as resources for the firm to reach external resources (Ribeiro and Colauto, 2016). Despite this need for an IT expert on the board, Valentine and Stewart (2013) found that board level willingness to reduce the gap between awareness and action is very low or non-existent. On the other hand, in the case of the UAE, Nicho and Khan (2017) found that the objectivity of ITG is well-defined and emphasized.

Additionally, Damianides (2005) and (Li et al, 2012) found a positive relationship between ITG and the reliability and the level of financial disclosure. The need for upto-date, frequent and accurate information, therefore places IT security at the core of executives' and directors' concerns. Accordingly, this study hypothesizes that there is a relationship between Information Technology governance and the level of electronic financial disclosure.

### 3 Methodology

In order to address the research questions, mainly the relationship between ITG and the level of EFD in the UAE, the current study collected data from all the 103 firms listed in the financial stock markets of the UAE for the period 2016- 2017. Consequently, the study measures the level of ITG in UAE firms by determining the percentage of the members of the board of directors who have an IT background or experience. Additionally, the study adopted a checklist used by Al-Sartawi (2016) to measure the level of EFD. So, if a firm disclosed any financial information by using any electronic platform it received a score of 1, and 0 if otherwise.

To test the hypothesis, the following regression model was developed using EFD as a dependent variable, and ITG as an independent variable. Additionally, the study used the board of directors' size, firm age, firm size and financial leverage as control variables.

#### Study Model:

$$EFD_i = \beta_0 + \beta_1 ITG_i + \beta_2 BD\_size_i + \beta_3 LF\_size_i + \beta_4 LVG_i + \beta_5 AGE_i + \varepsilon_i$$

Code	Variable Name	Operationalization
<b>Dependent variable</b>		
EFD	Electronic financial	This is a binary Wherein 1 means that the company
	disclosure	discloses financial data and 0 otherwise

#### Independent Variables – Board compensation:

Directors	with	IT	The percentage of members who have IT
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ITG	background and experience %	background and experience to the total board size
<b>Control Variables:</b>		
BD_size	Board size	Natural logarithm of Total Assets
F_size	Firm size	Natural logarithm of Total Assets
LVG	Leverage	Total liabilities/ Total Assets
AGE	Firm Age	The difference between the establishing date of the firm and the report date
ei	Error	

## 4 Data Analysis

### 4.1. Descriptive Statistics

Table 1 reports the descriptive analysis of the independent, dependent and control variables. The maximum level of information technology governance (ITG) was 57 % by UAE firms while the minimum was 0 % with a mean of 6.2 % indicating a low level of ITG. This result is in line with Valentine and Stewart (2013) who state that there is a gap between ITG need and reality. With regards to the level of EFD, UAE achieved a maximum level of 100 %, with an overall mean of 78.3 %, which is considered as a moderate level of EFD by UAE firms considering the high level of internet usage in the country.

Additionally, the descriptive statistics for control variables show that the mean of firm size, i.e. Total Assets, was 72,425.99, with a minimum of 32.27 and a maximum 3,412,461.54, which indicates fairly large firms. The normality distributions of the total assets were skewed, so natural logarithm was used in the regression analysis to reduce the skewness and bring the distribution of the variables nearer to normality. Moreover, the mean leverage of the firms was approximately 35 % showing firms with somewhat medium debts. The average size of the UAE boards is 8 members, while, firm age ranges from 2 to 50 with a mean of 26.56.

**Table 1.** Descriptive Statistics for continues variables

<b>Variables</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
ITG	206	.00	.57	.0620	.11494
Assets	206	32.27	3412461.5	72425.9	3.15257E5
Lev	206	-.44	.98	.3510	.31587
AGE	206	1	49	25.56	14.094
EFD	206	.05	1.00	.7833	.16762
BS	206	5	12	7.59	1.284

### 4.2. Validity

Table 2 summarizes the Pearson's correlation matrix. This will support the study in testing the statistical relationship between the independent and the dependent variables, and whether multicollinearity exists among the data before assessing the model. Table (2) shows that leverage and board size had the highest correlation

(0.303). This correlation is significant; however based on Donald and Robert, (1967) correlation coefficients should not be considered damaging until they exceed 0.80.

**Table 2: Pearson Correlation Matrix**

	<u>ITG</u>	<u>Assets</u>	<u>Lev</u>	<u>AGE</u>	<u>EFD</u>	<u>BS</u>
ITG	1					
Assets	-.068	1				
	.335					
Lev	.004	-.045	1			
	.958	.522				
AGE	.116	-.069	-.049	1		
	.096	.326	.482			
EFD	.131	.063	-.061	.146*	1	
	.060	.371	.384	.036		
BS	-.066	-.115	.303**	.099	-.007	1
	.346	.100	.000	.158	.922	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

A Variance Inflation Factor (VIF) test was used to check the data for multicollinearity. This test was used as according to James et al. (2017), VIF calculates the severity of multicollinearity and measures how much the variance of an estimated regression coefficient is affected by collinearity. The VIF should be lower than 10 and the tolerance test should not be below 0.2. The VIF scores for all variables, both independent and dependent, are reported in table (3). The results indicate that no VIF score exceeded 10 for any variable in the model, and no tolerance score was below 0.2. So, it was concluded that there is no threat of multicollinearity. The table also reports the normality test, where the skewness test and the kurtosis test suggest that all the predictive variables are normally distributed except for size which was doctored using natural logarithm.

**Table 3. Collinearity Statistics Test**

Model	Tolerance	VIF	Kurtosis	Skewness
ITG	.978	1.023	3.840	2.039
Assets	.967	1.034	75.132	8.149
Lev	.881	1.135	-.931	.235
AGE	.962	1.040	-1.514	-.076
BS	.888	1.126	3.053	1.442

Furthermore, to detect the presence of autocorrelation at lag 1 in the prediction errors or residuals from the regression analysis, the Durbin Watson test was used as reported in table (4). The Durbin Watson (D-W) value of the model was (1.9). Thus, we can further conclude that there is no autocorrelation founded in the model because the (DW) value was approximately 2.

**Table 4. Autocorrelation Test**

Model	R	R <sup>2</sup>	Adj. R <sup>2</sup>	Std. Error	Durbin-Watson
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1	.194	.038	.014	.1665	1.9
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### 4.3. Regression Results

Table 5 reports the findings of the regression analysis. The findings indicate that the model was reflecting the relationship between the variables in a statistically appropriate way. According to the table, the model has an adjusted R<sup>2</sup> of 0.38 which shows that the model explains approximately 38 % of the variation in the EFD amongst the UAE listed firms. However, the probability of the F-statistic with a significance 1.71 means that the ITG was not significant in interpreting the EFD level.

The main hypothesis of the study states that there is a relationship between ITG and EFD by firms listed in the UAE markets. The result indicates that there is a significant and positive relationship between the dependent and independent variables, i.e., the higher the level of ITG on the board, the higher the level of disclosure. This could be due to the existence of IT experts on the board, which brings to light the importance of technology in disseminating financial information to interested parties, as they understand the dynamic potential of IT on the business environment. This result is comparable to the study by Li et al., (2012). Moreover, since the UAE invests highly in technology, this offers a potentially beneficial effect on corporate governance by providing a rich environment for cultivating disclosure.

With regards to the control variables (covariates), the study found a significant and positive relationship between the level of EFD and age. One reason for this could be that younger firms might be more hesitant to disclose certain information such as research expenditure and capital expenditure to the competition (Owusu-Ansah, 1998). On the other hand, there was a negative yet insignificant relationship with leverage. This could be because firms with higher leverage tend to be more conservative and try not to disclose to stakeholders that they are indebted. Finally, the results show no relationship between firm size, board size and the level of electronic financial disclosure.

**Table 5: Regression analysis**

<b>Variables</b>	<b>Beta</b>	<b>T. test</b>	<b>Sig.</b>
ITG	.117	1.666	.097*
Assets	.006	.087	.931
Lev	-.058	-.779	.437
AGE	.130	1.837	.068
BS	.005	.071	.944
<b>R<sup>2</sup></b>		.308	
<b>F</b>		1.567	
<b>Prob. (F)</b>		1.71	

\* pv<1 %; \*\* pv<5 %; \*\*\*pv<10 %

## 5 Summary and Conclusions

This study aimed to address several research questions: (1) the extent of ITG in the UAE listed firms, (2) the level of EFD by UAE listed firms and (3) the association



between the two variables. To answer the research questions the researchers collected data from a sample of 103 firms listed in the financial stock markets of the UAE for the years 2016- 2017.

The study reported an overall level of EFD in the UAE at 78.3 % which is a somewhat moderate level compared to the percentage of users of Internet in the UAE, which is 85 %. Secondly, with regards to ITG, the overall level of its implementation is 6.2 % which is very low. The researchers tested the relationship between the dependent and independent variables, and found a positive and significant relationship between ITG and EFD. As for the control variables, the analysis reported a positive and significant relationship with age. While there was an insignificant and negative relationship with leverage, and no relationship with firm size and board size.

From a practical perspective, this paper is aimed at the board of directors and executive managers, as IT governance is their responsibility. As the level of ITG in the UAE firms is very low, this paper advises the board of directors to pay more attention to the percentage of independent members who are IT experts and understand the various technological advancements and how they can be utilized by the firm. These results can be used by the GCC countries as they share similar social, political and economic environments to the UAE. Furthermore, from a theoretical perspective, this paper offers a unique point of view which adds to the literature review discussing IT governance mechanisms, and EFD. The study would also be of interest to the international investment community, regulators, policy makers and governments in the UAE, the Middle East as well as the other GCC countries. This paper suggests having a study that further investigates the relationship between ITG and performance. Future studies could also test the relationship between ITG and social media disclosure which is a step beyond EFD, as social media is a two-way communication tool, unlike EFD which is a one-way communication tool.

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