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# IT GOVERNANCE MATTER: A STRUCTURED LITERATURE REVIEW

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## Abstract

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The aim of this paper is to critically explore information technology governance (ITG) context, its consequences, its various aspects, its determinants, disclosure, maturity, and challenges. There are some motivations that urge the researchers to carry out this study. First, the review of prior relevant literature reveals a limited number of studies addressing the IT governance context, its consequences, its various aspects, its determinants, and challenges. Second, very little is known about the potential implications of IT governance within the business and how it is significant to the decision-makers (e.g., shareholders, board of directors, executives, etc.). Finally, little research employs the structured literature review (SLR) approach to critically discuss and analyze the IT governance context with its various aspects. The systematic and structured literature review has been employed for a critical analysis of the previous studies on IT governance. It is found that effective ITG has a positive impact on the firm performance in consistent with Altemimi and Zakaria (2017), Hulme (2012). Additionally, it is concluded that there is a positive association between ITG, the trustworthiness and the level of financial disclosure agreeing with (Raghupathi, 2007; Ali & Green, 2007). It is also concluded that the level of ITG disclosure is higher within firms in Europe (67%) than in the US (49%) complementing with Joshi et al. (2013). The adoption of the SLR methodology enables this paper to derive unbiased empirical insights and critique into the current ITG research and to identify possible directions for future ITG research, which may possibly be of interest to the academics, regulators, and professional bodies (e.g., shareholders, board of directors, executives, etc.).

**Keywords:** Governance, IT, Disclosure, Board of Directors, Shareholders

**Authors' individual contribution:** Conceptualization — N.O.K.; Methodology — N.O.K.; Investigation — E.K.A.-E.; Resources — E.K.A.-E.; Writing — A.M.K.; Supervision — A.M.K.

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## 1. INTRODUCTION

Nowadays various organizations are looking forward to intensifying the usage of information technology (IT) as an influential tool to change the operational and strategic goals of firms (Albertin, 2001). Thus, the call for a specific focus on IT governance (ITG) is deeply needed (Van Grembergen et al., 2003;

De Haes & VanGrembergen, 2008) since ITG helps in improving the capabilities of the organization to continue and compete in an excellent way in the marketplace globally.

Our paper is motivated by the lack of research addressing the ITG context, its consequences, its various aspects, its determinants, disclosure, maturity, and challenges. Second, very little is

known about the potential implications of IT governance within the business and how it is significant to the decision-makers (e.g., shareholders, board of directors, executives, etc.). Finally, little research employs the structured literature review (SLR) approach to critically discuss and analyze the IT governance context with its various aspects. Moreover, this paper has three main research questions as follows:

*RQ1: How has research for inquiring into the IT governance phenomenon developed?*

*RQ2: What are the focus and critique of the IT governance literature?*

*RQ3: What more could/should be done on the IT governance phenomenon as a research agenda?*

The remainder of this paper is organized as follows. Section 2 presents the structured literature review as it presents the answer to the first two research questions through descriptive analysis. Section 3 outlines the methodology, in which we describe and justify the adoption of SLR research methodology and explain how we selected the articles for the analysis, as well as the development and application of the analytical framework. Section 4 refers to research results and Section 5 discusses the results. Finally, Section 6 has a conclusion including some limitations, implications, and future directions of ITG research.

## 2. LITERATURE REVIEW ANALYSIS: INSIGHTS AND CRITIQUE

### 2.1. Literature focus

The literature focus analysis was significant because it displays various streams of debate in the literature about IT governance-related issues. We classified the literature focus into nine specific categories which are: (J1) effective ITG mechanisms, objectives, and firm performance; (J2) ITG and disclosure; (J3) ITG and social media; (J4) ITG and security management; (J5) ITG and risk management; (J6) ITG on board; (J7) ITG challenges; (J8) ITG macroeconomic and institutional factors. All articles that could not be coded into the previously mentioned classifications were coded as other (J9).

We found that the most popular category in the literature was *effective ITG mechanisms, objectives, and firm performance*, with 44% of all articles (Ali & Green, 2007; Ali et al., 2015; Alreemy et al., 2016). The second category in the literature focus was *ITG and disclosure* with 5% of all articles (Joshi et al., 2013, 2018; Hsu et al., 2016; De Haes et al., 2017; Al-Sartawi et al., 2018). As for the third category, 3% of the literature focused on *ITG and social media* (DeNardis & Hackl, 2015; Haynes, 2016; Asongu & Odhiambo, 2018).

The next category (7%) was classified as *ITG and security management* (Chander et al., 2012; Ghani et al., 2014; Fazlida & Said, 2015; Haqaf & Koyuncu, 2018). The subsequent category (8%) was classified as *ITG and risk management* (Parent & Reich, 2009; Rubino & Vitolla, 2014; Linkov et al., 2018; Papazafeiropoulou & Saeidi, 2016). Subsequently, an equal number of articles (4%) were classified as *ITG on board* (Yatim, 2010; Valentine & Stewart, 2013; Turel & Bart, 2014) and as *ITG challenges* (De, 2016). The following 9% of the literature was devoted to *ITG and*

*macroeconomic factors* (Chandra & Malaya, 2011; Drine, 2012; Van Veenstra, 2012; Lee & Lio, 2016; Bekhet & Abdul Latif, 2018). The remaining 15% of the articles were checked for similarities to create a new category. However, we could not find any significant similarities to create a new category and thus we coded 15 articles as *other* (J9), covering a range of subjects.

Since most of the articles' literature focus was effective ITG mechanisms, objectives, and firm performance. This is reasoned to the need for improved ITG which is approved by 80% of chief information officers (CIOs) and its impact on achieving the objectives of the firm (Volders & de Jong, 2016). One of the studies that supported the significance of ITG reveals that firms with effective ITG achieve profits 25% greater than others with low ITG given the same goals (Weill & Ross, 2004).

It is hypothesized that the IT strategy committee, IT steering committee and the involvement of senior management in IT have a positive impact on the level of effectiveness of ITG (Ali & Green, 2007). After reviewing the articles, we found that ITG has a lot of objectives that have an impact on the performance of the firm. These objectives are the strategic alignment of IT and business, IT delivery value, IT resource management, IT risk management and performance measurement of IT (Ali & Green, 2007; Alreemy et al., 2016).

Although *ITG and disclosure* (J2) is a vital matter, we found that only 5% of the articles tackle this issue. Since ITG is a subset of corporate governance (Weill & Ross, 2004) so it is hypothesized that the level of disclosure of financial information is significantly related to a well-governed IT atmosphere (Damianides, 2005; Al-Sartawi et al., 2018).

As for *ITG and social media* (J3), little research with only 4% has been conducted on this matter. Some studies discuss the impact of social media governance using macroeconomic and institutional factors such as gross domestic product (GDP), corruption level and level of democracy (Asongu & Odhiambo, 2019). However, other studies discuss the social media governance regulatory frameworks within organizations (Zerfass et al., 2011).

*ITG and security management* (J4) is a significant issue since information security is considered a complimentary for ITG from various perspectives as the guarantee of privacy, reliability, and accessibility of information (ISO 27000). The emerging need for reliance on IT in a massive way may be associated with information security risk. Consequently, information security governance is a necessity (Moulton & Coles, 2003; Posthumus & von Solms, 2004; Bahl & Wali, 2014; Fazlida & Said, 2015).

*ITG and risk management* (J5) are closely related as demonstrated by a lot of studies such as (Parent & Reich, 2009; Wilkin & Chenhall, 2010; Rubino & Vitolla, 2014). ITG is considered a subset of corporate governance (Rubino & Vitolla, 2014). This is due to the agreement on how firms are controlled. Control Objectives for Information and Related Technology (COBIT) is one of the most widely used frameworks for ITG that is related to internal control issues and risk management

(Information Systems Audit and Control Association [ISACA], 2012; Rubino & Vitolla, 2014).

The level of *ITG on board* (J6) is a major concern as it may affect the performance of the organization. Slight material (4%) is recognized about this issue. It was found that there is a direct relationship between the board's involvement in the ITG issue and the IT usage needs for the organization. As the need for IT usage surges, consequently the ITG exercised by the board is higher (Nolan & McFarlan, 2005; Bart & Turel, 2010; Turel & Bart, 2014).

The study of the *ITG challenges* (J7) is presented in only 4% of the articles, although this is an important research category. These challenges can be a struggle to accept the change resulting from the technology implementation. For instance, in some cases technology is not questionable and people have to accept the technology as it is. As well as the social effects that result from technological execution as some may take advantage of this technology while others may not. In addition to the undesirable consequences associated with technology as privacy intrusion (Dé, 2016; Gómez et al., 2017).

One of the measurements of the macroeconomic factors (in the category *ITG macroeconomic and institutional factors* — J8) is economic growth (GDP), while institutional factors are measured with government efficiency, degree of corruption, openness of economic policy and degree of democracy (Rodrik et al., 2004; Drine, 2012; Zuo et al., 2017). It was evidenced that effective governance has a positive impact on economic growth (Knack & Keefer, 1995; Rodrik et al., 2004). All the articles that could not be coded into the mentioned classifications were coded as *other* (J9). Among these were cloud data governance (Al-Ruithe et al., 2018); the paradigm shift from IT management to IT governance (Dameri, 2012); green information technology practices (Przychodzen et al., 2018).

## 2.2. Organizational focus and nature of research

This criterion was adapted from Guthrie and Murthy (2009), Chenhall and Smith (2011), Guthrie et al. (2012), Dumay (2014a, 2014b). This criterion consists of seven categories: (K1) public sector; (K2) mixed sector; (K3) publicly listed; (K4) private small and medium enterprises (SMEs); (K5) private others; (K6) not-for-profit; and (K7) general/other — for firms that did not fall into one of the previously mentioned classifications. While going through the various studies examining the ITG mechanisms, risk management and other related issues, we examined the firms in which the respondents are working for. For instance, if the respondents worked in publicly traded firms so the study would be classified under *publicly listed* (K3). If the respondents worked in the public and private sectors together so the study was categorized under *mixed sector* (K2). If the study was non-empirical/conceptual or the type of the firm was not specified; consequently, it was classified under *general/other* (K7).

We found that the public sector organizations, apart from *general/other* (K7) were the most used organizations in the ITG studies, with 23 articles (Amali et al., 2014; Hsu et al., 2016; Bouty et al.,

2018). Followed by studies that used *mixed sector* (K2) with nine articles (Prasad et al., 2010; Ferguson et al., 2013). Subsequently, seven articles used publicly listed organizations (Yatim, 2010; Ghani et al., 2014; Quaadgras et al., 2014). Hence, it comes six articles used *private SMEs* (K4) (Huang et al., 2010; Bayaga et al., 2013; Bocquet & Mothe, 2015). In addition to four articles that used *private others* (K5) (Reynolds & Yetton, 2015; Ali et al., 2015; Bekhet & Abdul Latif, 2018). Surprisingly, only one article used *not-for-profit organizations* (K6) (Turel & Bart, 2014).

Analysis of the organizational focus reveals that there is a strong preference for ITG implementation in *public sector* firms (K1). This is reasoned to effective ITG execution has a good impact on the performance of the firm (Weill & Ross, 2004). ITG is anticipated to deliver maximum value to the management of public firms (Amali et al., 2014). The significance of effective ITG practices is now recognized by public sector firms for their accomplishment. IT is not only restricted to a firm's success but also becomes a fundamental part of the public sector. Besides it maximizes the shareholders' wealth (Nfuka & Rusu, 2010). Our results have revealed that there is a minimal number of articles for *private SMEs* (K4) and *private others* (K5). Meanwhile, most of the studies have researched ITG implementation in large organizations, neglecting the importance of implementing ITG in small to medium-sized firms. Though, the influence of ITG can be easily observed in small to medium-sized firms as it allows greater transparency and disclosure than any other firms (Huang et al., 2010).

As for the nature of research, following the same approach of Cuomo et al. (2016) and de Villiers and Dumay (2013), in which studies are categorized into *empirical* (L1) and *non-empirical/conceptual* (L2). We use content analysis to codify the articles whether empirical or conceptual ones. The non-empirical classification includes all the theoretical literature reviews, discussion papers and commentaries. The results refer to that most of the studies are empirical (58 articles) with 57% (Hsu et al., 2016; Sunthonwutinun & Chooprayoon, 2017; Santos & Santos, 2017). Though the remaining 43 articles are theoretical ones (Chandra & Malaya, 2011; Van Veenstra et al., 2012; Hulme, 2012). One can conclude that researchers are moving towards empirical research more than conceptual ones. A good equilibrium between both types of research creates a healthy environment in the world of science. There is especially a need for conceptual research in emerging or novel topics to generate a full understanding of the topic before the execution phase.

## 2.3. Regional focus

Investigating the geographical sites is essential as it gives a chance for us to understand the most active regions researched in the topic in addition to determining which regions need more consideration as new paths for investigation. We modify Guthrie et al.'s (2012) approach for our regional focus criteria by adding "null" to the original attributes as there are several non-empirical studies with no

geographical region. We found that Australasia is the most active region where ITG is investigated, representing 27% of all articles (Kashanchi & Toland, 2006; Chen & Wang, 2011; Almeida et al., 2013; Amali et al., 2014; Ali et al., 2015). The fact of ITG framework reform in these regions led the world. Followed by the non-empirical studies with no geographical region with 22% (Choi & Yoo, 2009; Chander et al., 2012; Dé, 2016; Cervone, 2017).

Subsequently, it is worth mentioning that the North America region represents 13% of all articles (Parent & Reich, 2009; Karanja & Zaveri, 2014; De Haes et al., 2017). Articles published in the global context constitute 12% of all articles (Joshi et al., 2013; DeNardis & Hackl, 2015; Alreemy et al., 2016; Haqaf & Koyuncu, 2018). An equal percentage of 11% for the articles published in the rest of Europe and the rest of the world (Bayaga et al., 2013; Buchwald et al., 2014; De Haes et al., 2017; Al-Sartawi et al., 2018). The lowest contribution for articles published about the ITG is the UK region with only 4% (Lomas, 2010; Hulme, 2012; Haynes, 2016). Although the significance of information security governance within the UK context and how it affected the loss of some vital public data in many cases in the UK since the year 2007 (Lomas, 2010). Lastly, we found that articles published about the ITG in developing economies are very scarce as Egypt, Qatar, the UAE, etc. Afterwards, researching the ITG topic in other countries would contribute a lot in this area and allow an effective worldwide comparison.

## 2.4. Research methods and data analysis approach

The research methods criterion (N) was adapted from Chenhall and Smith (2011), Guthrie et al. (2012), and Hoque et al. (2014). This criterion includes six attributes: (N1) survey/questionnaire/other empirical study; (N2) case study/field study/interview; (N3) archival studies, which utilize sources from database records; (N4) experiments, which use primary data collected from interviews and/or surveys; (N5) mixed as interviews and surveys; and (N6) null, which embraces mainly conceptual and theoretical reviews.

Our research analysis found that the most frequently used research method related to ITG matters is the *survey/questionnaire/other empirical study* category (N1) with 25% of all articles (Chi et al., 2017; Ferguson et al., 2013; Jairak & Praneetpolgrang, 2013; Sunthonwutinin & Chooprayoon, 2017). The second common research method employed is the *case study/field study/interview* category (N2) with 24% of all articles (Ismail, 2008; Jokonya & Lubbe, 2009; Reynolds & Yetton, 2015; Lin, 2018). Nineteen percent of the articles use archival methods such as the COMPUSTAT database, World Bank database, and Taiwan Economic Journal database (TEJ) as well as infinancials (INF) database. Corporate websites and annual reports published are also used as archival data (Yatim, 2010; Chen & Xie, 2015; Al-Sartawi et al., 2018; Bekhet & Abdul Latif, 2018).

A percentage of 16% of the articles used mixed (surveys and interviews) in addition to 15% of the articles employed theoretical research methods (as literature review) (Lomas, 2010; Chen & Wang, 2011; Cervone, 2017; Bouty et al., 2018). Only one article employed an experiment as a research method (Linkov et al., 2018).

Moving to the data analysis approach, this criterion has been adapted from Hoque et al. (2014) to classify the analysis tactics as follows: (O1) quantitative; (O2) qualitative; (O3) mixed; and (O4) null. This criterion helps the researcher to analyze the different data analytical tactics employed in IT governance. As previously stated, there is a strong likelihood for the *survey/questionnaire/other empirical study* (N1) category; we found that 39% of the articles used a *quantitative* (O1) data analysis approach which is the most widely used related to our topic (Chen & Xie, 2015; Hsu et al., 2016; Lee & Lio, 2016; Bekhet & Abdul Latif, 2018).

Successively, 15% of the articles employed the *qualitative* (O2) data analysis approach (Lin, 2018; Haqaf & Koyuncu, 2018). Moreover, 10% of the articles used a *mixed* (O3) approach (Joshi et al., 2013; Karanja & Zaveri, 2014). The remaining 36% of the articles which were theoretical contributions or conceptual one, did not specify the data analysis method used (Chandra & Malaya, 2011; DeNardis & Hackl, 2015; Gervalla et al., 2018).

Quantitative data analysis methods include multiple regression analysis models (Karake Shalhoub, 2006; Yatim, 2010), structural equation modeling (Ali & Green, 2007; Santos & Santos, 2017; Sirisomboonsuk et al., 2018; Al-Ruithe et al., 2018), analysis of variance (ANOVA) (Jokonya & Lubbe, 2009), factor analysis (Sambamurthy & Zmud, 1999; Bayaga et al., 2013; Lee & Lio, 2016). Correlation analysis was also used (Mostafapour et al., 2012; Ghani et al., 2014). Qualitative data analysis was used to analyze the interview responses (Huang et al., 2010; Buchwald et al., 2014).

## 3. RESEARCH METHODOLOGY

To achieve the purpose of this paper, a systematic and structured literature review has been employed for a critical analysis of the previous studies on ITG. The different steps taken to accomplish this structured literature review and meta-analysis method are outlined in the following:

- writing a literature review protocol;
- defining the research questions that the literature review is setting out to answer;
- determining the type of studies and carrying out a comprehensive literature search;
- defining an analytical framework;
- coding data using the developed framework;
- developing insights and critique through analyzing the dataset;
- developing future research paths and questions.

### 3.1. Literature review protocol

The researcher has started writing the literature review protocol to document how our research project is organized. The purpose of this study is to conduct SLR in which it analyzes prior studies revolving around the ITG area. "To categorize it in a way that provides a useful understanding of how and why [the IT governance] movement has developed in the way it has" and to identify "avenues for future research" (Petty & Guthrie, 2000, p. 156). Subsequently, a need for SLR on prior ITG studies to fulfill the raised gaps by answering the research questions outlined below.

### 3.2. Literature search

The first step is to select a search approach. Since our SLR is on ITG-specific issues within the distinct field of accounting information system research in which we expect to find little literature about the topic. So, the keyword search approach is chosen (Massaro et al., 2016). This approach is the most efficient approach in generating the most relevant articles about the ITG topic. Subsequently, the search process began by creating a keyword list as “information technology governance”, “information technology and governance”, “IT governance”, and “information technology governance and firm performance”.

The second step is to determine the criteria that will be included in the search when downloading the articles. According to our expectations that the prior literature on ITG is limited one; we extended the barriers of the search to include all the articles whether empirical or conceptual ones (e.g., book chapters) in addition to the published studies and unpublished ones (e.g., conference papers). Our literature search included articles with a start date of the year 2000 till a cut-off date of the year 2018. As previously mentioned, the IT governance concept has been discussed explicitly in the late 1990s (Loh & Venkatraman, 1992; Henderson & Venkatraman, 1993). Thus, we have selected this start and cut-off date.

The researcher chose five databases to search within which are JSTOR, Emerald, ScienceDirect, EBSCO, SpringerLink, and SAGE. The literature search process was carried out within two weeks starting the date of November 24, 2019. After downloading all the studies (in PDF format) on the ITG topic which were 238 research pieces, the researcher starts to filter the studies by keeping only the relevant ones. This filtration was done by checking the titles, abstracts, and content of the articles. For instance, some articles may seem related to the ITG topic; however, they are not in reality. After the filtration process, we reached a few of 101 only relevant research pieces including conference papers, journal articles and book chapters about the ITG topic.

### 3.3. Analytical framework

After finishing the literature search, the researcher defined the analytical framework. We followed the most common approach which was adopted by Guthrie et al. (2012) and Kotb et al. (2018). There is a slight modification for some categories as in organization focus, we added mixed category. As for regional focus, we added null attribute as there are some conceptual research papers. In the objectives (we swapped the whole attributes with the most related ones according to the topic of our SLR) and research methods substituted commentary/policy/normative with experiment). To build up a comprehensive literature review and meta-analysis, several categories are added like *nature of research* (de Villiers & Dumay, 2013; Cuomo et al., 2016), *data analysis approach* (Hoque et al., 2014; Cuomo et al., 2016) and *findings* (Dumay & Cai, 2014).

### 3.4. Article coding and establishing reliability

To establish the analytical framework's and the coding's reliability, we computed Krippendorff's alpha (K-alpha) as the reliability measure (Hayes & Krippendorff, 2007), resulting in a K-alpha score of 0.91, which is above the recommended score of 0.80 (Krippendorff, 2013).

### 3.5. Testing validity

Several checks are carried out to ensure the external validity and thus the generalization of our SLR's findings. This can be evidenced by the literature search process as explained earlier, where two authors searched various sources (e.g., Google Scholar) and databases (e.g., ScienceDirect and JSTOR) using similar search terms, and the whole search process was then repeated by the third author to ensure that the selected dataset was comprehensive of the available literature (Massaro et al., 2016).

## 4. RESEARCH RESULTS

### 4.1. Description and analysis of misconduct type

In addition to the formerly discussed criteria, studying the findings related to the ITG area allows the researcher to constitute a better vision of the topic. We adopted Dumay and Cai's (2014) approach when analyzing the key findings of other researchers.

Researchers have been concerned with the impact of the implementation of effective ITG mechanisms on firm performance. Most of the articles supported that effective ITG has a positive impact on the firm performance. For instance, Altemimi and Zakaria (2017) concluded that good ITG helps the organization in achieving its objectives in addition to minimizing various types of business risks associated. Hulme (2012) agreed with the previous researchers and mentioned that organizations with a well-governed IT atmosphere help in delivering reliable information that improves the decision-making process.

As for the ITG and disclosure, many studies strengthened the significance of transparency, accountability, and the various communication channels within the organization to create a good environment for ITG (Raghupathi, 2007; Ali & Green, 2007). Damianides (2005) mentioned that there is a positive association between ITG and trustworthiness and the level of financial disclosure. Joshi et al. (2013) conducted a contrast between the levels of ITG disclosure within a sample of firms operating in Europe and the US. It was found that the ITG disclosure framework is higher within firms in Europe (67%) than the US (49%). One of the reasons for this difference might be related to the fact that the US is only concerned about compliance with the rules and regulations for the reporting format as this type of disclosure is voluntary. Another interesting explanation for this difference might be linked to some US firms that are not encouraged to disclose ITG due to the huge costs associated with this disclosure type.

Moving to IT value and delivery and disclosure perception firms may not allow full disclosure of

their tactical use of IT assets because of the strong competitive environment they face (Darrough & Stoughton, 1990; Darrough, 1993; Eldomiaty & Choi, 2006). Lastly, Mauldin and Richtermeyer (2004) recommended that managers aim to highlight to the shareholders that they are conducting value-added IT projects. Accordingly, this improves the level of productivity and profitability within the firm. As for IT risk management and transparency, it is showed that “top management is responsible for planning and making IT risk policies and for clarifying all the IT-related business risks” (IT Governance Institute [ITGI], 2003, p. 3). In other words, IT risk transparency can be used by the shareholders as a measurement to assess to what degree the firm is able to control risk (Joshi et al., 2013).

IT performance measurement and disclosure aspects include transparency on issues related to IT investments and IT budget. There is a positive association between the disclosure of IT investment decisions and the surge in the market value of the firm (Dos Santos et al., 1993; Im et al., 2001; Dehning et al., 2003; Kobelsky et al., 2008; Xue et al., 2008). In addition, the declaration of the nomination of the CIO position within the organization assures the shareholders and improves their level of confidence in the entity (Chatterjee et al., 2001).

Transferring to ITG and risk management, generally Parent and Rich (2009) illustrated that there are various forms of IT risks as IT infrastructure risk, ongoing business operations risk, information risk, IT project risk and others that affect the performance of the firm negatively. ITG and risk management are vital issues that affect the firm performance. For instance, IT catastrophes (resulting from the execution of new systems or current ones) led to a massive drop in the stock price (Bharadwaj et al., 2009).

Linking to the information risk illustrated before, we will discuss IT governance and information security management. Information risk areas are data loss, privacy intrusion and spam, cyber threats, information security transformation (Parent & Rich, 2009; Ernst & Young, 2014). Information security governance aims at retaining the confidentiality and accessibility of information and guaranteeing the accountability of the entities (ISO 27000). It was found that financial sectors (the banking sector in specific) pay more attention to cyber threats and cyber risk as they are considered to be highly information-intensive sectors (Mohamed & Singh, 2012).

Meanwhile, the ITG concept is a significant one, so this requires the involvement of the board of directors (Read, 2004). A lot of researchers have tackled that the executive part of the firm as the chief executive officer (CEO), CIO has an impact on the performance of the organization (Preston & Karabanna, 2009; Johnson & Lederer, 2010). Despite the decisions made by the executives; they are still under control by the plans set by the board (Laux, 2010; O’Shannassy, 2010).

When it comes to the challenges faced by the ITG, one will find the consistency of the ITG framework and deciding who is responsible for the execution of the ITG within the firm is one of the major challenges (Markus & Bui, 2012; Gómez et al., 2017).

As for the ITG using macroeconomic and institutional variables, we will find that without a good and effective governance environment, the nations will not develop or reform. For instance, the study made by Drine (2012) aims to discuss the impact of governance using economic (as GDP) and institutional variables (such as corruption level, efficiency, openness to the economy, democracy level) on the level of technology catch-up. The study was conducted in five North African countries which are Algeria, Egypt, Morocco, Sudan, and Tunisia. It was found that the ability of these regions to adopt and implement new technologies is very weak. This is reasoned to ineffective governance and institutional systems, which consequently affects economic growth adversely during the 1990s and the early 2000s.

There is a relationship between social media and information governance, meanwhile, the massive use of social media channels is associated with a lot of risks. A snapshot of these risks is “reputational damage, legal liability for intellectual property breaches and security exposure” (Haynes, 2016, p. 90). Subsequently, ITG governance frameworks are a necessity to address these various risk types of social media usage. Another perspective on the impact of social media on governance using institutional and macroeconomic variables is discussed (Jha & Sarangi, 2017; Asongu & Odhiambo, 2019). It is revealed from these three studies that there is a positive relationship between social media and natural resources governance. Besides that, social media aids in minimizing the level of corruption and encourages democracy level.

## 5. DISCUSSION

Using SRL methodology, we clarified the characteristics of the ITG literature across various categories of content including authors, biographies, research themes, motivational events, regional focus, organizational focus, the nature of the data employed, and research methods.

Along the road, the findings reported in this research highlight the significance of the impact of ITG context within the IT and the business; which if it is properly implemented, can benefit organizations by enhancing and promoting successful practices. Moreover, the study highly contributes to ITG in practice by developing a framework to assist organizations to improve IT adoption decision outcomes.

This study also outlines the progress of the ITG context in the accounting information system literature. Also, the results of this study highlight that good ITG helps the organization in achieving its objectives in addition to minimizing various types of business risks associated consistently (Altemimi & Zakaria, 2017). Additionally, it concludes that there is a positive association between ITG and trustworthiness and the level of financial disclosure agreeing with (Damianides, 2005). As for the ITG and information security management, it is found that financial sectors (the banking sector in specific) pay more attention to cyber threats and cyber risk as they are considered to be highly information-intensive sectors (Mohamed & Singh, 2012). Lastly, it is underlined that strict enforcement of ITG context

within the business is affected by the executive part of the company (as CEO and CIO) complementing with (Preston & Karabanna, 2009; Johnson & Lederer, 2010).

## 6. CONCLUSION

Having discussed the theoretical foundations of ITG context, it is concluded that ITG context is a complex one with many dimensions that still need to be explored. In this paper, we have completed the thematic analysis of 101 papers about ITG, segregating the thoughts and topics of discussion around ITG. Moreover, this review can be used as a reference for the understanding of ITG by other researchers from different backgrounds in management as it is an interdisciplinary topic. After our detailed discussion of the literature in this area, we will now proceed with the implications and contributions this study has made to the literature and the limitations of the study as well as the future study that can be pursued.

The findings reported in this research highlight the significance of the impact of ITG context within the IT and the business; which if it is properly implemented, can benefit organizations by enhancing and promoting successful practices. The methodological position adopted, and research methods employed in this study help the researcher to illuminate and enlighten the issues being investigated; thus, the outcomes of the research give one more reason to the organizations in implementing ITG. Moreover, the study highly contributes to ITG in practice by developing a framework to assist organizations to improve IT adoption decision outcomes. The study can also be used as a guidance tool for how to implement successful ITG in practice. On the other hand, the study depicts the significance of introducing ITG context within the knowledge of the CEO and board of directors for its successful implementation. Finally, the implications that arose from this study indicate the importance of multiple factors in terms of achieving better ITG. This suggests the importance of other factors, such as industry type, organization size, IT investments, that enable mature approaches to ITG.

Even though the number of articles reviewed and analyzed within this study is relatively limited, it shows the magnitude of ITG research as an emerging area. This paper suffers from a few

limitations as we have only sought the articles within the database that we have access to. There might be some other significant publications out there that we might have skipped. Additionally, the inability to access some hard copies of ITG might also be relevant.

The detailed and systematic analysis of the existing ITG research has highlighted some gaps for future research. The literature review has many deficiencies including who is responsible for ITG, the role of executives in this process, best practice frameworks, determinants of ITG, the impact of ITG on the firm financial performance, and the cost-effectiveness of ITG implementation. Since most of the studies have focused on the effectiveness of ITG rather than the cost effectiveness. Despite the connection between implemented ITG framework and the theoretical ITG discipline. There is a discrepancy between ITG in practice and ITG in theory as IT decision authority, performance, risk management and capability (Smits & van Hillegersberg, 2017).

Accordingly, the key issues for ITG that might be researched are investigations into the ITG regulatory frameworks within the UK. Since we found that the lowest contribution for articles published about the ITG is the UK region with only 4% (Lomas, 2010; Hulme, 2012; Haynes, 2016). Our analysis also found that articles published about the ITG in developing economies are very scarce as Egypt, Qatar, the UAE, etc.

Our review shows that most of the studies were implemented in the public sector (Amali et al., 2014; Hsu et al., 2016; Bouty et al., 2018). So, examining the ITG regulatory frameworks within the private sector would be a contribution. Particularly, the banking sector as reflected by Mohamed and Singh (2012) is considered a highly information-intensive sector where the IT governance framework is highly regulated.

Moving to the research methods employed within most of the articles were quantitative ones (as surveys/questionnaires). Employing qualitative research methods such as interviews/case studies would also be an asset. A snapshot for the participants can be senior executives, managers, IT, CIO on board. From the aspect of the literature focus, this critical analysis determines that only 5% of the articles tackled the ITG and disclosure (Joshi et al., 2013, 2018; Hsu et al., 2016; De Haes et al., 2017; Al-Sartawi et al., 2018).

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## APPENDIX

Table A.1. Literature focus

<i>Category</i>	<i>No. of articles</i>	<i>Percentage</i>
1- Effective ITG mechanisms, objectives, and firm performance	45	44%
2- ITG and disclosure	5	5%
3- ITG and social media	4	4%
4- ITG and security	7	7%
5- ITG and risk	8	8%
6- ITG on board	4	4%
7- ITG challenges	4	4%
8- ITG and macroeconomic factors	9	9%
9- Others	15	15%
Total	101	100%

Table A.2. Organizational focus

<i>Organizational focus category</i>	<i>No. of articles</i>	<i>Percentage</i>	<i>Nature of research</i>	<i>No. of articles</i>	<i>Percentage</i>
1- Public sector	23	23%	1- Empirical	58	57%
2- Mixed	9	9%	2- Non-empirical	43	43%
3- Publicly listed	7	7%	Total	101	100%
4- Private SMEs	6	6%			
5- Private others	4	4%			
6- Not-for-profit	1	1%			
7- General/other	51	50%			
Total	101	100%			

Table A.3. Regional focus

<i>Regional focus category</i>	<i>No. of articles</i>	<i>Percentage</i>
1- Australasia including Australia, New Zealand, parts of Asia such as China, India, Malaysia, Singapore, Thailand, and Japan, etc.	28	27%
2- No geography-specific	22	22%
3- North America	13	13%
4- Global	12	12%
5- Rest of the world	11	11%
6- Rest of Europe	11	11%
7- The UK including England, Ireland, Scotland, and Wales	4	4%
Total	101	100%

Table A.4. Research method

<i>Research method category</i>	<i>No. of articles</i>	<i>Percentage</i>
1- Survey/questionnaire/other empirical study	26	26%
2- Case study/field study/interview	24	24%
3- Archival studies	19	19%
4- Mixed	16	16%
5- Theoretical (e.g., literature review)	15	15%
6- Experiment	1	1%
Total	101	100%

Table A.5. Data analysis

<i>Data analysis category</i>	<i>No. of articles</i>	<i>Percentage</i>
1- Quantitative	39	39%
2- Qualitative	15	15%
3- Mixed	10	10%
4- Null	37	36%
Total	101	100%