Investigating Digital Corporate Reporting from an Upper Echelons Theory Perspective: Evidence from the Arab Middle East

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Abstract

Utilising the insights of Upper Echelons Theory (UET) and bounded rationality assumption, this original study aimed to investigate the association between corporate leaders' characteristics and both the extent and readability of Digital Corporate Reporting (DCR). Content analysis of corporate websites of 122 publicly listed Jordananian firms has been carried out. The logistics regression analysis revealed that maintaining a functioning corporate website is inversely associated with CEO age. This indicates that younger CEOs are more likely to retain a web presence for the firm than their older counterparts. The OLS regression analysis revealed that CEOs' education and tenure were negatively associated with the extent of DCR. Moreover, it was found that Corporate Governance (CG) moderating variables hardly lessen this relationship. The results confirm the current thoughts regarding the rise of CEO effects in corporations with unique evidence from the Arab Middle East (AME). Building on the previous evidence, the study also aimed at uncovering the association between chairman characteristics and the readability of the digital version of the chairman's Letter to Shareholders (LTS). A hand-built dataset from a sample of 379 LTS from 101 publicly listed firms in 7 AME countries over five years (2014 – 2018) were employed to achieve this objective. Focusing on the clarity of DCR, the results of this second part of this study emphasizes the potential of UET to provide incremental plausible explanations of the variance in the levels of readability of LTS. The clustered regression results of the panel data demonstrate that older and less educated chairpersons are associated with more readable disclosures. Such findings on disclosure styles demonstrate the power of individuals in positions of authority as a consequence of higher education and tenure. Such findings contribute to the evolving inquiry on the significance of readability for enhancing corporate disclosure transparency and have implications for improving the DCR extent and readability.

Keywords: Digital Corporate Reporting, Upper Echelons Theory, Readability of Narrative Reporting, Arab Middle East.

Scholarships and Conferences

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List of Tables

List of Figures

List of Abbreviations

AICPA	American Institute of Certified Public Accountants
ASE	Amman Stock Exchange
BOD	Board of Directors
CG	Corporate Governance
DCR	Digital Corporate Reporting
DOI	Diffusion Of Innovations
EDGAR	Electronic Data gathering, analysis, and Retrieval
FASB	Financial Accounting Standards Board
FRC	Financial Reporting Council
FRE	Flesch Reading Ease
HTML	Hyper Text Mark-Up Language
IASB	International Accounting Standards Board
ICAEW	Institute of Chartered Accountants in England and Wales
IDs	Independent Directors
INEDs	Independent Non-Executive Directors
IFRS	International Financial Report Standards
IR	Investors’ relation
ISA	International Standards on Auditing
IT	Information Technology
LTS	Letter(s) To Shareholders
MENA	Middle East and North Africa
NGOs	Non-Governmental Organizations
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PDF	Portable Document Format
SDC	Securities Depository Center
SEC	Securities Exchange Commission
TMT	Top Management Teams

Table of Contents

CHAPTER 1: INTRODUCTION

1.1. Introduction

This chapter provides a general background of the current study. Then the research problem and research questions are underlined. The importance of conducting this research considering the implications is highlighted afterwards. Next, the methodology and methods used to achieve the research objectives are clarified. Afterwards, a discussion on the study's originality and contributions to our previous knowledge is provided. Lastly, the context of the study is explained.

1.2. Background

Effective corporate communication involves what is conveyed and how it is communicated (FRC, 2015b). Corporate reporting is developing gradually to satisfy the needs of the expanding spectrum of users and respond to outside developments (ICAEW, 2017). It has to be designed to reflect changes in the underlying economy (Benston et al., 2004) and satisfy the informational needs of investors and stakeholders. These needs have been observed by many regulators and scholars depicting traditional reporting limitations (e.g., Holland, 1998, ICAEW, 2004). First, to mitigate such limitations in conventional financial reporting (i.e., hard copy), professional bodies (e.g., FRC) addressed the importance of technology and supported companies' initiatives in disseminating their information on their website. Second, financial reporting has been the target of several improvement initiatives to restore public confidence (ICAEW, 2003) and mitigate traditional reporting limitations after the known scandals (e.g., Enron). Narrative reporting has expanded to focus more on management analysis, strategy, and forward-looking information to ensure adequate and useful information is delivered to users. These two changes and the unfortunate issues that happened with them are discussed below.

Information technology has become an essential aspect of everyday life as its use increased dramatically during the last decade; it has been integrated into the core operations of our modern institutions such as universities, companies, and governmental institutions. One of the emerging technologies is the internet and corporate websites that function as a source of information. Among other benefits, corporate websites facilitate marketing (Watson et al., 2000), branding, and establishing a web presence which is crucial these days (Thimm and Rasmussen, 2022). Users of corporate information are growing rapidly worldwide, and modern technologies can keep them informed, educated, and engaged with companies (Agca and Önder, 2007). Companies increasingly rely on the internet (e.g., corporate websites) to enhance their communication with stakeholders (Healy and Palepu, 2001, Watson et al., 2000). Firms have used corporate websites for corporate reporting since the 1990s (Louwers et al., 1996) to extend traditional hardcopy reporting in developed countries (Abdelsalam et al., 2007a) and developing countries (Al-Htaybat et al., 2011, Oyelere and Kuruppu, 2012). The continuous proliferation of the internet is reforming corporate disclosure by taking advantage of its potential (Kelton, 2006). These websites offer a platform for companies to publish their financial and non-financial information with stakeholders (Digital Corporate Reporting (DCR)) in a timely and more environmentally friendly manner. Such timelier disclosures can reduce the cost of debt, as any voluntary disclosures (Guidara et al., 2014), and reach a wider audience than traditional paper-based disclosures. In summary, the efficiency of securities markets can be improved by this increased accessibility; all prospective stakeholders receive the financial information promptly or directly (Benston et al., 2004).

Yet, there is a wide divergence in the level of DCR adoption among firms worldwide (Khlifi, 2022). Given DCR's high potential benefits, this divergence has attracted the attention of scholars to study the factors associated with its adoption (Kelton and Yang, 2008). Different theoretical backgrounds were employed in previous studies to study DCR across different contexts. The results generally showed that the larger and more profitable firms are more inclined to use DCR. These studies were mainly based on economic theories and perspectives suggesting that DCR would decrease information asymmetry between corporations and stakeholders and result in a lower cost of capital and stronger markets. For instance, the agency theory was used to explain firms' attempts to reduce agency costs by voluntarily disclosing financial information on their websites. Generally, the empirical results found that highly leveraged and larger firms have higher adoption of DCR (e.g., Kelton and Yang, 2008), which implies that managers are incentivised to provide more voluntary disclosure through different communication channels, including DCR. Likewise, signalling theory was used by many scholars suggesting highly profitable companies send signals to the market by presenting information on their websites (e.g., Oyelere et al., 2003) so they differentiate themselves from bad-news rivals and minimize market underestimating (Aly et al., 2010; Carven and Marston, 1999).

Moreover, socio-political theories, such as legitimacy theory, were used to examine the role of corporate websites as a legitimisation tool by publishing certain types of information. The arguments of the above theories have been partially confirmed but with limited systematic support in prior literature (Khan, 2007). The studies based on those theories largely neglect the nature of DCR as innovation and, consequently, overlook some incremental factors that may affect DCR adoption. Therefore, the Diffusion of Innovations theory (DOI) was suggested and used by a few DCR researchers (e.g., Xiao et al., 2004). This theory explains how innovation (e.g., DCR adoption) spreads over time through a social system (e.g., businesses) and identifies the main elements influencing diffusion into the innovation, adopters, communication channels, time, and a social system (Rogers et al., 2014). The empirical results of prior research demonstrate some factors associated with more DCR adoption, such as big4 auditors (suggesting them as change agents) (Xiao et al., 2004). Despite that, this theory lacks adequate explanation regarding managers' (adopters) characteristics that influence their decision on accepting and adopting unique innovations such as DCR.

Accordingly, the current thesis argues that the above theories lack a full explanation of DCR adoption, including top managers' (adopters') preferences and biases. A new theoretical perspective is deemed helpful in uncovering more variations in DCR adoption. Drawing on the Upper Echelons Theory UET (Hambrick, 1984), the framework proposed in this study acknowledges the potential influence of managers' characteristics on DCR. These characteristics can be used to proxy preferences and behaviours that may influence DCR adoption decisions, such as their responses to any communications during the diffusion process (Rogers et al., 2014). Moreover, managers' biased interpretations of DCR usefulness, predicting users' needs, and associated risks are among the reasons for considering adopting such innovation as a complex decision. These factors can lead to boundedly rational decisions by CEOs, especially in certain environments (Henrich et al., 2001). In other words, the proposed framework complements the previous theories that assume DCR adoption is a perfectly rational decision where managers publish more information online to send signals of their profits or reduce agency costs. In summary, this study uses the UET to investigate the association between DCR and CEO characteristics within the context of the Arab Middle East. The second main aspect of improved corporate reporting is discussed below.

Successful communication considers the message's nature and how it is delivered (FRC, 2015b, Brennan and Merkl-Davies, 2018). Changes in the underlying economy and environment necessitate CR development to ensure disclosure effectiveness (Benston et al., 2004). Traditional reporting has been reformed to restore trust problems and lack of usefulness after unending business failures. Among these changes is a noticeable expansion of corporate narratives to include more forward-looking and strategic information and satisfy the changing need of users.

These are embedded within annual and interim reports and presented on corporations' websites alongside financial information (Hodge and Pronk, 2006). Besides using more effective and innovative channels (i.e., web-based disclosure), companies must present their information clearly and readably to convey the intended message. Reading ease and understandability of corporate reports determines their usefulness (Courtis, 1998) and, consequently, key indicators of disclosure effectiveness. The Chairman's Letter to Shareholders (LTS) constitutes an important part of these digital narratives and reaches a broader audience. LTS must be simplified (more readable) since not all readers are experts (FRC, 2015b, SEC, 1998).

Regulators in developed countries attempted to address the issues of readability. They observed the increased level of complexity, which increases asymmetry. The response was clear through guidelines requiring reports written in plain English in the US (Firtel, 1998, SEC, 1998), the UK (e.g., FRC, 2011), and many private-sector initiatives. The complexity has attracted the attention of researchers, and the focus was on the level of complexity; they found that annual reports and the different sections are complex over time (Jones, 1988, Rahman, 2014, Moreno and Casasola, 2016). Another field of research focused on highlighting the adverse impacts of complexity that range from misallocation of capital, increased audit fees (Blanco et al., 2021) and increased agency costs (Luo et al., 2018, Dalwai et al., 2021a).

In contrast, many researchers started to investigate the reasons behind complexity. Scholars have been using many theories to study readability determinants, such as agency, signalling, and obfuscation theories; however, these theories focus on the neo-classical point of view. Most DCR studies assumed that managers make rational decisions by issuing more readable narratives to reduce asymmetry, reduce agency costs, or send signals when performing well. Or by issuing complex narratives to obfuscate readers to hide negative performance (Courtis, 1998, Rutherford, 2003, Smith et al., 2006b, Bushee et al., 2018, Hassan et al., 2018). Likewise, profitable companies try to send signals by issuing more readable reports, and firms that aim to satisfy the need of stakeholders issue more readable narratives, such as CSR (Wang et al., 2018). There was an enormous focus on the obfuscation assumption among researchers, though results lacked systematic results. Many studies have found no intention of obfuscation (e.g., Smith et al., 2006a, Rutherford, 2003). However, the adverse impacts of complex texts would be the same. Few studies have examined managers' characteristics, such as age which was influenced positively (Xu et al., 2018) and narcissism (Zudana et al., 2022).

The determinants of complexity can depend on the nature of the narrative itself; a literature review by Jones and Shoemaker (1994) concluded that factors affecting the textual complexity of chairs' statements, notes, and MD&As are inconclusive and contradictory. The studies on US and UK results can theoretically be more supportive of the obfuscation since there are guidelines to advise preparers about the importance of using simple and clear language, unlike the less developed countries.

Many studies addressed the readability of financial reporting in emerging markets (such as Dalwai et al., 2021b, Dalwai et al., 2021a, Hassan et al., 2021, Hassan et al., 2018, Ezat, 2019, Salehi et al., 2022, Habib and Hasan, 2020, Noh, 2021, Hidayatullah and Setyaningrum, 2019, Abu-Bakar and Ameer, 2011, Zudana et al., 2022, El-Sayed et al., 2020). In this venue, scholars in AME, such as Dalwai et al. (2021a), advocate that corporate governance mechanisms must be improved to increase firm investor confidence through more readable corporate reporting. Most studies in developing countries have followed the same perspective that relies on neo-classical theories and suggests unbounded rationality, such the intentional obfuscation. Many of such studies reported inconsistent results on the impact of profit, industry type, and corporate governance on readability.

Particularly, text complexity and its consequences in English-language reports in the AME have rarely been studied. For instance, obfuscation was identified in Qatari annual reports by Hassan et al. (2018). Similarly, Dalwai et al. (2021a) found that textual complexity in Oman is profound and increases with equity capital cost. In Egypt, EGX100 company reports are complicated and hard to understand (Ezat, 2019). Hassan et al. (2021) found that reading difficulty is inversely linked with a negative tone and financial risk in Gulf Cooperation Council (GCC) institutions, suggesting that managers use simple language to communicate high risks (Hassan et al., 2021). On the other hand, few works examined AME Islamic banks, such as Ahmed et al. (2013), who found that their mission statements lack clarity. Given the deficiency in previous studies and mixed results on readability determinants (Khan and Ismail, 2010) and the low percentage of explained variance among firms in literature (Ettredge et al., 2002), the current study aims to undertake an empirical investigation focusing on readability. It will employ another theoretical perspective to explain an incremental variance of disclosure complexity. The UET perspective and bounded rationality assumption are employed to investigate the relationship between individual characteristics and the level of readability. UET relies on the assumption of bounded rationality managers face when making complex decisions. The potential lack of knowledge about the consequences of complex writing, audience needs, and reading abilities are proposed factors that impair writers' decisions regarding the LTS they issue, especially in the AME. The current study deviates from previous readability studies in that it focuses on variables associated with writers' influences on text clarity. The study also differs from those in the AME region, such as Dalwai et al. (2021a), in that it includes all sectors (not only financial sector companies) and from seven countries rather than a single country. It also differs from (Dalwai et al., 2021a, Hassan et al., 2021) in that it focuses on LTS rather than the entire annual report.

Despite the significant number of studies on DCR, there is apparent reliance of prior researchers on a limited number of theories, thus factors, to examine DCR. These limited number of factors have been mainly studied in developed countries' contexts and thus could not be exactly suitable to the AME context that has different regulatory, social, cultural, and economic environments (see table 1.1). Relevantly, the current study argues that developing countries would be different from developed in terms of DCR diffusion due to reasons of its stages based on DOI (Rogers et al., 2014). While much research has been done on DCR determinants by employing theories that overlook the nature of DCR and thus cover firm-level variables, the role of managers' characteristics that can incrementally influence DCR adoption is not yet known. Therefore, theoretical concepts discussed in the existing DCR literature need to be extended to better account for the distinctiveness of DCR from other channels of disclosure. As shown in chapter 2, there is a lack of studies that grasp the uniqueness of the DCR concept and its underlying nature and features (i.e., unlimited access, associated risks and multiple purposes) in contrast to traditional reporting. These features may increase the complexity of adoption decisions (see: Kelton and Yang, 2008). DCR requires to be regarded as an innovation different from usual reporting in nature and intent. It is also different from other types of innovations, such as its inclusion of adopters and end users. It also allows an unlimited audience via openness (web presence) (AbuGhazaleh et al., 2012a) and can be utilized for multiple functions such as branding (Winter et al., 2003). Thus, many matters in DCR are to be explained after adapting the existing theoretical perspectives used in the DCR literature (Poon and Yu, 2012).

There is evidence in the literature that found out the percentage of performance variation explained by individual CEOs (i.e., CEO effect) has grown significantly over 60 years 18,000 firm-years, as reported by Quigley and Hambrick (2015), who used variance partitioning techniques. However, the debate on how important they CEOs are in reality in terms of their effect on performance and whether such effect is a result of random chance has been discussed by

Fitza (2017). A principal literature review paper has shown that senior management executives strongly affect financial reporting decisions, especially disclosure quality (Plöckinger et al., 2016). However, DCR has not yet been among these studies. Despite the general consensus that CEO's diverse abilities and competencies influence company performance (Bennedsen et al., 2008, Gabaix and Landier, 2008)et al., 2008), researchers and scholars diverged and have offered little consistent evidence (Plöckinger et al., 2016) and contradictory (Hiebl, 2014). For instance, Although Burkert and Lueg (2013) could not find a correlation between CEO education and financial measurements, Naranjo-Gil and Hartmann (2007a) did. Yet, existing UET studies have not demonstrated agreement on which managerial/behavioural characteristics, educational background, or CEO qualities are essential for disclosure effectiveness. Significant moderator variables within the UET are also under-researched (Plöckinger et al., 2016).

In summary, discussed in detail in Chapters 2 and 3, the literature review observed essential gaps in the existing body of research in the following points. First, there are gaps in the theoretical frameworks used in previous studies. Many of these studies revealed conflicting and inconsistent findings among different countries with little explanation for such differences. Second, methodological limitations such as the lack of suitability of index items to the underlying country (Khan et al., 2010) are noticed and essential to be discussed when structuring the DCR index. Accordingly, the CEO characteristics have not yet been studied from the UET and bounded rationality perspectives; thus, many potential factors that may influence DCR adoption are overlooked. Moreover, cultural differences such as power distance can impact management perspectives and behaviours toward DCR, which have been adequately considered in the existing body of literature. DCR extent and quality are essential to evaluate the effectiveness of leadership (i.e., decision-making). The AME is deemed a suitable context to explore the leadership impacts on DCR. In order to examine how competent and inventive corporate leadership is, it is vital to study the AME from an UET viewpoint, as emphasised by some scholars (e.g., Zahra, 2011). To progress our knowledge in all these, the current study by examining whether CEO age, tenure, education and gender are associated with the level of DCR adoption. Moreover, it investigates whether chairman age, education, tenure, and overconfidence are associated with boundedly rational decisions regarding reading ease of narrative disclosures.

1.3. Research Problem

Businesses and the broader community must communicate effectively to demonstrate transparency and integrity. Companies worldwide increasingly dedicate part of their websites to presenting financial and non-financial information (Gajewski and Li, 2015). The disclosed information varies from performance summaries to detailed, comprehensive information covering many aspects, including the company's effort to promote markets and society. It has been argued that higher adoption of DCR increases transparency (Kelton and Yang, 2008, Bin-Ghanem and Ariff, 2016a) and lowers information asymmetry (measured by the spread and the probability of informed trading) (Gajewski and Li, 2015). This can be achieved by unlimited accessibility to wider categories of information and by presenting adequate information on companies' websites[1] (Kelton and Yang, 2008, Ettredge et al., 2002) and through more readable and clearer DCR content (FRC, 2015a, FRC, 2015b). In addition to users' accessibility and web visibility, corporate reporting transparency is interrelated and essential these days.

However, earlier research demonstrated two issues. The first is the high divergence in DCR practices, ranging from not having websites or websites with little information by some firms to well-balanced content and format items by others. The second is the prepares' disregard for

[1] Many corporate websites usually provide an overview of the company's performance, a review of performance, press releases, stock quotes, frequently asked investor relations questions, earnings forecasts (by financial analysts), as well as annual reports (such as SEC 10-k reports in the US).

the readability of corporate narratives (Besuglov and Crasselt, 2021), whether delivered through conventional or digital media, such as websites. Early scholars noted readability's significance to accounting, such as Riahi-Belkaoui (1995), who advised studying accounting's readability and understandability to grasp it as a language. Accounting text style may impair comprehension Harris and Hodges (1995).

Given the negligence of readability and clarity of narrative disclosures in the AME and the slow diffusion of the DCR, the information asymmetry could not be decreased to what it could. This could prevent the healthy functioning of the capital market. The information asymmetry problem has long been noted in the literature (Jensen and Meckling, 1976). Information asymmetry can hamper accurate decisions by the main users of primary financial reports, such as shareholders and other users, by placing insiders (managers and majority shareholders) against outsiders (minority shareholders, creditors, and other stakeholders) Farvaque et al. (2011). The factors that can decrease information asymmetry include enhanced DCR adoption in terms of extent and readability. Two layers of asymmetry can be affected by inadequate and complex DCR. First, the asymmetry between management and small shareholders. Second, the asymmetry between institutional and small shareholders. The latter may be disadvantaged more by complexity due to their unfamiliarity with complex writing styles in corporate narratives (SEC, 1998). This is avoidable if narratives obey the plain English rule, which is envisioned to support unsophisticated shareholders (SEC, 1998).

Previous studies have tried to address the issues of information asymmetry by researching its causes (see: Healy and Palepu, 2001). Particularly the practices of withholding information by managers (weak engagement with DCR) and obfuscating readers (through complex texts). However, whether decision-makers' biases and preferences can affect these two issues is still unknown. Top managers who make decisions can influence the adoption of DCR and decide on corporate reports' writing styles. In other words, managers may make boundedly rational decisions regarding these two areas. The current study aims to fill this gap by employing the UET perspective. The previous literature also lacks adequate critical analysis of the DCR phenomenon that could help highlight its practical problems and how these may hinder its adoption and leads to differences among countries with different structures (e.g., developed vs developing).

Numerous issues have been explored in the CR literature, including DCR. However, this study aims to restudy DCR differently. Given the notion of superior access to information offered to institutional investors (such as pension funds, investment trusts, and banks), technology can be bad if not comprehensive. There is a concern regarding the fairness of such access when looking at other investors and major shareholders. Thus, transparency, and essentially higher internet visibility, of financial reporting could offer the following: first, protection to minority shareholders' rights to more frequent web-based information[2], and second, aid to other financial stakeholders' informational needs on the one hand. The need for accessible and detailed, though reliable, information by the non-financial stakeholder becomes unavoidable nowadays, especially in emerging countries. However, companies' leaders are behind in what they are expected to do regarding utilising technology with more DCR.

Given the inconsistency of DCR determinants in the prior literature, the signs of inadequate institutional diffusion of DCR in the AME (Arafa, 2012), and the barriers to its adoption like resistance and centralisation (AbuGhazaleh et al., 2012b), the study has analysed DCR with a more critical eye and underlined a stimulating research gap. Accordingly, the current study aims to bridge the gap between the previous studies' focus on capital market variables and the

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2 Especially when they do not attend the AGMs.

increasing role of corporate leaders' influence on different corporate affairs including corporate disclosure by employing UET to their characteristics.

1.4. Research Motivation and Importance

The motivations for commencing this study on DCR extent and readability in the AME are discussed below.

Moreover, DCR can lead to better AME markets: Regulators in developed countries are paying attention to the advancements that enhance financial reporting. Therefore, efforts have been made worldwide to foster transparency and accessibility. The improved corporate reporting transparency in western countries can refer to enhanced governance structures (Ajinkya et al., 2005) and active markets. Digital reporting on firms' websites appears increasingly significant for developed[3] countries (Shan and Troshani, 2020), which allows their markets to sustain and increase their legitimacy. Accordingly, emerging securities markets must offer clear and accessible information to a wider audience, including current and potential investors, to expand and operate like established markets. Targeted and potential audiences and messages are more extensive than before; thus, effective targeting requires developments in reporting, such as style, design, and new media (i.e., websites) (Buxton, 2000). Unfortunately, developing economies progress slowly in this dimension to maintain sustainable economic and business sector development via a wider investor base (including institutional and small investors). More DCR adoption is essential for the following reasons. First, enhanced DCR is presumably important and promotes stakeholders' accessibility, thus reducing information asymmetry. This could boost the efforts to improve AME capital markets and serve non-financial stakeholders (NGOs,

[3] A developed country is a state nation with a high quality of life, developed (high-income) economy, and sophisticated technical infrastructure compared to less industrialised countries (Heshmati et al., 2014).

employees). As a result, society at large may be negatively impacted by such uneven and insufficient corporate reporting.

Moreover, Corporate governance (CG) guidelines worldwide are well written and claim to protect all shareholders. Unfortunately, CG has proven problematic in emerging and developing countries (Iskander and Chamlou, 2000), thus delaying capital market progress. These CG structures need improvement to enable private industry expansion in MENA nations, which necessitates more corporate transparency via more effective channels (i.e., web-based disclosures). Thus, reviewing some results in the literature further motivates the research idea. For instance, the website may be deactivated after top managers are replaced in Jordan, as reported by employees during a study by (AbuGhazaleh et al., 2012a). This necessitates incorporating more potential determinants in developing countries. The DCR literature has proposed major differences in its adoption among countries may influence its diffusion (Xiao et al., 2004), such as the nature of persuasion (Rogers et al., 2014) about corporate website abilities in these countries. The diffusion stage may influence these differences, such as the accuracy of DCR knowledge, persuasion, and awareness of its usefulness may bias CEO’s perceptions toward more or poor adoption decisions. For instance, the awareness of DCR use may vary based on factors, including the CEO's perceptions of DCR usefulness against risks. CEOs' unobservable tendencies in this aspect are linked to demographic characteristics (Chatterjee and Hambrick, 2007); thus, studying these characteristics may provide original findings.

Corporate websites have been strategically utilised for communication mostly or sometimes unsystematically (Trabelsi et al., 2008). Therefore, within each country, several factors can explain national differences among firms in adoption and quality. Yet, the ways that DCR may diffuse in different settings are unclear and still under-researched. It is important for the development of DCR that studies consider the social-political differences across countries and how the culture (such as power distance) affects the diffusion of these innovations in different environments.

Likewise, issuing more readable narrative reports and enhancing disclosure channels (i.e., corporate websites) are essential to protect minority shareholder rights. Laws and regulations in the AME need to pay attention to these two aspects. Minority shareholders need to be empowered since their engagement in governance in many emerging countries tends to be hampered by legal system inefficiencies (Haque et al., 2008). Therefore, the study also aims to investigate the readability of DCR narrative content, letters to shareholders in specific. Lastly, complexity misleads investors, but digital narrative complexity would have a greater impact because a wider base of users is using disclosure channels. Therefore, chairpersons, who enjoy a great deal of control and power, could make miscalculated disclosure decisions that lead to failure or slow growth of corporations. Altogether, this study is mainly about the characteristics of top managers that can be linked to the practices and strategies of optimising the use of websites to publish their companies' information on the one hand; and to provide clear and readable digital reporting on the other.

Moreover, the study is also motivated to utilise the UET because of the criticism of the Neo-classical and agency theories that assume rational organisational leadership (Gounaris and Koritos, 2012). Such theories do not acknowledge managers' idiosyncrasies, inaccuracies, or irrational decision-making (Bamber et al., 2010). Strategic management literature implies that noneconomic manager-specific traits may affect corporate operations and success, contrary to financial economics theorists (Bamber et al. 2010). Neo-classical ideologies see organisations as black boxes; therefore, academic studies rely only on "the market" rather than the firm itself and its management (Hambrick, 2007, e.g., Watson et al., 2021). UET, therefore, argue that managers can influence corporate decisions that are complex and have higher discretion. Since

DCR extent and readability are complex decisions for the top management (e.g., Xiao 2014), the study is motivated to examine if CEO and chairman characteristics can incrementally explain some of the variances among listed firms in the AME region. Investigating the characteristics derived from the UET perspective could complement the limitations of the theories used in the prior literature.

In addition to the above, my motivations for commencing this study on DCR extent in the AME are summarised as follows. First, the traditional annual report provides the basis for most academic studies of financial reporting. My opinion on this is rather different; investigating new forms of reporting may provide light on the many ways in which DCR might be improved, both in terms of content and usefulness to users. Second, during my investigation of the implementation of IT in Jordan's listed companies, a participant's remarkable response of "Our management does not believe in technology" (Al-Tamimi, 2005, p.89) left an indelible impression on my subsequent studies. Consequently, I think managers' implied views and understandings regarding financial reporting are worth studying in the AME. Third, I normally strive to identify problems and issues in using technology and how this can affect corporate reporting quality.

On the other hand, four aspects motivated the current study to investigate the readability of online LTS. First, prior accounting and management literature asserts that corporate leaders have an increasing influence on organisational decisions (Quigley and Hambrick, 2015), including communications. Second, the manifest complexity of corporate narratives worldwide is increasing (Lo et al., 2017, Habib and Hasan, 2020), resulting in adverse outcomes for shareholders, among the broader impacts (Luo et al., 2018, Rjiba et al., 2021). Third, following the UET, prior research gained insights into the influence of leadership on corporate reporting and stressed the importance of studying corporate reporting quality from different perspectives. As such, the study is motivated to examine text complexity and consider it a threat to reporting quality. Fourth, AME researchers have underlined the consequences of using complex language in many fields, and financial reporting is no exception. A core aim of this research is to examine how information is presented to the intended users (i.e., quality) (Blankespoor, 2018), which is as essential as examining the quantity or 'coverage' of DCR. Fifth, regulators may think about issuing plain language laws to decrease the asymmetry. Acceptable reading ease (plain English) supports unsophisticated stockholders (SEC, 1998). The lack of guidelines and regulations covering the complexity issue increases the chances for managers to reflect on their understanding and bounded rationality. Thus, they may have different behaviours toward DCR clarity. Studying the potential impact of upper echelons characteristics on readability is deemed essential.

1.5. Research Objectives and Questions

The study's primary aim is to uncover if companies' upper echelons influence the extent and readability of DCR practices by AME companies. Specifically, the research has two primary objectives. First, to investigate the association between CEO characteristics (age, gender, tenure, education) and the extent of DCR. Second, to investigate the association between chairman characteristics and the readability of the chairman's online LTS.

Based on the research problem and research motivations, the study objective can be expressed in the following main question:

> *"What is the relationship between upper echelons' characteristics (age, tenure, education, gender, overconfidence) and the extent of Digital Corporate Reporting and readability of LTS accompanied within it?"*

In particular, the study attempts to answer the following specific research questions:

RQ1: What are the extent and patterns of DCR of the Jordanian publicly listed companies?

RQ2: What is the relationship between CEO characteristics (age, tenure, education, gender) and the extent of Digital Corporate Reporting?

RQ3: What is the relationship between CEO characteristics (age, tenure, education, gender) and the content and format dimensions of Digital Corporate Reporting?

RQ4: What are the extent and patterns of the readability of LTS accompanying digital reporting?

RQ5: What is the relationship between chairman characteristics (age, tenure, education, overconfidence) and the readability of LTS accompanied within digital reporting?

The hypotheses of this study are built on these research questions. A good study does not only answer stimulating questions but also poses more interesting ones. Figure 1.1 below explains the research scheme to examine the relationship between upper echelons characteristics and DCR extent and readability.

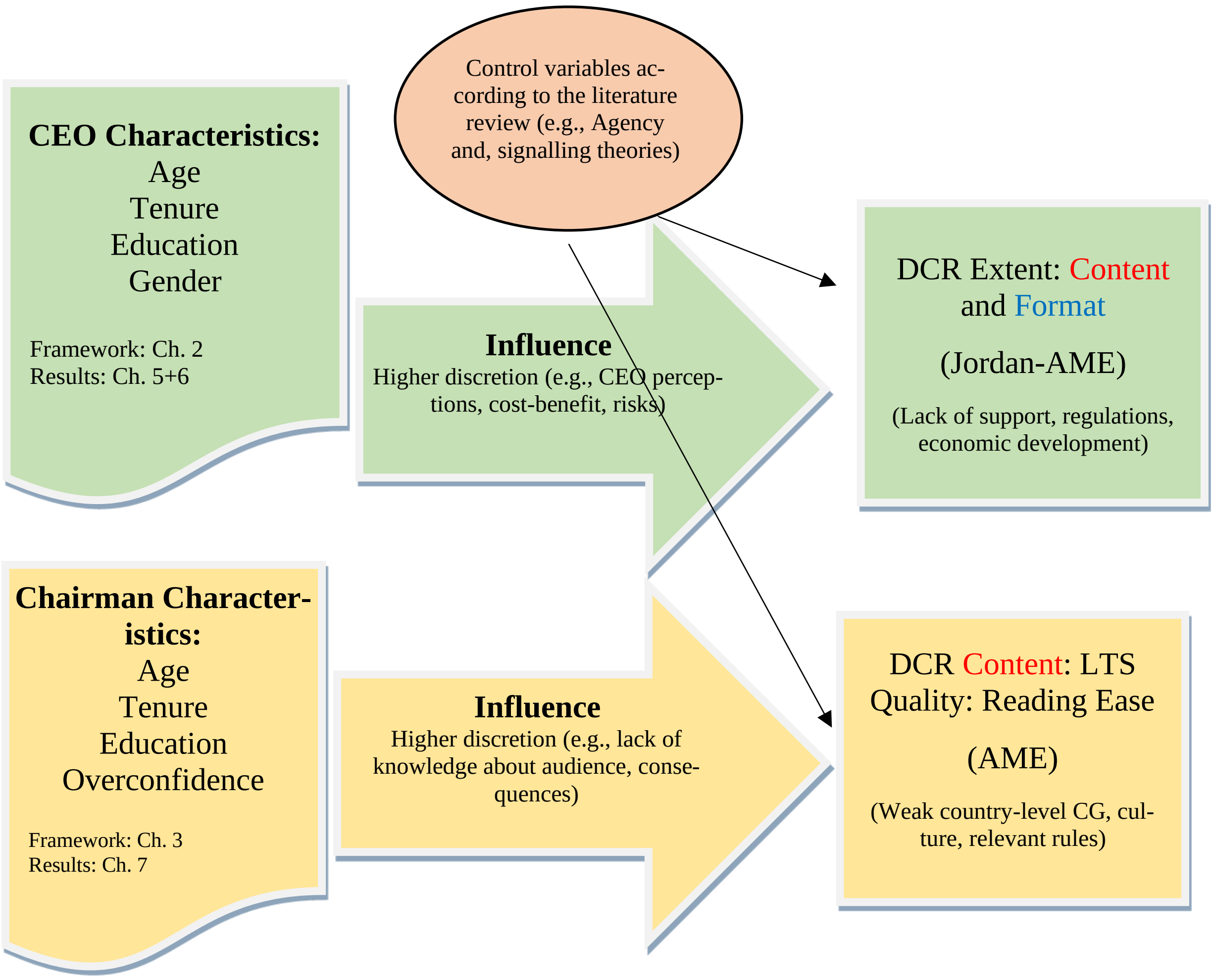

Figure 1.1. Study Scheme

1.6. Significance of the Study

The significance of the current study stems from its anticipated benefits to both scientific research and economic and societal advancement. It discusses two interrelated phenomena/aspects relevant to DCR: the extent of it is adoption and the readability of what is presented on corporate websites. It has deeper analyses and conceptualizations of these phenomena. The study's importance is discussed below.

The changing needs of investors and other users and technological developments require continuous improvement efforts to maintain accountability and transparency. Transparency is intended to foster accountability (Fox, 2007). DCR allows timely information, which decreases the creditors' estimation of the company's default risk and, as a result, reduces its cost of debt (Sengupta, 1998). The current study discusses how DCR can be diffused more easily by better understanding its nature and environment and the traits of managers that can predict their adoption decisions. Prior research found that the investors of Jordanian listed firms depend heavily on DCR to make their investment decisions (Yassin, 2019).

The inadequacy of corporate disclosures was among the key reasons behind the numerous business failures worldwide, such as WorldCom, Enron, and Tyco in developed countries (see, for example, Reinstein and McMillan, 2004). Relevant regulators have responded to such failures in good time. Benston et al. (2004) explained that corporate governance and financial disclosure were called for reforms due to scandals, especially the 2001-2003 wave of accounting frauds (Bavoso, 2014). The literature studied the reasons for such failures, and regulators responded with more governance requirements and disclosure by which managers can be more accountable. The research is important since it reconceptualizes corporate leaders’ accountability and responsibility within DCR. This is by predicting the factors that may denote managers' intentional and unnational obfuscation of information users. Corporate leaders represent the whole firm, not just themselves; thus, the impact of senior management on disclosure may still hurt the firm and the economy. The current study attempts to stress this idea.

Corporate leaders, including CEOs, are agents; they act on behalf of owners and are supposed to take decisions with adequate effort, knowledge, and motivation to optimise owners' interests. Thus, they are expected to increase the level and effectiveness of disclosure. They decide what and by which means (e.g., the internet) information is released to outsiders. However, researchers have not yet investigated the impact of CEO characteristics on digital reporting practices in terms of their extent and quality. This is critical for several reasons. For instance, executives may be appraised in terms of their investments in IT. However, this can be double-edged; it may not increase disclosure transparency as anticipated. The enhanced internal financial reporting due to more IT usage is unlikely to provide the same improvements as external reporting, thus worsening information asymmetry (Xiao et al., 1997). Therefore, ensuring a balance in improving internal and external reporting is critical to controlling information asymmetry.

The study aims to uncover corporate leaders' characteristics that may denote power that shapes their action styles. For example, the manager may use websites to create an identity and boost the firm's branding. These benefit the company, but different forms of power can lead to irrational decisions (prestige power) that diminish the efforts to decrease the asymmetry and lead to inaccurate decisions by the main users of financial information, such as shareholders and other primary users. Therefore, studying the relationship between UE characteristics and critical aspects of transparency is essential to this research.

Given the large diversity in corporate disclosures by utilising electronic channels, it is necessary to determine which managers' traits are connected with effective online usage of electronic capabilities to share corporate information with stakeholders. Thus, the research is expected to fuel the debates on good and transparent leadership. Since corporate reporting has to keep up with technological advances, shareholders and other stakeholders need to understand the CEO attributes that improve communication. Such understandings may influence CEO appointments and chairperson elections.

Moreover, since DCR allows corporate information of a contemporary company to be more accessible to diverse stakeholders, this study deals with a valuable disclosure channel that, by all accounts, can be used by an unlimited number of stakeholders, making it a central improvement to transparency. However, literature has evidenced both continuous negligence to DCR adoption. Accordingly, it is worth knowing much about the issues related to the adoption of DCR, such as the misuse of internet technology to exert such activities.

Moreover, this research studies a topic that might benefit a massive part of society, including different stakeholders, managers, governing bodies, and regulators. Corporate leaders held up their responsibilities to enhance transparency and shareholders' rights. Evidence shows that some qualities, such as tenure and education, negatively impact performance. By studying upper echelons’ qualities and then suggesting actions, such as further regulations to improve disclosure, the market would perform better. Managers' discretion on corporate reporting is vital to all stakeholders because more accessible and clearer information means more power in users' hands.

In essence, the study will advance the research on the deficiency in DCR, users' accessibility to corporate financial information, and its readability. These are essential issues that would possibly lead to inappropriate planning and misallocation of resources. Since DCR increases accessibility by minority shareholders, it is essential to try to foster its adoption. This is achievable through studying managerial disclosure behaviours that are predictable by their demographic traits. It is essential to study the factors that enforce DCR adoption by firms' leadership and the factors that prevent them from doing so.

Finally, the motivations to study the AME are based on the following. Despite the Reforms to enhance financial reporting that have occurred worldwide, they are believed inadequate in AME. As will be discussed in chapter 2, DCR is not diffusing well, and narratives within DCR have lower quality. The study aims to identify the different parties who have the responsibility and capacity to improve the status of this disclosure; DCR can be improved in terms of adoption and quality.

1.7. Brief Methodology

The core objective of the current study is to investigate how corporate leaders' (CEO and chairman) traits reflect differences in DCR adoption and readability. Accordingly, a positivistic methodology will be used. This approach seeks to educate the actions of companies (i.e., preparers), inform and recommend changes to policymakers, and reform regulations. Thus, the research design uses a quantitative methodology by which hypotheses are deducted from the selected relevant theory to address the research gap. Methods entail hand-collecting the independent variables data (country-level, firm-level, and individual-level) from corporate websites, databases, and annual reports. All the data on the dependent variable were hand-collected for the final sample, which comprised cross-sectional DCR adoption data for 176 firms, and the final sample for the main analysis was 122 firms. This is done by employing content analysis approaches on the sampled corporate websites to record the items of the DCR index. And for readability, a textual analysis tool will be used to generate scores of text readability and word count. Longitudinal readability panel data were hand-collected from 101 listed forms consisting of 379 firm-year observations. The empirical analysis will be done using advanced statistical tools (Stata) to test the suggested regression models. Such models aim to test the UET's ability to investigate the role of upper echelons in DCR adoption and clarity.

1.8. Brief Context of the Study

This research focuses on the context of the Arab Middle East as part of developing countries. DCR is diffusing in these countries slowly and differently than in western countries, which increases the likelihood that managers reflect their perceptions when adopting and practising it. It has been found from pilot checks of companies listed in this region that Jordan is a good example to examine top managers' effect on DCR from the UET perspective. Therefore, Jordan is selected as an emerging economy with a growing medium-size capital market. The cross-sectional study will cover the companies listed on Amman Stock Exchange (ASE). The empirical data are collected during 2019 (capturing DCR) and three years back to capture the independent variables. Jordan is adopting IFRS, and stakeholders are increasingly becoming influential with CSR reporting also emerging. The securities market is expanding with continuing anti-corruption procedures. Detailed justifications for selecting Jordan as context are discussed in chapter 4.

Regarding the readability of online LTS, the study relies on a wider context, the Arab Middle East countries. Specifically, seven AME countries with similar characteristics (e.g., regulatory environment, language, religion, and culture) are studied (Jordan, KSA, UAE, Oman, Qatar, Bahrain and Kuwait). All these countries adopt IFRS, have civil law legal systems, and share similar cultural features such as high-power distance. The English language is used in corporate reporting an additional to some extent. Yet, they do not have any regulations or guidelines on text complexity/readability. Relying on multiple countries allows generalisability and comparisons concerning textual features of narrative reports. Complete data were hand collected for 101 companies which is an adequate number. The total number hand collected LTR is 379 covering the years (2014-2018).

Table 1.1 below provides some relevant differences between the major developed countries (UK and US) and the AME. The study argues that these differences contribute to the higher level of discretion that upper echelons have in the AME. Regarding DCR in Jordan, it is essential to understand how the unique setting of Jordan (i.e. economic and regulatory) may impact the safeguarding of owners and creditors; the in-depth analysis of Porta et al. (1998) work can be used to explain this. The unique setting of Jordan (economic and regulatory) may contribute to the slower diffusion of DCR. It is argued by Guay et al. (2016) that a firm's informational environment has an impact on how information is communicated. For example, countries with low legal protection at the country level may disadvantage minority shareholders (La Porta et al., 2000), especially when ownership is concentrated (Shleifer and Vishny, 1997). The findings of La Porta et al. (2000) lend credence to the idea that investors' rights are less protected in non-common-law nations such as AME. Such settings could impact the safeguarding of owners and creditors (e.g., improved accessibility to corporate information). Since Jordan is a civil-law country, the protection of minority shareholders who benefit from DCR may contribute to lower diffusion of DCR (weaker acceptability to innovate in disclosure) compared to common law countries. Relatedly, prior empirical evidence demonstrates that SMEs in developing countries are slower to embrace technology than those in industrialised countries (Khan et al., 2010, Junaidah, 2007). More discussion of the Jordanian context is provided in chapter 2, including resistance to change and centralisation of DCR adoption.

Moreover, the study is motivated to examine CEO characteristics' impact on DCR given many developments in internet usage and ICT among the listed Jordanian companies. Despite such developments, prior literature found the DCR inadequate based on the analysis in chapter 2. More details and justification for each context to apply the study’s frameworks are presented in Chapter 2 for DCR extent and chapter 3 for readability.

Table 1.1 Comparison between US, UK, and the AME

	USA and UK	AME
Internet penetration	Average: 90%	66%
Social media use	Average: 60%	50%
DCR guidelines	Adequate; USA: Commission guidance on the use of company websites (2008), FASB 2000, UK: FRC (2015), (2017). DOI theory is much supporting DCR within such contexts.	None
English language	First langauge	Second (other) langauge
Readability guidelines	USA: SEC plain rule. UK: Crystal mark, cutting the clutter	None
Cultural values	Low power distance	High power distance
Legal system	Common law	Civil law
Accounting environment	UK: UK-GAAP, IFRS US: GAAP	All seven countries adopt IFRS
Income group	High	High (except Jordan, which is upper-middle)

1.9. Originality and Contribution

First, the originality of the current research emanates from this study being the original to utilise the UET perspective to investigate the impact of upper echelons characteristics on DCR, up to my knowledge. The study discusses the theoretical problems around DCR research as a response to some scholars (e.g., Xiao et al., 2004). Particularly the lack of studies that consider diverse potential factors influencing DCR, including the decision-making processes under the bounded rationality perspective. It thus contributes to the literature by addressing the gaps in knowledge about CEO characteristics association with potentially impaired decisions regarding DCR extent and chairman characteristics influence of chairman LTS readability. Therefore, unlike mainstream research, this study carries out the prediction attained by the qualitative (executive-level) variables based on the uniqueness of such channels. The results have provided empirical evidence on two out of the four characteristics in the theoretical framework, showing that DCR is associated with less educational level and shorter tenure of CEO. Moreover, the current results in the additional analysis suggest that agency theory explained differences in the ‘content’ dimension of DCR (financial and non-financial information) more than the ‘format’ dimension. This supports the argument that DCR has different nature than the traditional disclosure channels.

Second, the study also contributes to the literature by responding to many researchers who highlighted the need for more research to balance the shortcomings of the DOI model in understanding DCR slow diffusion (Xiao et al., 2005). It also responds to scholars who necessitate more theories to explain disclosure (e.g., Verrecchia, 2001). The study also contributes by investigating the value of managers’ qualities that are always trusted when appointing corporate leaders, such as higher degrees. The results will implicitly help signify the extent of executives' awareness of the advanced practices of corporate reporting and also help by shedding light on executives responsiveness to digitalizing corporate reporting initiatives. The characteristics of those upper echelons are likely to matter and influence their disclosure strategies. The use of the UET might explain two things relevant to DCR adoption. Why do some firms maintain internet visibility (more DCR information)? Likewise, it helps uncover the characteristics of managers who keep their firms invisible. Such knowledge may help future researchers predict the factors that can facilitate generating a market of information (Haeberle and Henderson, 2018) in such contexts.

Third, the study also contributes to the UET literature by applying its premises to a new field in corporate disclosure, the DCR. It contributes to the debates on how disclosure decisions are complex (Evans III and Sridhar, 2002) since managers can be more or less motivated to disclose more information based on several factors. The study supported the idea that opportunistic behaviour is just one reason for the differences in disclosure (Bamber et al., 2010). Empirically, the study contests the prevalent empirical models in studying DCR that neglect these factors. This contributes to the works of Damanpour and Schneider (2006), who highlighted the lack of comprehensive empirical studies examining how innovations are adopted in organizations across unique dimensions.

Fourth, the study on readability is unique in the AME since it covers multiple countries and firms from all industries, which is methodologically different. It also covers all industries (not just financial sector firms) and seven countries, unlike AME studies (e.g., Dalwai et al. 2021a). It also focusses on LTS rather than the entire annual report, unlike Dalwai et al. (2021a) and Hassan (2021). Empirically, the study tests if adding new relevant predictors in the current study, especially those on the manager-level determinates, would explain larger variations in narrative reports' readability. The results show that the R-squared value is higher than relevant studies that investigated only one trait of top management, which is age (Xu et al., 2018). This research is different in that it examines the authors' potential effects on text clarity which is inspired by the UET premises. Empirically, it has shown that doctoral degree holders and older chairmen are associated with worsened readability. The current empirical results differ from the relevant studies and AME studies on readability in the following points. First, the study has covered 7 AME countries instead of one single country, Oman (Dalwai et al, 2021b) and addressed only the banking sector, while the current study was comprehensive. Second, unlike Xu et al.'s (2018) readability study that focused on one of the characteristics (age), assuming that age can proxy other qualities, the current study has instead investigated four different characteristics.

Third, the current study is different from AME studies (e.g., Hassan et al., 2018 and Dalwai et al., 2021a) in that it found no indication that obfuscation is intentional, which indirectly supports the UET proposition. Such negligence of readability in AME is likely caused by the lack of knowledge, which is one reason for boundedly rational decision-making on disclosure quality. Lastly, the critical analysis of the DCR phenomenon helps underline the practical problems in corporate reporting and suggest solutions based on the results and literature. Specifically, based on the results on readability issues, it is recommended that regulators pay attention through guidance on readability and how companies can avoid the complexity. Procedures to follow can be based on those in UK and US; reviewing the letter before issuing (e.g., by colleagues) (FRC, 2015b) and using readability formulas (SEC, 2013). The analysis also uncovers issues in CG in the region regarding both DCR adoption and readability, especially when most CG codes claim to protect small shareholders. In reality, they neglect practical support for the adoption of DCR to keep such stakeholders informed on a timely basis and also with clear narratives.

The current empirical results can be contrasted to the previous literature by including firm-level attributes as control variables have shown some association with DCR. Previous literature on DCR adoption has used only a few variables relevant to CEO, such as duality (Kelton et al, 2008), which has not been supported by the current findings. The findings contributed to DCR literature by demonstrating that new characteristics derived from the UET perspective have not been studied before; in particular, CEOs with longer tenure and higher educational levels are negatively associated with the extent of DCR, in addition to CEO age that is associated with website existence. Moreover, the study has contributed to the extant body of literature by finding out that the distinction between DCR content and format dimensions has justified their statistical association with different determinants (explained in chapter 6 additional analysis). Verrecchia (2001) called for a unified theoretical basis of disclosure that aims, in the first place, to reduce information asymmetry. Accordingly, this research argues that the content dimension of DCR is viewed and classified as voluntary disclosure. However, web-based content is supported by the website and technology features. Thus, the adoption can be highly influenced by managers' attitudes toward openness and IT.

1.10. Dissertation Structure

The present research is divided into eight chapters. After elucidating the objective and importance in this introduction, two chapters are provided to examine the literature and lay down hypotheses on DCR adoption and readability. The dissertation is structured as follows.

Chapter 2 is structured into two main parts: a literature review of DCR and the study's framework (DCR extent only). It begins with a review of the fundamentals and reforms of corporate reporting and the persistent transparency problem. A background on corporate websites as a communication channel is presented before critically evaluating the most relevant conceptual and empirical DCR research. Afterwards, the theoretical underpinnings of earlier DCR research are presented with a synopsis, and research gaps are discussed. The uniqueness of Jordan is then discussed. The second part presents the research's theoretical background as a foundation for this novel investigation of DCR. After revisiting the research gap and defining the fundamental parts of DCR, the UET is introduced as appropriate for adding additional factors explaining DCR, compared to previous theories and their limitations. The last section focuses on hypothesis formulation.

Chapter 3 provides the literature review and conceptual framework to set the stage to examine the readability of online LTS. The development of textual narrative components of corporate reporting and practices affects its reading. The general readability importance and development are discussed after that. Afterwards, previous studies on readability are reviewed, focusing on its determinants and consequences. The research gap is discussed and justified after that. The theories used in previous relevant research are discussed before discussing the Upper Echelons Theory (UET) perspective in examining readability determinants. The concepts of LTS readability, digital channels, and AME context are all discussed. Lastly, the hypotheses are then presented.

Chapter 4 discusses the study's methodological decisions based on the theoretical foundations and philosophy. This chapter summarises the main philosophical and methodological approaches considered in previous accounting research to choose the suitable approach to achieve the current study objectives. In turn, the chapter provides a comprehensive study design, covering everything from sampling procedures through data collecting, variable definition and measurement, and planned data analysis.

Chapter 5 provides a descriptive analysis of DCR extent. First, descriptive statistics are provided for the independent, control, and dependent variables. The overall DCR score is analysed first, and then the content and format dimensions are discussed. Next, the results are combined to discuss how this innovation is diffused in Jordan. The adoption trend is highlighted and compared to previous DCR literature and best practice.

Chapter 6 provides the multivariate analysis and discussion of testing the relationship between CEO characteristics (age, tenure, education, gender) and the extent of DCR. It begins with checking multiple regression assumptions. Then, regression results are provided, including hypothesis testing and discussions. This is followed by the additional analysis examining several mechanisms' moderation effects on DCR. Sensitivity analysis comes after that. The results are then discussed based on theoretical background and the relevant literature. Finally, a summary is presented.

Chapter 7 deals with the relationship between chairman characteristics and the readability of chairman letters to shareholders within the DCR channel. It starts with descriptive statistics depicting LTS readability patterns and word count across firms in the AME. Then the regression analysis results are discussed

In Chapter 8, a recap of the study's key findings and answers to research questions are provided. After that, some generalizations that capture the essence of these findings are presented. The theoretical, methodological, and empirical contributions to literature are then discussed. Afterwards, the implications to practitioners, policymakers and researchers are provided. The chapter ends with a discussion of the research limitations and recommendations for future studies.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK (THE EXTENT OF DIGITAL CORPORATE REPORTING)

2.1. Introduction

This research investigates Digital Corporate Reporting (DCR) in developing economies in the Arab Middle East (AME) context. This chapter focuses on DCR in terms of adoption to help us understand how CEO characteristics may influence it. The first part of this chapter is a review that starts with a discussion about the foundations of corporate reporting, including DCR, and why transparency is such a pressing issue in the present day. Next, a history of financial reporting and the role of corporate websites as a communication medium are provided before the critical review of the most important conceptual and empirical DCR research. Afterwards, the theoretical underpinnings of previous DCR research are provided. Next, a summary discussion of the literature and the research gaps is provided. Finally, the special attributes of Jordan as a study setting are discussed.

2.2. Literature Review

This section aims to critically assess the existing literature on DCR to provide light on the state of knowledge in this area, identify gaps, and justify selecting particular unresolved questions to be explored in the present study. Research on technology and accounting emerged as the use of technology gained popularity. Wallman (1995) explained his concerns that the accounting and disclosure of corporate financial information did not evolve in tandem with business world changes. Companies started to use their websites to disclose their corporate information as early as the 1990s, which we call Digital Corporate Reporting (DCR). Researchers started and continued to examine the benefits, practices, determinants, and consequences of DCR. They relied mostly on neo-classical theories to explain the DCR strategies. Alternatively, the current study emphasises the argument of Hambrick (2016), who argued that the study of strategists is essential to grasp strategy fully. The next sub-sections aim to explain the concept of financial reporting in general, first by discussing the importance and limitations of the traditional Corporate Reporting (CR) model and how the internet has reformed CR. Then defining and discussing the importance of DCR and reviewing relevant prior research focusing on DCR determinants.

2.2.2. Traditional Corporate Reporting: Importance and Limitations

Corporate disclosure is described as consciously disseminating quantitative or qualitative, required or optional, formal or informal financial or non-financial information (Gibbins et al., 1990). Fair securities markets depend on corporate transparency; an efficient capital market rates assets based on all available information (Malkiel, 2003). Disclosure makes financial markets more efficient, lowering capital costs to maintain improved access to the capital markets. Companies supply users with hardcopy reports following laws and regulations, whereas press releases and conferences are newer avenues. The annual report is an official document and is audited. The prominence of annual reports is well-acknowledged in the accounting literature (Al-Ajmi, 2009). Regardless of the influential role of some other channels, the annual report is still dominant for quite a few reasons, including the notion that it is the only statutory yearly communication between a company and its stakeholders (Slack and Campbell, 2008). Another significant reason is that the financial statements in the hardcopy version of the annual report are audited; accountants are responsible for assuring the authenticity and precision of reporting in addition to external auditing. It is normally distributed to users indirectly (via regulatory agencies after certifying it), which makes the delivery to users slow and time-consuming; potential users can find it difficult to have copies.

However, the increasing number of users due to the growth of companies has also challenged the annual report's effectiveness. In addition to the economic environment, technological advances allowed vast amounts of data to be made available reliably and cheaply using channels other than traditional annual reports. Targeted and potential audiences and messages are more extensive than before; thus, effective targeting requires development reporting, such as style, design, and new media (the internet) (Buxton, 2000).

The spread of technology has generally changed the need for new disclosure channels. Information technology has become an essential aspect of everyday life as its use increased dramatically during the last decade; it has been integrated into the core operations of our modern institutions such as universities, companies, and governmental institutions. One of the emerging technologies is the internet and corporate websites that function and utilise companies as a source of information. A corporate website usually refers to a website that is functioned and utilised by a profit as a source of information (such as its background, products and services, and performance). In this scene, researchers asserted that companies have started launching websites initially for purposes other than corporate reporting, such as advertising and promoting their products, developing a universal reputation, and is considered a platform for investor interaction (Ettredge et al., 2002) [4] Few companies started to use the internet to publish their corporate reports. With the advent of the internet, regulators have asserted the importance of improving both the content and the communication channels of financial reporting (e.g., FASB, 2000, ICAEW, 2004). Coupled with the limitations of the hardcopy annual report, companies may choose to release their information using their websites (Xiao et al., 2002). Firms have used corporate websites since the 1990s to extend traditional hardcopy reporting but not as an alternative to it in developing countries (e.g., Al- (Al-Htaybat et al., 2011) or developed countries (Abdelsalam et al., 2007a).

The Annual Report (AR) is perhaps the most powerful document declared by companies' managers. It is debated whether it is still the sole famous disclosure channel nowadays. Indeed, it could be asked whether the internet will end the hardcopy texts, including the annual report, with such an influx of technology and instantaneous global communication. In other words, whether the printed annual report has become obsolete. Especially when investors are increasingly dissatisfied with the usefulness and relevance of financial report information (Lev, 2018), new methods and channels of communicating financial information to investors need to be extensively pursued. For example, the distribution of Annual Reports in the UK is governed by the Companies Act 2006, which states that every company must send all members a copy of its annual Report. On the other hand, there are no legal requirements to deliver hard copy Annual reports in the USA, Germany or the Netherlands. However, developing countries are

[4] It is worth pointing out that not all websites are used to provide similar things; a recognised classification of websites according to their use is illustrated in other chapters.

expected to require that. It can't be discontinued because many users still do not have continuous access to the internet (e.g., Al-Htaybat et al., 2011).

The prominence of the annual report has attracted a few researchers' attention, who compared annual reports and website reporting by highlighting some issues. While corporate website contents are not meant to be audited, auditors refused to certify their responsibility regarding web-based reports (Debreceny et al., 2002). Moreover, hardcopy annual reports do not need an internet connection or additional reader skills compared to the website's version.

Nonetheless, the annual printed report has fallen short of the advantage found in other channels (e.g., information on corporate websites in content and format) (FRC, 2015a). First, it allows for less effective communication than the digital medium. Moreover, the annual report is not enough in the capital market context (Marston and Shrives, 1991, Hope, 2003) since it lacks frequent and timely delivery of disclosures.[5] Accordingly, the scheme of traditional corporate disclosure communication "has become less able to satisfy users' needs as it is not as timely, interactive, accessible or detailed enough" (Lodhia et al., 2004, p.67). Traditional reporting has been extended, such as the speed of corporate disclosures. For example, investors can download financial information from a company's website within minutes and be in a position to start analysing the data. As a result, Digital channels for reporting are more efficient and cost-effective than the conventional methods of print media (Garg and Divya 2010).

As in its current phase, DCR can be defined as disseminating financial and non-financial information in various digital formats such as PDF, HTML and multimedia by a company on its corporate website. In this aspect, users in the UK consider digital reports (PDFs) as an extension, not a substitute for a hard copy (FRC, 2015a). Among other benefits, corporate websites

[5] Conference calls and interim reports are examples of other channels that allow timelier disclosure. However, a website allows better timeliness than both of these and to an unlimited number of users.

facilitate marketing (Watson et al., 2000), branding, and establishing a web presence which is crucial these days (Thimm and Rasmussen, 2022). Users of corporate information are growing rapidly worldwide, and modern technologies can keep them informed, educated, and engaged with companies (Agca and Önder, 2007).

FRC believes that this use demonstrates users are open to innovation when it better meets their needs. However, users sometimes do not know (and collectively agree on) what exactly they need. Stockholders may generally favour PDF format as the best digital annual report. However, the PDF is not a substitute for the traditional hard copy but an improvement to it (FRC, 2015a). Users highlight that PDF offers the best combination of paper and digital formats features (FRC, 2015a).

Moreover, information can be available at a time under complete control by the firm (i.e., voluntary and without approval from external auditors). Conference calls and interim reports are examples of other channels that allow timelier disclosure. However, the corporate website allows better timeliness than both channels and unlimited users. It allows users to choose different data formats to download. As a result, DCR can provide users with different degrees of accessibility, engagement, research, and data exchange and may build a new terminal that will revolutionise corporate reporting (Al-Htaybat et al., 2017).

Despite the soft-copy opportunities, the hard-copy reporting model is still mandatory and has its primary advantages. For example, the latter has fewer risks (such as the risk of modification) than DCR. Information on the Internet has the potential to be unstructured; data can be published, modified, or deleted remotely or locally at any time without evidence of these actions ever having occurred. Another threat is that information on the internet is exposed to access and modification by unauthorised external and internal users to the reporting entity. The possible breaches in the integrity of audited reports are comprehensively analysed by Lymer and Debreceny (2003).

2.2.3. Generations of DCR Development

Online corporate reporting passed many phases before its final development. As a result of advances in technology, numerous scholarly works provided evidence that the traditional paper-based corporate reporting has adapted, and there is still an increasing chance of Internet-based disclosures (e.g., Oyelere et al., 2003, Xiao et al., 2004, Ponte and Rodríguez, 2002, Sanad et al., 2016). Generally, companies aim to communicate rapidly with investors and other stakeholders and reach a broader audience base than the annual print report allows. Thus, they started to provide online corporate information that can be quickly processed and used in user analysis (Fisher and Naylor, 2016). The level of DCR development is best understood in light of the classification of DCR practices into the following three generations, according to Al-Htaybat et al. (2017).

Generation 1: Accountants started as early adopters of internet technology, as early as the time of inventing dial-up internet connections in the 1990s in Europe and the USA (Al-Htaybat et al., 2017). During this generation, organisations publicised their annual report via the internet since they used their corporate website as a different delivery tool instead of the traditional paper-based annual reports (Lymer et al., 1999, Lodhia et al., 2004). Companies enjoyed using multiple formats (HTML and PDF) to duplicate their printed annual report (Hedlin, 1999, Lymer and Debreceny, 2003). Reporting using PDF files differs from using HTML in several fundamental ways. HTML allows a flexible view where users can easily copy the content. These qualities facilitate better use of technology. However, many firms in many countries have a high variation in DCR adoption.

Generation 2: State-of-the-art internet presentation languages have offered the betterment of CR, which constitutes the second generation of DCR. The introduction of the eXtensible Mark-up Language format to present financial reports on the Web has several benefits. These advantages are the ability to hyperlink contents (both internal and outside sources) and "the ability to manipulate data displayed on the desktop by importing it directly into local applications of the user" (Debreceny et al., 2003). According to Beattie and Pratt (2003), the development of a sub-language, the (XBRL), allows the easier exchange of information between diverse web formats and offers extensive online financial data search options. XBRL is now adopted in countries in highly developed capital markets (USA, UK…etc.). XBRL is often termed as level 2 digital reporting (ICAEW, 2004).

Generation 3: The enduring development in technological modernisations, such as SoMoClo (Social Mobile and Cloud), embodies a cutting-edge step to renovate companies' current corporate reporting practices. Those are advanced and allow the change of corporate reporting and its related applications to cloud platforms. This interactive DCR stage is further explained by Al-Htaybat et al. (2017) as it is a revolutionary terminal that will renovate the current corporate reporting scene (Al-Htaybat et al., 2017). Moreover, Krahel and Vasarhelyi (2014) claimed that cloud technology allows real-time updating and extraction for individual analysis, making it the most advanced feature.

The prior literature on DCR offers evidence that most reporting practices are conceivably still in the first or second stage (Marston and Polei, 2004, Xiao et al., 2004). Previous studies show that firms in developed countries are primarily in a progressive stage in DCR. Xiao (2004) explains that in China, "it will take some time for this technology to become a common communication medium." (p.196). The focus of this thesis is on corporate websites. Since corporate websites became perhaps a powerful communication tool that facilitates sharing information with users, on the one hand, companies have increased the use of their websites to present financial statements online. However, on the other hand, it was noted that a few companies are using specific internet portals for electronic communication with shareholders. For example, eDelivery is how British Petroleum (BP) sends documents to its shareholders in electronic form (i.e., via email).

Moreover, some recent studies examined the companies that have started to release financial information on their official social media pages (Amin et al., 2020). For example, Amin et al. (2020) documented the existence of 256 Twitter accounts for 219 companies out of the FTSE 350. These empirical results demonstrate a significant relationship between the scope of using Twitter as a financial disclosure channel and (board tenure, board independent members' percentage and gender) among other BOD characteristics. Furthermore, the probability of the occurrence of financial disclosure tweets is 7% among the studied firms (Amin et al., 2020). The relevance of social media is very high in developed countries. For example, the UK is "the top English-speaking country and the fourth globally, having the highest percentage of active social media accounts relative to its population as of 2015" (Amin et al., 2020).

Digital annual reporting now offers two-way interaction between the firm and its investors and users and the flexibility to view and download in PDF and Excel. Corporate websites may also satisfy timeliness criteria. The adoption depends on when the managers decide to use DCR effectively and disseminate information on time.

A noted upsurge of interest in the future of financial reporting referred to 1991. The Jenkins Report in the US confined a customer focus to the reporting he requires seeing (AICPA, 1994). Subsequently, several bodies and individuals worldwide have published reports, articles, and even illustrative web technology-based company reports that speculate on the future of financial reporting. One of the significant developments is the DCR.

Given the previous actualities, many scholars acknowledged the need to boost academic and professional research in different dimensions and aspects of corporate reporting practices. In addition to the credibility, understandability, and other elements, there were calls to focus on the channels/avenues used by companies to deliver and communicate information to the interested stakeholders. This has been highlighted by the Financial Reporting Council (FRC, 2015a) and the Institute of Chartered Accountants in England and Wales (ICAEW, 2004).

Other successful research projects have been undertaken to discuss the desired improvements in Corporate Reporting (CR) in professional research reports and academic papers. While an early attempt to discuss digital reporting was the report of FASB (2000), a recent project is the Financial Reporting Lab (Digital Current report) (FRC, 2015a).

Despite that, the annual report is still popular, but companies (in emerging economies particularly) need to increase their digital copy to satisfy the growing number of users' needs; companies started to reform their reporting practices and the mode of delivery. The following section will discuss how technical advancements allowed accelerated Corporate Reporting (CR) reforms regarding annual reporting and continued communication.

2.2.4. The Importance of Digital Reporting

Companies increasingly attempted to serve the informational needs of significant stakeholders in a global setting, which led to multiple revolutions in financial reporting. Hedlin (1999) classified developments of electronic annual reports into three separate evolutionary phases outlined in the following paragraphs. Phase one was the initial step to DCR when a company created its Web presence by launching a website in 1995. This phase of website usage was characterised by little attention to investors since the contents were narrowed to important company information. Phase two, where better development became apparent in 1996, numerous corporations have started to be aware of the opportunities to deliver financial information to investors via the web. Such information was as simple as an electronic version of the hard copy annual and interim reports. Lastly, in Phase Three, only some companies started to take advantage of the exclusive features and potential of the internet as a capable medium to communicate to investors more effectively. This phase started in 2011 when XBRL started to diffuse.

The use of the internet for financial reporting dates back to the 1990s. Dial-up internet allowed companies to utilise the limited features available at that time. Annual reports are usually placed on the company's official website under a relevant specific section since the 1990s (Petravick, 1999). After the annual reports had experienced such intense revolutions, their boundaries became dynamic and less disconnected. Depending on the company style, these sections may have a heading of 'investor relations', 'investors information', 'financial information', or others. Significantly, regulators responded as early as 1995, when the American Security Exchange Commission (SEC) used EDGAR[6] (a web-based large-scale store of financial data) for receiving and publishing filings by listed companies. Connectedly, studies confirm that the internet is gradually used for corporate reporting (Ashbaugh et al., 1999, Xiao et al., 2004, Xiao et al., 2005, Abdi et al., 2018, Hussein and Nounou, 2021). The Federation of European Accountants clarified that innovations in corporate reporting are centred on technology (FEE, 2015).

Evidence was provided by Allam and Lymer (2003) that companies have been using more interactive technologies in digital reporting since 2002, much more than in the preceding year. Recent papers show that most large companies worldwide have web-based financial infor-

[6] Electronic Data Gathering, Analysis and Retrieval.

mation on their websites (e.g., Boubaker et al., 2012, Abdi et al., 2018). Henceforth, the traditional methods of investor and stakeholder communication now have the prospect of being supplemented, replaced, and enhanced because of such opportunities offered by Web technologies (Marston and Polei, 2004). Examples of valuable features offered by this modernised disclosure medium include graphics, hyperlinks, and engaging in dynamic updates. Therefore, annual report users at this point can enjoy different viewing options and formats. For example, users can modify the HTML content's view options to increase the font size, copy, save and print the content. They can also use text on their phones, tablets, and computers.

The erudition of digital technology has changed how everyone views information gathering, including the area of corporate reporting (Martić et al., 2017, Bills et al., 2021). The technology-driven reporting platforms can provide companies with an instantaneous platform to reach global audiences with accurate and timely information (Jones and Willis, 2003). The benefits of DCR have been documented by Khan (2007), who studied the Malaysian environment, which means these apply to other developing countries. These fall into two categories. On the one hand, the company benefits by attracting overseas investors, publicising the company more widely, providing greater attention, discharging responsibility, and increasing transparency. On the other, user advantages are to boost timeliness and efficiency in accessing financial information, enable users to make decisions, give inexpensive alternative vehicles of disclosure, enable accessibility, and make investment decision-making simpler and quicker. The drawbacks of utilising the internet are discussed by Adams and Frost (2004, p.3): The internet is not a universally accessible resource; the time and money needed to create and maintain the website include costs that must be accounted for; web content may be massive and unstructured; most of the measures for performance have not been inspected or audited; finally There may be more regulations governing website disclosure.

2.2.5. Value Relevance and Investors' Use of DCR

Some studies have argued that DCR is useful for decision-making. DCR can contribute to four intrinsic qualities of the International Accounting Standards Board (IASB) Framework of financial information. These relevant qualities are understandability, relevance, reliability, and comparability. For example, in terms of information timeliness, DCR is more accessible than information supplied in hard copies. Regarding comparability, users can download data for several firms and compare them using the same screen, search engine, and other technology features. In general, preparers use technology to ease the preparation and development of the content of corporate reporting. With solid information technology systems, companies can better manage the flow of information to deliver the appropriate content more effectively (FEE, 2015). Consequently, the quality and flexibility of financial disclosures are of great importance to satisfy the increasing needs of various users. In this situation, the theoretical and empirical evidence show that the internet has been regarded as an efficient and widely used source of corporate information (e.g., Fisher et al., 2004).

Notably, numerous studies confirmed the value relevance of DCR. For example, Ahmed et al. (2015) found a statistically significant positive relationship between DCR in Egypt and market value and market returns. Recently, Shan and Troshani (2020) concluded that using digital corporate reporting technologies increases the relevant and reliable nature of financial information. In addition, Lai et al. (2010) found that positive relationship between cumulative abnormal returns and the disclosure of financial information on the internet. Moreover, it was found that the stock market reacts more quickly to companies that provide timely information through DCR than those that do not (Lai et al., 2010). Importantly, It was found that the investors of Jordanian listed firms depend heavily on DCR to make their investment decisions by expected stock return (Yassin, 2019).

Therefore, the procedural aspect of improving financial markets must rely heavily on advanced digital reporting (ICAEW, 2004). DCR can increase the value of companies because relevant information about firms seeking international finance is readily available to international investors. Therefore, this study contributes to the emerging corporate reporting literature (Holland, 2009) and the digital disclosure content. As an integral part of overall strategic management responsibility, the Investor Relations function is fundamental here because it offers the link between a company and the world of finance (AbuGhazaleh et al., 2012b). Moreover, it is helpful to understand the DCR management process as a case of more opportunistic behaviour since managers can be more actively involved in it than in traditional reporting.

Studying the relevance of the DCR contents to users is essential but can sometimes be unachievable without some advanced methods and procedures. In this regard, unlike most prior research that used traditional research designs (e.g., regression to test the formulated hypotheses), Rowbottom and Lymer (2007) have used a technique that provides valuable insights into the consumption and relevance of digitally available information. First, they studied the frequency of downloading the main items of the annual reports from its website. However, the annual report must be fragmented into downloadable sections on the company's websites. Although the perceived relevant contents vary, Rowbottom and Lymer (2007) found that all users' most repeatedly downloaded information, regardless of the reader type, of the 15 sample British companies, is the mandatory financial figures.

Because technology developments are boundless, the research discusses how corporate reporting could develop in the upcoming years. For example, the Financial Reporting Council (FRC) has issued its first report on the Lab's *Digital Future* project, which sets out a framework/plan for future digital reporting. The report articulates the opinions of a wide-ranging group of

Financial Statements (FS) preparers, investors, and other parties on the characteristics they would like to see in any forthcoming digitally enabled scheme of corporate reporting (FRC, 2015a).

The dynamics of CR change have been studied by Kriz and Blomme (2016). They specified, "The delivery of corporate reporting will be affected by technological changes. Printed reports and financial statements delivered by post are not viable options in a technological world. Information travels faster, and stakeholders want to have access to information on a timely basis, through new technologies, for instance (e.g., mobile apps) and new communication platforms (e.g., social media)" (Kriz and Blomme, 2016, p.38). As soon as information is released through DCR (i.e., website), it is promptly available to all shareholders, thus can reduce information asymmetry without accessibility delay (Lai et al., 2010)

Concerning the perceived usefulness of the presentation format, Hodge and Pronk (2006) found that Non-professional investors prefer to examine HTML-formatted quarterly reports and focus mainly on management's commentary on the quarterly report results. In contrast, large investors choose to view PDF quarterly results and focus directly on the financial statements (Hodge and Pronk, 2006). Consistent with that, the FRC (2015) research report found that users prefer the PDF annual report.

2.2.6. Theoretical Underpinnings in DCR Previous Studies

Theoretical framing is crucial in research because theories explain behaviours. Therefore, a good study requires a 'theoretical framework' to connect the researcher to this field's existing body of knowledge. A theoretical framework indicates which key variables influence phenomena and emphasises the importance of understanding how those variables may differ and under what conditions they may occur.

In general, corporate disclosure cannot be easily predictable as similar behaviours. Several quantitative DCR studies do not provide adequate theoretical discussion about the DCR, especially early studies. For example, the early research by Ashbaugh et al. (1999) did not offer any theoretical justification when they examined DCR.

In contrast, many essential studies explain the theories that can explain DCR practices in detail. Many researchers have used different approaches to clarify why companies may use digital mediums for corporate reporting (i.e., DCR). Those theories include agency theory, signalling theory, and diffusion of innovation theory, on the one hand. On the other hand, different approaches can be more suitable for explaining the DCR of specific content, such as Corporate Social Responsibility (CSR). For instance, the legitimacy theory is used by Rosa Portella and Borba (2020).

First, the Agency theory argues that management incentives explain the variances in a voluntary disclosure. Watson et al. (2002) explained that executives know investors strive to control their actions through different monitoring mechanisms. In value-decreasing investments or high opacity, investors tend to galvanise their fears when managers are entrusted with the responsibility of maximising shareholders' wealth. In these engagements, investors seek to enhance the information provided by management (Rediker and Seth, 1995). Accordingly, managers have inducements to increase disclosure to persuade investors to perform optimally. To diminish agency costs, firms may find it better to increase the levels of DCR on their websites. Several researchers have studied general voluntary disclosure behaviour variations using the agency theory (e.g., Cooke, 1998). DCR, as argued in the financial reporting literature, represents a perfect example of corporate disclosure that intends to reduce information asymmetry, and thus agency cost, between management and investors (Ashbaugh et al., 1999, Debreceny et al., 2002).

Second, the Signalling theory is also used to study firms' differences in their DCR practices. According to the evaluations of Craven and Marston (1999), companies expect that if they do not keep up with the same level of disclosure as other companies in the same industry, stakeholders will assume that they are withholding bad news. Therefore, firms may send signals that they maintain a similar level of corporate disclosure. Several corporate reporting studies argued that firms with high profits have a greater likelihood of signalling their superior performance to investors by giving a large amount of information in their annual reports. Signalling theory suggests that voluntary disclosures are one means for companies or managers to distinguish themselves from others on some dimensions, including quality and performance. The means and motivating factors for such disclosures include large auditors and high performance (Healy and Palepu, 2001).

In fact, most studies used agency and signalling theories. However, the characteristics of DCR (e.g., limitless capacity, versatility, and more significant loss of control of those interpretations) have made this research problematic. In addition, the costs and benefits of adopting DCR (and the associated use of the reported information) not only become less confident than those of hardcopy disclosure; they may also result in complex trade-offs beyond those related to the adoption of this technology (Xiao et al., 2004). Disclosures may be a tool for managers to convince stockholders about their optimal behaviour in response to the owner's attempt to control their activities through bonding and monitoring actions (Watson et al., 2002). Furthermore, Lee and Blouin (2015) emphasise that DFR adoption is associated with BOD support for adopting web technologies.[7] Based on the Agency Theory views, the board of directors monitors the

CEO to improve the CEO's performance to avoid possible conflict of interest. Improvements include CEOs' performance via better investor relations.

Third, Diffusion Of Innovation theory (DOI). Some researchers took advantage of the literature on innovation diffusion to improve our understanding of companies' DCR decisions by exploring different perspectives on innovation diffusion. Diffusion of innovation can be defined as how innovations are communicated over time through specific channels among the people in certain social provisions (Mahajan and Peterson, 1985). Diffusion of innovation theory attempts to clarify and describe the mechanism of how a new invention, in this situation DCR, is adopted and becomes successful (Clarke, 1999). Similarly, Sevcik (2004) perceived that innovation might take a long to adopt. Not all innovations are adopted, and resistance to change may be an obstacle to the diffusion of innovation, along with many barriers (FRC, 2015a). The phases of adoption are knowledge, persuasion, decision, implementation, and confirmation. Clarke et al. (1999) identified five stages through which an innovation passes in the accounting field: knowledge, conviction, making the decision, implementation of the decision and confirmation.

In general, innovation adoption is identified when an individual is doing something in a certain way is doing it differently (LaMorte, 2016). Examples can include how they buy a new product and obtain and execute an inventive behaviour. The adoption process starts when the induvial does observe the new thing. In this venue, innovation diffusion theory was used by Xiao et al. (2004) to generate hypotheses about factors influencing DCR adoption that are specific to their study's context, China. This theory explains, in general, how innovations (i.e., DCR) spread through a social system over time. Companies' innovativeness generally denotes their ability to announce new or significantly different methods, services, and goods (Bell, 2005). Xiao et al. (2004) also contended that international audit firms are diffusers of innovative technologies. For instance, Price Waterhouse Coopers has developed a system that compares different companies' financial statements. In addition, the Big-4 accounting firms are positioned to advise their clients on DCR.

Fourth, the stakeholders' theory. The websites are more effective and reachable for certain disclosures than the traditional print annual report, including CSR. Campbell and Slack (2008) clarified that while companies provide stand-alone social and environmental reports (which have become more popular in the past decade), many stakeholders now seek corporate information from the company website.

Fifth, legitimacy theory clarifies that a company's CSR disclosure activities satisfy the needs of broader stakeholders on the one hand and legitimise itself on the other. It is suggested under legitimacy theory that DCR allows firms to maintain their legitimacy (Deegan and Unerman, 2011). Many determinants can be linked to DCR adoption, but these rely on the perspective of the phenomenon. However, recent DCR studies using the legitimacy theory could not support the suggestions that profitability and debt influence DCR (Rosa Portella and Borba, 2020). They found that firm size, sector, and country of origin are associated with environmental disclosure on the corporate website. However, profitability and debt variables are not significant to website disclosures. Craven and Marston (1999) explained the opposition to the previous theory that "The extent to which companies will utilise the available Internet facilities may be constrained by the possibility of verifiability problems resulting in liability risks for investors and other stakeholders" (p. 324).

Sixth, the institutional theory has offered justifications for firms' DCR practices. For example, Rowbottom et al. (2005) stated that "Institutional theory suggests that online disclosure may be driven by a desire to conform to social or capital expectations" (p. 7). Additionally, another argument for the institutional theory's relevance in DCR is the theory's ability to offer perspective to understand how firms respond to changing cultural, social, environmental, economic, political, and institutional constraints and expectations. Moreover, it links a company's practices (for example, DCR) to the society's values in which a company operates. In this context, Dillard et al. (2004) indicated that institutional theory explains how companies seek to align perceptions of their practices and characteristics with social and cultural values.

In addition to the above theories, the voluntary disclosure theory was used by (e.g., Xiao et al., 2004). Table 2.1 below summarises how different main theories explain DCR practices

Table 2.1 Summary of the main theories used in DCR literature

Theory	Definition	Role in DCR research	Main findings
Agency	Disclosure is essential to reduce agency costs and information asymmetry raised by the dispute between agents (management) and owners (investors).	It can explain firms' practices of disclosing voluntarily on their websites to serve shareholders' needs, thus reducing agency costs.	Highly leveraged and larger firms have higher adoption of DCR.
Signalling	The theory states that corporate financial decisions (including disclosure) are signals the company's managers send to investors to reduce information asymmetry.	It suggests that companies disclose certain information on their websites to signal their superior performance.	Larger and more profitable companies send signals to the market by presenting information on their websites.
Institutional	Companies within the same industry tend to adopt the same level of disclosure.	Companies use DCR to mimic other companies' use of DCR within the same industry or comply.	e.g., companies of certain industries (e.g., banks) adopt DCR more.
Legitimacy	Legitimacy theory suggests that firms must act within the boundaries of what society classifies as 'socially acceptable behaviour.' This is to continue operating successfully.	It can explain why companies disclose certain information, such as CSR info, on their website. So, companies try to legitimise themselves by reporting information on their websites.	Firm size, sector and country of origin are associated with environmental disclosure on the corporate website.
Stakeholders	Explain why companies disclose information directed to various stakeholders on their websites rather than investors.	Companies may satisfy a broader group of stakeholders as they have a 'stake' in the company and should be treated equally by presenting various information on the corporate website.	Different stakeholder groups are becoming concerned about more

			corporate affairs-related issues. [8]
Diffusion of Innovations Theory	The theory offers a general explanation for how innovations diffuse through a social system over time. The main elements influencing the diffusion are innovation, adopters, communication channels, time, and a social system.	It provides a general explanation for how innovations (DCR) spread through a social system over time. * Despite that, the theory lacks the full explanation regarding managers' (adopters) characteristics influencing accepting and adopting unique innovations such as DCR. (Research Gap).[9] Therefore, a new perspective is suggested to study the variations in DCR adoption by focusing on managers' traits.	Firms audited by large audit firms tend to adopt DCR (e.g., Big4 auditors as change agents) (Xiao et al., 2004).
Upper Echelons Theory (proposed perspective)	Managers have bounded rationality when facing complex decisions. Top managers have different attitudes and preferences, which can be stronger when facing complex decisions such as innovation adoption (Hambrick, 2007).	Top management characteristics (as) are proxies for their attitudes and preferences and can be associated with different levels of DCR adoption. Since DCR is a complex innovation (Xiao et al., 2004), DOI lacks comprehensive explanations for its diffusion in the AME. UET recognises more facts surrounding DCR adoption (e.g., CEO power, discretion, resistance to change and centralisation).	

Moreover, given the increasing demand for information from diverse groups, it is believed that the Internet may enable better information disclosure and stakeholder dialogue to fulfil business economic, environmental, and social obligations to stakeholders (e.g., Unerman & Bennett, 2004). Despite that many researchers have already adopted the stakeholder's perspective to explain DCR practices (e.g., Debreceny et al., 2002; Aly et al., 2010; Skouloudis,

[8] "This paper puts forward ideas for corporate reporting to evolve in a way that will keep pace with the developing economic reality and address the needs of a wider stakeholder audience." (Kriz and Blomme, 2016).
[9] Detailed discussion is provided in chapter three.

Evangelinos, & Kourmousis, 2010), many of such empirical findings indicated that organisations had surpassed stakeholders' expectations for the level of information they provided. This necessitates including more variables that can complement the available frameworks.

In summary, it is noted that most studies rely mainly on agency and signalling theories and are initiated in countries with efficient capital markets. Developing countries have different economic, regulatory, and cultural environments, which creates more potential for managers to exert higher discretion regarding DCR adoption. Therefore, these theories could be narrow in explaining more variations in DCR practices and capturing top management's role in the adoption. Xiao et al. (2004) suggested that the initial era of DCR adoption may be explained by economic-based theories, while innovation diffusion theory can explain the subsequent adoption stages. The current study extends this argument by expecting that managers could also play a role in DCR diffusion. The following section will evaluate the prior research classified into many areas.

2.2.7. Previous DCR Studies

The review relies on academic articles and some relevant professional bodies' DCR research and top management's impact on disclosure. This permits the discussion of various broader viewpoints and covers different kinds of evidence. Many of the DCR studies have been published in reputable journals. For instance, Journal of Accounting and Public Policy (Debreceny, Gray et al. 2002, Ettredge, Richardson et al. 2002, Xiao, Yang et al. 2004, Kelton and Yang 2008), Accounting Horizons (Ashbaugh, Johnstone et al. 1999), European Accounting Review (Craven and Marston 1999), International Journal of Accounting Information Systems (Debreceny and Gray 2001, Ettredge, Richardson et al. 2001), Managerial Finance (El-Masry, Ezat et al. 2008). Previous DCR studies have various objectives, such as describing the adoption and features of DCR and exploring users’ views and determinants of DCR.

2.2.7.1. Descriptive Studies on Adoption and Features of DCR

Research on DCR started as early as 1996. Justifiably, the earliest studies were typically descriptive, offering valuable understanding and insight into the subject (see: Gowthorpe, 2004). Jones and Xiao (2004) argue that the majority of DCR research before 2004 lacked a theoretical foundation and made no effort to theorise. Those studies have mainly discussed the mounting frequency of corporate websites and their capabilities, advantages, and disadvantages. Extant DCR research in the early stages focused on users' preferences and views about the types of information and formats users want from the DCR. For instance, FRC (2015a) demonstrated that it is believed that most users will be open to innovation when it better meets their needs.

These early studies have rightly highlighted the valuable features of electronic reporting, such as allowing users to search, retrieve, filter, download, and even reconfigure information in a timely and cost-efficient manner (Wagenhofer, 2003, Petravick, 1999). Preferences of users, therefore, are studied. Hodge and Pronk (2006) found that professional investors prefer the PDF version, while nonprofessional investors prefer to view HTML reports (the reported quarterly information).

Moreover, Louwers et al. (1996) explained that the ways decision-makers use information would be changed due to the electronic delivery of annual reports. Similarly, Wagenhofer (2003) described how the additions offered by the Internet, like hyperlinks, interactivity, and search engines, have primary usefulness in enhancing the usability of the information.

DCR is preferred by investors and stakeholders because of its benefits of IFR, such as cost savings and time efficiency (Mokhtar, 2017, Bananuka, 2019). DCR users have been surveyed by the FRC (2015a) and found to acknowledge the digital features of Portable Document Format (PDF).

2.2.7.2. Previous Studies on the Determinants of DCR

Despite its apparent advantages, DCR were not always voluntarily adopted by all firms. Therefore, researchers started post-1999 to explore potential characteristics associated with its adoption. To facilitate this start, some researchers classified web content to discover reasons for firms' disclosure choices. For example, Ettredge et al. (2001) differentiated between mandatory and voluntary as two types of DCR content. According to Lymer (1999b), listed companies supply multipart information to different users voluntarily (e.g., analyst's conferences) or as a response to mandatory requirements (e.g., under some stock exchange rules). However, many studies do not distinguish between disclosures of mandatory versus non-mandatory pieces of information since the website itself is still voluntary in the first place, despite its increasing usage. Therefore, the descriptive DCR studies discussed in the previous section have been followed by a new line of research that focuses on the factors that explain the variations in DCR adoption among firms (e.g., Oyelere et al., 2003, Kelton and Yang, 2008, Momany and Al-Shorman, 2006, Aly et al., 2010).

DCR research started examining web-based reporting determinants such as firm-level financial and qualitative characteristics. However, the number of variables included in these studies varies significantly. For instance, some studies examined only one factor, such as firm size (Allam and Lymer, 2003) or industry type (Hussainey and Al-Nodel, 2008), while others studied two predictors, such as firm size and sector type (Craven and Marston, 1999) or firm size and capital ownership (Pirchegger and Wagenhofer, 1999). The possible reasons behind choosing a few variables could include the expected/real multi-collinearity between some factors in specific contexts. It is also noted that even when researchers investigate multiple factors, most rely on limited types/groups of variables. This could be influenced by the context (e.g., country). For instance, Xiao et al. (2004) proposed determinants include auditor type, foreign listing, classes of stock ownership, and government regulation, arguing that these are relevant to the Chinese context. The single or homogenous group of DCR include firm-level characteristics, corporate governance, or capital structure. For instance, Aly et al. (2010) studied the impact of firm size, leverage, audit size, profitability, liquidity, industry type and foreign listing status on corporate internet reporting in Egypt.

In contrast, others used new and different determinants such as Corporate Governance (Kelton and Yang, 2008) and found a significant positive relationship between levels of DCR in the USA and governance index, board independence, audit committee expertise, and audit committee meetings. Most DCR researchers used firm financial characteristics that are quantitatively measured, such as firm size, leverage, and profitability, to predict DCR variations (e.g., Abdelsalam and Street, 2007, El-Masry et al., 2008, Oyelere et al., 2003, Craven and Marston, 1999, Debreceny et al., 2003, Ettredge et al., 2002). These studies found fairly consistent results; most of these studies provided findings consistent with Ashbaugh et al. (1999) when they found that DCR firms are larger and more profitable. Firm size is another common among a large number of studies. Researchers have used the signalling theory to argue that a company's decision to disclose can be influenced heavily by its size. Results are almost consistent with many studies worldwide (e.g. Ponte and Rodríguez, 2002, Momany and Al-Shorman, 2006, Aly et al., 2010) that found larger companies tend to send positive signals to the market (based on their good performance). Another firm-level variable is the industry type. Some DCR studies covered different sector types, and others focused on particular industries only. Ponte and Rodríguez (2002) show that the sector in which a company operates heavily influences whether or not to disclose certain voluntary information. Consistent results were provided by Aly et al. (2010) and Hussainey and Al-Nodel (2008). Other researchers gave more details on the industry impact, such as Ettredge et al. (2001), who found that companies in the petroleum industry had the uppermost DCR usage contrasted to other sectors by relying on six items of accounting information and 11 items marked as other financial information, which is a working feature during those periods. Therefore, these results might be of limited validity because companies now offer massive types of information.

Another essential element of corporate accountability is corporate reporting to satisfy various users' needs. Therefore, many studies examined specific ownership and governance structures as motivations that likely affect adopting DCR voluntarily. For instance, Yap et al. (2011) found that board independence, financial expert board members, and directors' ownership are significantly associated with the level of DCR. In a similar context, it was also found that corporate web-based disclosure is linked to companies with dispersed ownership structures (Marston and Polei, 2004) since lower institutional investors (block shareholders) are found more than concentrated-ownership companies. Moreover, several studies examined capital structure association with DCR. For example, Abdelsalam et al. (2007b) have examined corporate Internet reporting comprehensiveness and determinants in the context of London-listed companies, where their results demonstrated that DCR comprehensiveness is associated with director holding, director independence, CEO duality, and analyst following. On the other hand, it was found that institutional ownership is negatively related to DCR (Kelton and Yang, 2008). Ashbaugh et al. (1999) found that less block-holder ownership is associated with DCR.

Another factor relevant to CG is auditor type; some prior studies have examined the possibility of auditor-type (e.g., Big-4) influence on DCR (Ponte and Rodríguez, 2002). It has been contended that the audit company, whether Big-4 or not, can substantially impact corporate disclosure practices in general. In specific, it is argued that firms whose FS are audited by a Big-4 auditor tend to engage in DCR more than firms that are audited by Big-4 auditors. Empirical evidence on the relationship between the auditor category and the extent of DCR adoption is mixed. For example, Xiao et al. (2004), Bonsón and Escobar (2006), Al-Shammari (2007), Alanezi (2009) in Kuwait and Boubaker et al. (2012 found a significant relationship between DCR and auditor type. In contrast, Chan and Wickramasinghe (2006) and Aly et al. (2010) did not find a relationship between DCR and auditor type.

In summary, most of the previous studies discussed are academic research papers (carried out by researchers for different purposes). The next section provides a discussion of professional and regulatory studies on DCR.

2.2.7.3. Professional Bodies Research on DCR

Much research has been released by professional bodies (e.g., standard setters and market regulators) who perceive DCR in a more comprehensive way than academic researchers. They sought to emphasise the significance of DCR and collaborated on the common goal of developing standards for the content and presentation of web-based reporting. Security and auditor obligations (Fisher et al., 2004) are two examples of the challenges that are discussed. For instance, Section 550 of the USA Securities Act explained that auditors are not obligated to read material included on electronic sites (Gray and Debreceny, 2001).

One of the pioneering works in this domain was a study led by IASB and conducted by Lymer (1999a). He addressed not only the determining factors of the first suppliers of web-based reports but also established an initial procedural methodology to capture the extent of digital reporting implementation. Lymer (1999a) paper heartened further research in the direction of the universality of DCR practices, thus forming a pavement for popularising ideas of XBRL. Furthermore, such standards offer to report certainty and flexibility for future innovations. In their investigation of XBRL, subsequent studies have supported such innovative platforms. While many users have shown acceptance and acknowledged the internet reporting channels, scholars believe that regulating XBRL has many challenges (e.g. Jones and Willis, 2003). Generally, XBRL was seen as a good step; however, it is evidenced that the benefits of XBRL reporting have usually not yet been entirely delivered (Jones and Willis, 2003). Contrary to this, it is sturdily supported by the surveyed academics and practitioners in Asia and Eurasia (IFAC, 2008). Moreover, Penler and Schnitzer (2002) argued that XBRL provides the opportunity for banks by enabling them to remove the “heavyweight” of their reporting requirements. XBRL implementation issues have been discussed by ICAEW (2004). Plumlee & Plumee (2008) stressed the need for adequate guidance for XBRL auditors. Premuroso and Bhattacharya (2008) found that corporate governance is associated significantly with a firm's early and voluntary filer of financial information in XBRL format.

On the other hand, many bodies attempted to address the problems raised by Internet progression as a reporting tool. The underlined facets are the homogeneousness and quality of web-based information, including issues of legal and security nature (FASB, 2000). Moreover, the International Organization of Securities Commissions (2001) started to study the everyday Internet use by investors, the securities industry, and regulators in its follow-up report. On the other hand, different stakeholders surveyed by the International Federation of Accountants (IFAC, 2008) resisted those financial reports that have not become more valuable to them after all such developments.

The subsequent challenges and recommendations for sustainability (Véron, 2007), control considerations when communicating with stakeholders (IFAC, 2002), and cost vs benefit of different levels of digital reporting (Xiao et al., 2004). Auditing was also among the issues examined. The Auditing Practices Board (APB) has instituted that: auditors do not have any responsibility for financial information on the Web (Beattie, 1999).

Finally, it is worth pointing out that businesses are not only the adopters of digital financial reporting. Governments also engage in DCR by using the internet as a reporting tool. Unfortunately, there is little scholarly work on this fact. For instance, Serrano-Cinca et al. (2009) studied the factors associated with the voluntary DCR of a sample of ninety-two Spanish local public administrations. They found that size, political will, and citizens' income level all affect DCR. The nature of some factors included is unique to the settings of governmental organisations. However, size is a relevant determinant of many DCR practices in different settings in the world. The governmental adoption of digital technology is due to intentions different from those in business. Banker and Patton (1987) explained that “the voluntary provision of information has been seen as a way of limiting conflicts between citizens and politicians and forms part of agency theory” -cited by Serrano-Cinca et al. (2009).

In summary, the issues such as professional and academic papers highlighted could increase the complexity of the decision about DCR adoption. At the same time, they facilitate solving some issues in the countries they belong to. Moreover, not only in Jordan but also in the UK CEO is said to be the DCR adoption decision-maker (FRC, 2015a). However, the country setting and the environment give these managers higher discretion. The following section will focus on managers' expected roles in digital reporting adoption.

2.2.8. Roles of Top Management in DCR

The impact of top management and key executives in an organization has been studied regarding their numerous impacts on firms. Despite the general consensus that CEOs' diverse abilities and competencies influence company performance (Bennedsen et al., 2008, Gabaix and Landier, 2008)et al., 2008), researchers and scholars diverged and have offered little consistent evidence (Plöckinger et al., 2016) and contradictory (Hiebl, 2014). For instance, Although Burkert and Lueg (2013) could not find a correlation between CEO education and financial measurements, Naranjo-Gil and Hartmann (2007a) did. Yet, existing UET studies have not demonstrated agreement on which managerial/behavioural characteristics, educational background, or CEO qualities are essential for disclosure effectiveness. Significant moderator variables within the UET are also under-researched (Plöckinger et al., 2016).

Few studies provide insights on managers' views of or expected responses to transforming their organisations in the digital age. For instance, one study (Kane et al., 2015) reported surprising answers when respondents were asked if their organisation views digital technologies as a threat; 28% stated that it is.[10]

Numerous studies focused on the characteristics and experiences of the CEO. Some highlighted the influence of these individual executives on financial reporting outcomes (e.g. Aier et al., 2005, Bertrand and Schoar, 2003, Demerjian et al., 2013, Plöckinger et al., 2016). However, how characteristics are studied differs among the theories used. Gender, for example, is one of the most controversial characteristics of diversity. Yet, the business psychology literature, agency theory, and stakeholder approach support the opinions favouring gender diversity in management and boards (Fernández-Méndez and Pathan, 2022). Nonetheless, gender may have a different effect on corporate reporting under the particular perspective of UET since the focus is on gender influence on decision-making (i.e., adoption). Therefore, among the characteristics of managers studied under the UET perspective are gender and age. Scholars suggest that age is a key demographic attribute that may be related to variability in firm performance. Connectedly, experienced CEOs are risk-takers more than their less experienced counterparts (Schrand and Zechman, 2012). According to Serfling (2012), elder CEOs are less likely to take risks since their experience rises with age. Moreover, the CEOs' cohort substantially influences

[10] The study reported that "Early-stage company exuberance likely ignores the fact that what is good for one company can be just as good for another." page 13.

corporate financial choices since younger CEOs lack a prior record of success (Serfling, 2012). In addition, prior studies argue that CEOs' age is related to high-quality disclosure (Huang et al., 2012). These factors can increase the complexity of DCR adoption decisions as a disclosure strategy. Managers may face vital adoption decisions, including how to structure the level of web presence, contents beyond annual reports to be displayed, and the level of digital communication with significant stakeholders. Rational decisions need time, effort and knowledge of their costs and benefits. Moreover, there could be some believed disadvantages to web-based information available to the public, such as security issues. CEOs' evaluation of such disadvantages could affect their decisions of adoption (see, for example, Adams and Frost, 2004). CEO characteristics can thus play a role in their strategic and complex decision based on the UET (Quigley and Hambrick, 2015).

Moreover, views of DCR could lead to adoption decisions being complex or multifaceted. On the one hand, the beliefs of capital market participants about DCR may be affected by manager-specific characteristics. For example, Malmendier and Tate (2009) found that reputable chief executive officers have higher expectations from analysts and shareholders. In the same way, investors might presume that a company led by managers knowledgeable of technologies and innovations (based on their experience or education) may have a well-developed digital reporting adoption to serve users' needs. However, no research supports this view. On the other, users' views may influence managers' views and, thus, decisions. In this aspect, results from Jordan reveal that some interviewees say that an alternative is available, such as the ASE website. More details on DCR as an innovation and how managers may perceive it and respond are reported within the theoretical framework section in this chapter. The following section will review the prior research on DCR within the chosen context of the study, Jordan.

2.2.9. Digital Corporate Reporting in Developing Countries and Jordan

The DCR literature has covered many developed and developing countries. Examples of studies carried out in developed countries include: In the UK: Abdelsalam et al. 2007. Lymer and Anders Hussey and Sowinska, 1999; USA: Petravick (1999) and Gillet 1996; Ireland: Koreto (1997), Sweden: Hedlin (1999); the US, UK, and Germany: Deller et al. 1999; Spain: Gowthorpe and Amat 1999; Finland and the UK: Lymer 1997. On the other hand, DCR has also been studied in emerging economies (e.g., Xiao et al., 2004; Momany and Al-Shorman, 2006; Al-Shammari, 2007; Mohamed et al., 2009; Mohamed and Oyelere, 2009; and Desoky, 2009; Yassin, 2017).

The country in which companies operate influences DCR adoption (Ponte and Rodríguez, 2002). This can be due to differences in market development and IT use among these countries. Although technology started in the west, it is used by companies everywhere, and firms across different countries, especially larger firms, can be more motivated to apply technology. However, some differences between countries are affected by many factors, such as cultural differences (e.g., resistance to change and power distance).

Some research has been done on DCR practices in the context of emerging economies. In the Jordanian context, the earliest study highlighting the low adoption of DCR was a survey carried out in 2004 which found that only 25% of the listed manufacturing firms publish financial information on their websites (Al-Tamimi, 2005). This was followed by a detailed empirical study by Momany and Al-Shorman (2006). Few studies followed, focusing on a similar group of variables. Jordan is a developing country that has a high-power distance. Such high power of CEOs may be linked to the centralised DCR adoption decision, as revealed by AbuGhazaleh et al. (2012b). Moreover, DCR is relevant to users, as a recent study found that investors use DCR when making investment decisions (Yassin, 2019). Adoption was low in the early years.

For instance, in 2006, only 45% of companies operated websites. Only 70% of these firms published financial information (Momany and Al-Shorman, 2006). The percentage of companies operating websites can be compared to newer results by Yassin (2017) when 65% of the listed firms have websites.

These studies have revealed variances among listed companies in their adoption of DCR. Moreover, some of these studies confirmed that size, profitability, and listing status significantly affect DCR adoption by Jordanian-listed companies. For example, Momany and Al-Shorman (2006) used the survey method to browse corporate websites and classified DCR into comprehensive financial statements, partial financial statements, and financial highlights and found that DCR is associated with larger companies and has high leverage and concentrated ownership. Momany et al. (2014) found that the number of companies that use their websites to disclose financial information is growing. However, the overall usage level is still unsatisfactory.

AbuGhazaleh et al. (2012b) found that the presence of websites is positively associated with firm size and 'Financials' type companies; there is a positive association between the level of DCR and size, governmental ownership, institutional ownership, number of shareholders, and 'Financials' type companies but a negative association with the company's age. Momany et al. (2014) confirmed that DCR is associated with the size and listing status; larger companies are more likely to disclose annual reports on their websites. In a more recent study, Yassin (2017) found that firms that are more likely to engage in DCR are larger, more successful, highly leveraged, and have no role duality, more board members, and fewer independent non-executive directors.

Some Jordanian studies have evaluated the role of boards' composition and proved its high impact on different disclosure activities (e.g., Sartawi et al., 2014). However, Sanad et al. (2016) research on listed companies in a similar country in the region, Bahrain, found that, except for board size, board characteristics do not affect the level of DCR. Such a result is unexpected, though, in line with evidence from Egypt, another AME country, that documented board independence negatively correlated with DCR (Samaha et al., 2012). On the other hand, it was found that the investors of Jordanian listed firms depend heavily on DCR to make their investment decisions by expected stock return (Yassin, 2019).

Lastly, concerning the nationwide usage of XBRL in Jordan, Mohammed et al. (2009) studied the difficulties of its implementation. They found that the main problem is the lack of XBRL experts, technological requirements, time, and funds. Jordan adopted the XBRL in 2020. XBRL is different from DCR since it is a country-level mandatory tool. It gives no personalised features to companies and is still complex. It is beyond the scope of the current study. A more detailed review is provided by Hoitash et al. (2021).

2.2.10. Discussion of Contextual, Theoretical and Empirical Researches Gaps

The results of this review support the worldwide lack of uniformity in DCR among firms, as revealed by Khan (2007). There are different diffusion stages for innovations based on the DOI model, where DCR is not an exception. DCR has been described as improving since it entered a voluntary diffusion phase, according to Xiao et al (2004). However, within the AME region, numerous studies have been carried out and found that the DCR trend is slowly diffusing. In Jordan, a study in 2005 found that approximately (45%) of corporations had websites. Seventy per cent of them provided financial information, whereas thirty per cent did not (Momany and Al-Shorman, 2006). In Kuwait, it was revealed that 70% of companies listed on the Kuwait stock exchange were involved in DCR (Al-Shammari, 2007). Comparable results were reported by Hossain et al. (2012) when examining companies working in Qatar. (Basuony and Mohamed, 2014) studied DCR practices and found that 63% of the listed companies in Qatar, Bahrain, and Oman were engaged in DCR. Momany and Pillai (2013) reported that 60% of

UAE companies listed on the ADX (Abu Dhabi Exchange) used their websites for financial reporting purposes. An increase in DCR practices in the UAE to 67% has been documented by Oyelere and Kuruppu (2016). In 2017, 65% of the Jordanian listed firms had websites, and over 90% of them presented either annual reports or financial highlights, as reported by Yassin (2017). Recently, a study on Islamic banks in Oman revealed that the total level of DCR was 69% (Sarea et al., 2020).

Several methodologies were employed in previous DCR studies; the majority used regression analysis to test relationships (Al-Hayale, 2010, AbuGhazaleh et al., 2012b, e.g. Momany et al., 2014), while some were based on interviewing participants (e.g., Al-Htaybat et al., 2011, Campbell and Slack, 2008). Both methodologies were helpful in shedding light on the diffusion of such innovation in such regions, such as users’ views and companies' characteristics. The noticeable slow diffusion requires more research by considering the different socio-economic and cultural environments. Based on the discussions of previous literature within the previous sections, many points can be revealed. First, there are manifest differences in the diffusion of using corporate websites between developing and developed countries, especially in the context of Jordan in the AME. It is noted that firm-specific determinants in DCR literature are based on different theoretical perspectives. Second, a few research papers aimed to theorise relationships and thus propose determinants of DCR for adoption. These factors are, to a large extent, similar to voluntary disclosures, although DCR can differ in nature and purpose. The purposes of DCR can go beyond the objectives of traditional reporting. For example, effectively disseminating information to stockholders is important to establish an 'Internet presence' (Ashbaugh et al., 1999). On the other hand, firms can use corporate websites for window dressing and impression management (Winter et al., 2003). To explain more, Bonson and Escobar (2006) explain that companies often use their website to show the most appealing aspects. This is in line with signalling theory that top management wants to increase the company's value and reduce the cost of capital (Sengupta, 1998).

Yet, focusing on a company's characteristics from an economic-based perspective is useful for predicting its activities. However, this leaves little room for studying the impact of managerial discretion, personal idiosyncrasies, and erroneous or irrational assessments when making adoption decisions (Hambrick, 2007, Bamber et al., 2010). Little focus on the possible impact of managers' characteristics on innovations like DCR. The suggested DCR research would use variables to reflect predicted managers' beliefs and attitudes toward DCR. These are influenced by the environment in which a company operate.

The differences between developing and developed countries concerning DCR diffusion may weaken the generalisability of most published DCR research results on determinants. Some factors studied in the literature seem not applicable to all countries. For instance, analysts' followings item is not common in Jordan as in some emerging countries[11]. Moreover, timeliness is believed to signify an advanced level of utilisation of DCR capabilities. Yet, DCR in Jordan can be classified as moderated with a poor focus on timeliness. For that reason, it was decided not to undertake this element. This could be since professional users prefer PDF, and non-professional users prefer HTML versions (FRC, 2015a).

DCR adoption and diffusion are improved in developed countries due to technological advancements and other factors, including culture (Xiao et al., 2004). Laws, regulations, and norms facilitate this, such as considering investors' views extensively[12]. Contrary to developed countries, public corporations in MENA have lower DCR adoption. They also have weaker corporate governance disclosure (Sarhan and Ntim, 2019), not only limited adherence to it. The

[11] Data on this item in Jordan is lacking; thus, it is dropped from consideration.
[12] For example, they indicated that PDF is a step forward rather than a replacement for hard copies since it offers the ideal combination of paper and digital characteristics (FRC, 2015a).

disparities in website accessibility between New Zealand and Indian corporations are considered by Chatterjee and Hawkes (2008) to show how reporting structures and nations might vary. Variation in site design and supplied information decreases accessibility and complicates company-level comparisons. Therefore, studying DCR with wider frameworks, including managers' characteristics, is essential.

The current research aims to extend our knowledge and contribute to the existing academic research on voluntary disclosure and DCR in particular (e.g. Kelton and Yang, 2008). For example, the literature documented the relationship between the level of DCR and firm size and profitability industry type. Some studies also show a significant relationship between board size, independent directors, and the level of DCR (e.g., Kelton and Yang, 2008). Predominantly, it offers more prevailing examinations of a voluntary channel of disclosure using explanatory variables than those devoted to annual-report disclosures. Notably, previous studies did not differentiate between annual reports and website nature, such as allowing prominent features of its content and increasing firms' openness. Therefore, these factors are considered in the current research and follow UET that ‘discretion’ is an elementary condition where managers' individualities are expected to influence their decisions, such as adopting DCR. Discretion is defined as freedom or latitude of action free from external constraints, such as environmental, organisational, or other conditions, with multiple decision options available (Hambrick, 2007). For instance, when managers are more powerful or there is inadequate persuasion of DCR usefulness, for instance, CEOs tend to rely on their unique perceptions and views on the DCR level of adoption.

It is noted that the R-squared values in most previous studies are generally low. This indicates that the selected independent variables do not explain an ample amount of DCR variation. Such studies do not address the nature of DCR, given the suggested influence of managers' characteristics. Ultimately, it is noticed here that researchers have mainly replicated major DCR studies. This is very important as the theory guides the hypotheses. In general, DCR adoption appears more centralised in developing countries than in developed ones, and determinants are inconsistent among them. Developing countries are believed to be different from developed in terms of the overall DCR diffusion level (denoting this innovation diffuses differently). For example, cultural differences can impact management perspectives and behaviours toward DCR, such as power distance. This may weaken the institutional adoption of DCR in some countries, such as Egypt in AME (e.g., Arafa, 2012). Corporate reporting is affected by the culture in developing countries.

The use of DOI theory is useful, assuming that the usefulness of such innovation is easily perceived by corporate leaders (issuers); however, given the nature of DCR and complex decisions. This required a border theoretical framework to complement the previous theories by accounting for CEO behavioural aspects in relation to DCR adoption. The UET relies on the bounded rationality assumption the argue that managers, when faced with complex decisions, are influenced by their individual preferences and interpretations. CEO may rely on the initial assessment of risks associated with DCR adoption, expected users' needs, and openness to innovations. These allow more discretion or latitude of action for the CEO based on the UET (Hambrick, 2007). The present literature review has revealed that most prior studies on DCR have examined the phenomenon in the same approach as studying traditional hard copy reporting. Most academic works have assumed that companies adopt DCR for the same reasons they use in other forms of disclosure: to signal performance, legitimise themselves, and mitigate agency problems. Consequently, previous studies barely considered DCR as a unique channel that differs from others in terms of its nature and purpose. In fact, DCR represents an innovative reporting channel (FRC, 2015a) with at least three key differences from other channels. First, a corporate website is an innovative tool with distinct features which allows corporate information content to be presented in new ways (e.g., HTML, PDF, videos). Second, DCR is associated with increased openness (as one form of transparency) due to unlimited audience having access to the disclosure. Third, DCR forms part of a website that can be used for different purposes, including branding and impression management.[13] Therefore, it can be argued that the phenomenon of DCR would be best studied through sensible consideration of these facts. Unfortunately, few researchers have employed new theories, such as Xiao et al. (2005), who used the diffusion of innovation (DOI) theory to examine DCR. However, the innovation in DCR is unique due to factors such as the associated acceptance, risks and benefits and also multifaceted. This means that its adoption can be based on the views of both companies (issuers) and information consumers (e.g., shareholders).[14]

Empirically, prior studies have identified many determinants of DCR yet typically focused on only limited categories of determinants, mainly covering the institutional environment and firm-level characteristics. Importantly, the overlooked potential determinants of DCR include the top managers' role as key strategy setters. Therefore, the current study argues that the influence of managers' characteristics on DCR remains largely unexplored, apart from CEO duality and expertise having been examined by a few researchers (e.g., Kelton and Yang, 2008). Moreover, given the non-exhaustive set of DCR determinants documented in the literature, the highlighted research gap represents a promising avenue for investigation. Thus, it is suggested that corporate leaders' characteristics might serve to explain part of the variance seen in terms of DCR adoption.

[13] A different view is that a website can make a firm appear larger and different from how it is in reality.
[14] In addition to being potentially based on how managers treat users' views.

In order to assess the impact of top management on DCR adoption decisions, this study employs the upper echelons theory (UET), which suggests that the characteristics of top management significantly influence organisational outcomes, planned choices and performance levels (Hambrick and Mason, 1984). As a result, the present study contributes to the UET research by evaluating an essential dimension of firms' activities: corporate reporting. Principally, the UET emphasises how corporate leaders, when faced with complex decisions, are inclined to exhibit 'bounded rationality' rather than perfect rationality (Gounaris and Koritos, 2012). Consequently, managers rely on their values and interpretations (proxied by personal and psychological traits) when evaluating the potential of innovations and strategies for adoption.

Previous studies have established that the personal attributes of corporate decision-makers or CEOs (e.g., age, tenure and education) can heavily influence corporate preferences, structures, decisions and strategies (Nielsen, 2010). In essence, when top corporate managers face complex situations (i.e., the adoption of DCR innovations), their attitudes and beliefs, as proxied by their characteristics, play a significant role in their responses (i.e., adoption or otherwise), as discussed in chapter three in greater detail.

Furthermore, the decision-making processes of CEOs have been the subject of an extensive body of research (See the review by Plöckinger et al., 2016). The UET suggests that CEO characteristics may be associated with differences in their behaviours and judgements. In general, a number of studies have highlighted the impact of managers on different organisational activities. However, some researchers have voiced uncertainty as to whether the UET can be applied to other functional management areas (e.g., Bills et al., 2021). Yet, the significant distrust in corporate management following the 2008 financial crisis has paid considerable attention to managers' characteristics, such as their overconfidence in company reporting (e.g., Schrand and Zechman, 2012, Ahmed and Duellman, 2013). The UET is promising to DCR research (Xiao et al., 2005) and, thus, is expected to be supported in contexts with settings diverse from developed countries, for instance, managerial attitudes towards change and the degree of centralisation (AbuGhazaleh et al., 2012b), and these effects can be proxied by many demographic CEO characteristics. In developing economies, there is an apparent lack of support and enthusiasm concerning the adoption of DCR. This lack of interest may be due to the absence of clear channels of communication (Rogers, 2003) and relevant experience sharing, education and training. For example, a CEO in Jordan seem to have higher power than a CEO in a developed economy and must sign off on all information before it is posted on the company's website.

On the other hand, in developed economies, there are useful guidelines concerning DCR adoption. For instance, the SEC and FRC have conducted extensive projects that promote DCR. The FEE (2015) has argued that modern corporate reporting would be resulted from collaborative endeavours by corporations, stakeholders, and authorities and suggested that experimentation could be a driving force behind DCR adoption. Such projects and statements can influence key players within companies regarding the importance of DCR adoption.

Moreover, CEOs serve as the 'adopters' based on the DOI model, and they rely on their attitudes and the perceived usefulness of DCR to decide on its adoption/confirmation (more details are available in Rogers et al., 2014). This is because DCR remains a mainly voluntary channel, and it is still difficult to compare the advantages and disadvantages of DCR. Therefore, the use of the UET in this context is valid due to the condition of discretion and the 'bounded rationality' exhibited by managers concerning DCR.

Hambrick (2007) highlighted how the UET perspective opposes the notion that managers exert little influence because organisations are swept along by external forces and inhibited by both conventions and norms. He further argued that both views are provisionally valid, depending on managerial discretion or 'latitude of action' (Hambrick, 2007). In the case of DCR, there is a high degree of discretion regarding its adoption (e.g., centralised in less developed economies).[15]

The under-researched influence of management on digital corporate communication is essential to be examined, especially in developing countries, with Jordan as an example. Despite the many papers that examined DCR in Jordan, the CEO impact is under-researched, and other areas lack research (see: Omar, 2015). This gap is addressed by studying several characteristics of CEOs (in upper echelons), including age, education, gender, and tenure. The context will be the companies operating in the Jordanian capital market within the AME context. In such a context, powerful managers highly influence the means and scope of corporate communications through the website (e.g., AbuGhazaleh et al., 2012b).

Lymer et al. (1999) have offered a situational paradigm that posits technical and non-technological impediments to change and forces for change that are expected to influence DCR. However, there are not yet empirical attempts to examine DCR with a close evaluative eye (e.g., UE resistance to change). Thus, the research gap on CEO impact is worth filling to provide useful recommendations following the positivist approach. Understanding how executive diversity, such as gender, impacts corporate financial reporting can inform researchers, policymakers, regulators, and the general public (Cumming et al., 2015). Moreover, factual benefits of CEO selection criteria based on many prospective abilities are deemed lacking in this context. For example, CEO education is negatively associated with profitability; thus, these abili-

[15] The following chapter will examine this issue in detail.

ties need revision. This is consistent with the evidence that Jordanian boards suffer many problems with diversity. One of the vital corporate governance challenges observed in Jordan and the Middle East is the composition of boards which appears to be ad hoc (IFC, 2015). Since various social, political, and cultural influences play a major role in CEO selection, more emphasis should be placed on a diversity of characteristics that really benefit various shareholders and stakeholders. The transparency from DCR adoption deem relevant, and studies are needed on how the demographic characteristics of the upper echelons are associated with these.

Moreover, elaborating on the importance of studying top management influence, a CEO represents the whole company, not only themselves, because all the surrounding parties see, understand and evaluate the organisation based on its communicated information (Wu et al., 2011). This is in line with the sentiment that companies communicate is ‘constructed’ because reporting is like creating a picture of the company. Users use this picture to analyse it and act accordingly (Hines, 1988). Accordingly, asymmetric/inadequate corporate reporting may significantly affect society at large.

Lastly, there is a gap in the UET Theory literature. The previous studies highlighted the need for more accounting research using the UET (e.g., Plöckinger et al., 2016). The UET has been under the spotlight in literature since 1984. Generally, UET's prior research has typically focused on the relationship between the characteristics, processes and structures of the Top Management Teams (TMT) and the firm's performance or strategic decisions, including but not limited to internationalisation, strategic renewal, and mergers and acquisitions (e.g., Kwee et al., 2011, Mihalache et al., 2012, Nielsen and Nielsen, 2013). This stream pushes for a surge of empirical research in accounting and management studies (Carpenter et al., 2004, Finkelstein et al., 2009). However, while research on UE theory has been all-embracing, the use of UET in finance and accounting research has been witnessed only lately (Hiebl, 2014). The potential impact of CEOs was early demonstrated in the finance literature by Bertrand and Schoar (2003) concerning the firm's investment and financing decisions (e.g., investment to cash flow sensitivity, leverage). Their results indicate an identifiable manager-specific component to these corporate decisions.” [16]

DCR is one of the topics that, given their lack of exploration, offer room for more inquiry. Consistent with that view, the review by Plöckinger et al. (2016) stressed that top managers' age, education and knowledge impact on financial reporting is yet to be explored. Therefore, the investigation of DCR practices from a UET standpoint is promising. Drawing on this UET gap, the current study attempts to explore the effects of CEO on DCR adoption.

2.2.11. The Jordanian Context

A preliminary survey was carried out on AME countries to explore DCR practices before this research was fully conducted. First, the literature was reviewed and revealed that Jordanian firms have the lowest web presence and DCR adoption compared to gulf countries. Second, the internet was searched to depict to see how many companies in each country have a functioning website. It was also found by the literature review that firms in the Gulf countries have more competition, higher e-commerce (Aladwani, 2003), and higher internet usage (Alshubiri et al., 2019). On the other hand, Jordanian firms' weak DCR adoption can be due to a lack of competition (AbuGhazaleh et al., 2012a). This is consistent with the results documenting high adoption of DCR in the gulf area. In the AME region, numerous studies have been carried out to examine the determinants of corporate Internet practices. In Kuwait, Al-Shammari (2007) reported that 70% of companies listed on the Kuwait stock exchange were active in IFR. Similar results were

16 Moreover, CEO beliefs seem to greatly influence DCR decisions. The study results of Lee and Blouin (2015) tell that once the CEO appreciates the usefulness of the internet for endorsing transparency and accountability in companies there is a higher DCR adoption (more performance figures on its website). This also holds true at the organizational level, with more DCR when the firm classifies the web as communication or strategic instrument.

reported by Hossain et al. (2012) when examining companies operating in Qatar. Mohamed Basuony and Mohamed (2014) examined DCR practices in Qatar, Bahrain, and Oman and found that 63% of these listed companies were engaged in IFR. In the UAE context, Momany and Pillai (2013) reported that 60% of companies listed on the ADX (Abu Dhabi Exchange) used their websites for financial reporting purposes. Recently, Oyelere and Kuruppu (2016) indicated an increase in DCR practices in the UAE to 67%.

The research sample is drawn from the listed firms identified in the AME. Jordan[17] serves as a key Middle Eastern bridge between Western and Arab nations. Therefore, some convincing reasons motivate and rationalise initiating this study in the context of Jordan. The context of this study is discussed below to highlight how it is suggested to provide stronger support to the adopted theoretical perspective, the UET.

Firstly, despite the that Jordan has good corporate governance codes, they place high importance on the timeliness and transparency of corporate reporting. However, as with most regulations, CG adoption is based on a comply-or-explain rule (EBRD, 2017, Thimm and Rasmussen, 2022). This gives more discretion to top management in implementing DCR. Furthermore, based on the UET model, cultures and countries play a major role in CEO impact. Therefore, studying DCR in developing countries is expected to reveal stronger support for the UET on this phenomenon.

17 Independent from the United Kingdom since 1946, the Hashemite Kingdom of Jordan is a constitutional monarchy with relatively few natural resources. King Abdullah II assumed the throne in 1999 with an ambitious reform agenda. The economy, one of the region’s smallest, is supported by foreign loans, international aid, and remittances from expatriate workers. In 2000, Jordan joined the World Trade Organization and signed a free-trade agreement with the United States. The king appointed Bisher al-Khasawneh to serve as prime minister in October 2020 and tasked him with focusing on economic reform that includes a realistic government budget. Ongoing conflicts in Iraq and Syria have severely disrupted Jordan’s economy and regional trade, and more than 1.3 million Syrian and Iraqi refugees have strained its limited resources.

Secondly, the Jordanian corporate governance code encourages companies to use their website to enhance disclosure transparency. However, this is just one short sentence in the code. Therefore, DCR adoption is expected to be adequate among the listed companies because the phenomenon is known to them. Unfortunately, prior Jordanian studies have shown slow diffusion of DCR, and signs of resistance to change by managers are documented by (AbuGhazaleh et al., 2012a). Furthermore, studies on users' perceptions in the Middle East Arab area have shown signs of centrality concerning DCR adoption.

Thirdly, it may be necessary to distinguish between developing and developed countries' contexts. This is because there is a lack of 'channels' that promote the diffusion of innovation. One of the methods that facilities adopt is education. There is a lack of DCR education or training in Jordan as a developing country, in contrast to western countries. This is part of the persuasion process in DCR. Seventhly, Jordanian firms are relatively small compared to developed countries (Li and Tang, 2010). Smaller companies usually allow higher levels of managerial discretion due to factors such as power and decision centrality, which is a significant base of the UET theory. Therefore, managers' impact on the strategies and activities can be higher in countries with smaller firms. As far as the researcher is knowledgeable, no prior studies address the possible impact of top manager characteristics on DCR adoption. So, this theoretical gap is mainly due to the unique setting of developing countries regarding technology use, especially in external reporting practices.

Fourthly, based on the DOI model, adopters may not be well encouraged, according to their perceptions highlighted in scholarly works (AbuGhazaleh et al., 2012a). Persuasion in the DOI model is substantial as it speeds up the adoption process. Many scholars looked at educational programs and training as ways to influence adopters' knowledge. For example, Davis et al. (1989) stated that these programs are intended to "persuade potential users of the power offered by a given system, and the degree to which it may improve users' productivity could well influence U. Learning based on feedback is another type of external variable apt to influence usefulness beliefs.” P.987.

Georgakakis et al. (2019) have explained that incorporating and highlighting the significance of these individuals requires a more systematic use of role theory in CEO-TMT studies. Analysing parts of the DCR diffusion process based on the DOI model to understand the DCR can be helpful. For instance, the factor of ‘*persuasion’* of adoption can be complex (i.e., different views by users, issuers, and stock exchanges). Since such factors are lacking in Jordan[18], in order to empirically study whether managers are influenced by their perceptions of such a complicated DCR adoption, it is crucial to adopt UET to analyse DCR.

Fifthly, Jordan has adopted the ISAB’s International Financial Reporting Standards (IFRS) almost wholesomely. Companies whose shares are traded in the national capital market are required to adopt IFRS in preparing and disclosing financial information. Such adoption requires a reasonable level of transparency, which creates an environment that encourages strategically employing DCR practices. Additionally, CG codes in Jordan attempt to promote transparency and protect the rights of minority shareholders by the provision of the same level of information. This could be better, theoretically, achieved and improved by utilising digital reporting channels. Therefore, CEOs in Jordan seem barely motivated toward technology use in this area to comply with the CG guidelines in Jordan. Yet, the Jordanian encouragement is highly abstracted by few words and no research projects by regulators compared to developed countries (e.g., in the UK FRC, 2015a). CG Moreover, the literature points out the lack of governance compliance

[18] Compared to the UK, US and even many developing countries in the AME.

in Jordan (EBRD, 2016), which supports the suggestion of an increased role of top management regarding DCR adoption.

Sixthly, most of the theoretical arguments in DCR research are based on the developed economies' levels of diffusion of DCR. However, the regulatory setting, the economic indicators and managerial and cultural values are all different in developing from emerging economies.

Seventhly, Jordan is an emerging economy and constantly tries to attract more foreign investments. In addition, the capital market of the economy is also growing with an increasing percentage of foreign investors. These factors encourage the management to provide easy and accessible corporate financial information via the Internet. Accordingly, since it could be proposed that DCR is essential in the Jordanian business setting, studying the response of top management to all these factors is worth exploring.

Possible reasons for the low DCR adoption in Jordan are discussed Al-Htaybat et al. (2011) research revealed significant differences in users' views on DCR's usefulness in their decision. This may affect the factual DCR adoption by the reporting firms (and their CEOs). The highlighted views included users' concerns about the costs of both Internet access and printing the reported information, which may justify the other result that users still prefer the traditional copy version of the annual report (Al-Htaybat et al., 2011). Lastly, there is no requirement by the stock market for Jordanian listed companies to maintain a website; however, most of them operate one, especially banks, because of their high web presence and competitive environment.

The next part introduces the theoretical background to develop testable hypotheses attentive to the influence of CEO characteristics on the extent of DCR. This study will account for the current extent of DCR among the listed companies and its association with the managers' characteristics. The results are expected to inform our understanding of the phenomenon, highlight

CEO characteristics in terms of their benefits to shareholders, and offer recommendations to companies and policymakers.

2.3. Theoretical Framework on DCR Extent and CEO Characteristics

2.3.1. Introduction

Section 2.2. discussed the relevant literature on Digital Corporate Reporting (DCR) adoption, including its trends, practices and determining factors. This part clarifies and discusses the theoretical foundations of the current research. This framework constitutes the grounds for exploring the DCR phenomenon in the context of emerging countries. Moreover, the theories used in the prior DCR studies are reviewed in the previous part and are often referred to in this part. Especially the Diffusion of Innovations (DOI), which is analysed to discuss its limited usefulness in explaining the potential influencing factors of DCR, especially in developing countries such as Jordan. This part starts with a recap of the research gap, followed by definitions of the basic elements of DCR as an innovation. Then an overview of DOI theory limitations in addressing DCR is presented, followed by the UET and its relevance to the current DCR research. Hypotheses development is provided in the last section.

2.3.2. Recap of the Research Gap

Accounting information transparency has been one of the topics attracting consideration in accounting research and practitioners for many years (e.g., Amara et al., 2013). Many research projects worldwide focus on improving the quality of financial reporting (e.g., Jenkins, 1994, FASB, 2000, FRC, 2009b). Financial reporting quality is important to develop and developing countries aiming to improve capital market competence. For example, as early as the 1990s, Jordan's regulatory and governing agencies focused on enhancing corporate disclosure and transparency. However, inadequate guidance is provided on important aspects of financial reporting and innovative channels, such as the web.

One of the main aspects of high-quality corporate reporting is the usage of technology (i.e., the Internet) for reporting and disclosure. After reviewing the related literature, the important researchable gap that has been highlighted in the previous studies on DCR is that most DCR researchers have examined DCR solely using the same determinants used in hardcopy reporting studies. In reality, DCR itself differs in nature and purpose, possibly, from traditional reporting (see Xiao et al., 2002). A few researchers employed the diffusion of innovations theory (DOI) (Rogers, 1995, Rogers, 2003), such as Dunne et al. (2013) and Ilias et al. (2021). However, previous studies have not investigated the possible influence of Adopters' characteristics (i.e., top management) on DCR adoption. Therefore, the current study introduces the Upper Echelons Theory (Hambrick and Mason, 1984) t investigate DCR by studying the impact of CEO characteristics (i.e., Age, Gender, Education, Tenure) on the extent of DCR practices. These factors are under-researched in the DCR literature, as argued in the previous part.

Adopting the upper echelons' viewpoint is an essential contribution to the DCR research, especially when we know that top management has an increasing role in firms nowadays. Significant evidence advocates a greater impact of corporate executives on firms' activities today than before (Mackey, 2008, Quigley and Hambrick, 2015). DCR adoption is generally more centralised in developing countries than in developed ones, making this innovation diffuse differently. In Jordan, the case study from developing economies in this research, DCR research can be seen as repetitive, with the impact of top management being understudied.

Following an empirical approach, this study aims to develop a regression model that predicts variation in DCR adoption based on a broader range of DCR determinants after integrating the Upper Echelons Theory (UET) into the framework. Of paramount importance is attempting to explain the patterns of DCR's adoption and determinants to provide insights for policymakers and regulators. This includes the value of regulating and encouraging the adoption of DCR.

Although previous research papers have focused on other theories (e.g., agency theory, signalling theory and innovation diffusion theory), no explicit contradiction can be found between these approaches and the UET perspective. Studies based on the theories mentioned above can help understand the role of top managers, which is a significant factor affecting corporate decisions and outcomes (Bamber et al., 2010 p.1131). Although the financial economics literature has described the influence of individual noneconomic characteristics as limited, the literature on strategic management suggests that such effects can strongly affect a company's outcomes. The effects can be more apparent when innovations are diffused among firms and societies, especially when some innovations lack adequate communications, adversely affecting their 'diffusion'. The following section discusses the DCR as a concept of innovation.

2.3.3. Innovation in Corporate Reporting

Financial reporting denotes a blend of quantitative financial statements, and qualitative or narrative information focused on external users, including stakeholders in general and investors and lenders in specific (Weetman, 2018). Several research projects focused on transforming corporate reporting in general (e.g., Jenkins, 1994) and, importantly, on optimising it by using internet technology (ICAEW, 2004, FRC, 2015a).

Digital corporate reporting is disclosing corporate information, including financial and non-financial, on companies' websites. Some basic definitions consider DCR as a form of voluntary disclosure. In contrast, others prefer to use the term 'digital reporting' and consider it an innovative disclosure method (e.g., FRC, 2015b). The word 'innovation' means a new idea, product or service. However, adopting innovation does not occur instantaneously among all individuals in a social system.

DCR has many unique features since websites allow not only different formats of information but also imply different features that promote transparency (Watanabe et al., 2019)[19] (e.g., unlimited access). However, if the disclosure is provided based on the user's requests, it is called *passive transparency*, a term borrowed from governmental accounting (Raupp and Pinho, 2016). On the other hand, web-based reporting can be classified as active or *proactive* in essence (i.e., it offers information before requested).

The term 'digital' in this research refers to distributing corporate information to external users in a digital form in contrast to a print copy. There are also advanced digital communication channels (e.g., emails, chat rooms, web20, and social media) (Al-Htaybat et al., 2017) in contrast to other advanced non-digital channels (e.g., face-to-face meetings and conferences).

In a broad sense, managers may rely more on their strategic beliefs towards technology than on the technology itself, including its capabilities (i.e., beliefs about technology, rather than the technology itself, may affect DCR adoption). This can be true when we analyse the diffusion of innovations in society. In addition, corporate companies utilise websites to provide information, streamline transactions, connect with stakeholders, and enhance customer service (Merono-Cerdan and Soto-Acosta, 2007). DCR is a technological-based innovation, and its adoption may include multidimensional trade-offs beyond agency and signalling theories (Xiao et al., 2004). There are five stages for innovation to diffuse (Rogers, 1995, Rogers, 2003), as explained in figure 2.1 below.

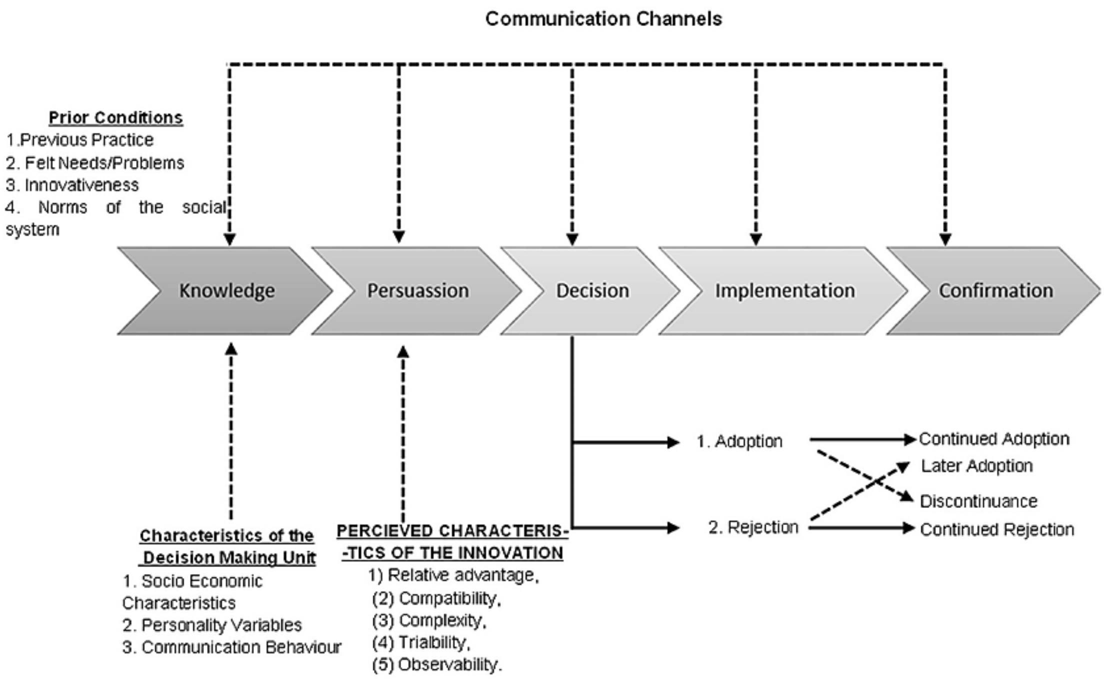

Figure 2.1 Five Stages in the Innovation-Decision Process
(Source: Diffusion of Innovations, Third Edition by Everett M. Rogers, 1983, P. 165)

The model of DOI above involves five stages of innovation: knowledge or awareness, persuasion, decision, implementation, and confirmation. This general model may not be suitable for fully understanding the DCR innovation. It was developed initially for other fields of study. Poon and Yu (2012) have assessed this model. It is evaluated below.

Moore and Benbasat (1991) identified five factors for the rate of adopting innovation as follows: "(a) Relative Advantage: the degree to which an innovation is perceived to be better than its precursor. (b) Compatibility: the degree to which an innovation is perceived to be consistent with the existing values, needs, and past experiences of potential adopters. (c) Trialability: the degree to which an innovation may experiment before adoption. (d) Observability: the degree to which the results of an innovation are visible to others. (e) Complexity: the degree to which an innovation is perceived to be difficult to use."

Previous theories on DCR can be seen as accepting the implied assumption that the innovation in reporting, the DCR, is like any other innovation (e.g., Xiao et al., 2004). Divergent from common beliefs, digital transformation has been seen as ‘less about technology’ and ‘more about people’ (Frankiewicz and Chamorro-Premuzic, 2020). Vibrant digital strategies need to be reinforced by ‘leaders’ who foster a culture able to change and invent new methods. In this context, it was highlighted as early as the 2000s that the upcoming changes in DCR are contingent on technological and non-technological factors, such as resistance to technological change (Xiao et al., 2002). This has been initially addressed by Damanpour (1991) as he found that innovative activity is significantly positively associated with some factors, including management attitude towards change. However, to the best of the researcher's knowledge, no research has yet expanded the theoretical analysis of DCR. This study is the first that integrates the upper echelons theory in studying the DCR.

Xiao et al. (2004) used the innovation diffusion theory in proposing a variety of viewpoints on how DCR innovation gets adopted and decisions that have been taken to diffuse it in China. However, not all innovations are the same. There are many different types. For innovation diffusion to succeed, these various kinds of innovations (e.g., technical, administrative) necessitate varied conditions and circulation/diffusion processes (e.g., communication) (Damanpour, 1991, Swanson, 1994).

2.3.4. Limitations of DOI Theory in Studying DCR

It has been highlighted by Poon and Yu (2012) that adapting the DOI theory to study the DCR is essential. They stated that it “potentially opens up a new means of developing an understanding of the present state of corporate Internet reporting of firms that adopt this innovation.” (2012, p.9). However, the critiques of DOI theory are well documented in the literature. For example, Lyytinen and Damsgaard (2001) stated that researchers should emphasise the leading players in the ‘diffusion’ field. The following points explain why the DOI theory cannot fully address the DCR’s determinants.

First, the DCR adoption level varies considerably among countries and firms across a single country. The pro-innovation bias assumption in the DOI theory is the certainty that the whole relevant community should adopt 'innovation.' Assuming that there should be no need to alter the adoption. This is not the case in DCR, as users can be heavily influenced by its acceptance. Researchers on the users' perceptions regarding DCR provided mixed results. This can also be connected to the demand for corporate information through DCR. However, previous research did not prove that companies can be more inclined to provide financial data via the Internet if there is a high demand for it (Brennan and Hourigan, 1999). Particularly, previous studies found that trading volume is not associated with DCR.

Second, the innovation under consideration, the DCR, does not replace the previous reporting channels. It could be perceived that current regulations are barriers to DCR (e.g., a hard copy is mandated). The 'website-based' reporting is still voluntary. As a developed country, the UK's laws state that annual reports must be provided on paper (FRC, 2015a). However, the FRC (2015b, p.23) argued that "the law should not be seen as a barrier to optimising digital reporting".

Third, two distinct parties deal with the DCR, unlike most innovations. Information issuer and users. There is possibly a lack of communication between these two groups in developing countries compared to developed countries. No clear adequate regulatory/policy pressure toward adopting such technologies. The usefulness of technology depends heavily on both parties.

Fourth, users may resist familiarising themselves with technological transformation (Xiao et al., 2002). The available literature from some developing countries (e.g., Jordan) regarding users' views explained that readers of annual reports prefer the conventional hard copy (Al-Htaybat et al., 2011). This theory is used within a single industry that employs technological innovation. The DCR is not a single industry aspect. It is cross-sectional.

The DOI model can be seen as less relevant to some DCR research. For example, it was argued that the audit committee performs an oversight role and, as such, recommends and passes decisions (Aly et al., 2010), intending to provide more open lines of dialogue between the organisation and those who have an interest in its success. Therefore, the audit committee may not be responsible or concerned about disseminating information (i.e., the channel). Moreover, the DOI model disregards the ‘richness of information disseminated on a firm’s Website’ and only classifies firms based on an ‘adoption or rejection’ rule; either ‘adopters’ or ‘non-adopters’ based on the existence of a website (Poon and Yu, 2012).

The FRC (2015b) highlighted many essential points about DCR as Brakes on innovation. These are summarised below and contrasted with the attributes of rapid innovations suggested by DOI theory. First, disincentives for innovation. Consistency and comparability are integral and essential qualities of financial reporting. DCR intends to improve FR's usefulness. However, these are still not clear in DCR. Because many investors do not broadly appreciate the exclusivity of DCR innovation, this creates only ‘limited’ benefits for firms that innovate in corporate reporting. This is relevant to the relative advantage attribute in the DOI model. Second, lack of clarity between the firm and users' wants. Knowing what they may want without previous experience in comprehensible technology development is still problematic (unclear). This is relevant to the ‘Observability’ attribute, which is the ease with which others may observe the outcomes of an invention. Third, limited benefits. Investors may require clear benefits if asked to support more DCR change initiatives. This means companies and investors need to cooperate to advance to practical resolutions. This is because many surveyed investors stated that PDF had offered them significant benefits in DCR. This issue is related to the attribute of ‘Relative Advantage’, which is the measure of how much improvement one thinks one has seen from innovation over its predecessor. The DCR is not a successor to the existing reporting channels.

DCR lacks clear benefits to all firms that can foster the adoption. Therefore, each adopter manager may perceive the 'advantages' differently. Fourth, Internal procedures are not fully helping companies. FRC stated that firms are not innovating enough, partially because of firms' view of regulation. Moreover, the annual report on paper is the centre of much attention in corporate governance; companies face difficulties and dangers to their reputation and other properties as they attempt to adapt to the changing digital landscape (FRC, 2015a).

The DOI model found that innovations that are adopted 'more rapidly' have the following perceived attributes: they "are perceived as (a) relatively advantageous (over ideas or practices they supersede), (b) compatible with existing values, beliefs, and experiences, (c) relatively easy to comprehend and adapt, (d) observable or tangible, and (e) divisible (separable) for trial" (Rogers, 2003)." (Rogers et al., 2005, p.2).

Accordingly, the previous discussion reveals that DCR can diffuse slowly due to the lack of match with rapid innovations attributes. We call this 'estimated adoption'. However, the 'actual adoption in the UK is higher than the above-estimated adoption. Therefore, the role of managers' perceptions can be higher than in other innovations. This can denote that some key attributes are missing from the DOI model (i.e., unsuitable to DCR) or others matter more to DCR adopters. Under any of the two cases, DCR is a very different innovation and therefore, more research is required to examine top management's influence on real DCR adoption.

From a DOI viewpoint, DCR has unique structures that portray a complex and interactive technology. The acceptance by adopters, CEOs and their firms can be the first step toward letting information users benefit from DCR (i.e., easy access). Therefore, many barriers to smooth adoption are unique to the DCR as an innovation. Possible factors have already been highlighted by previous DCR research, such as users' reluctance to read financial reports and the slow reaction of regulators (Xiao et al., 2002). Other issues can include the absence of auditor's assurance over web-based information, including financial statements, an issue yet to be resolved. Some DCR barriers have been underlined by ICAEW (2017), stating that technology may need to be simplified for users. For example, it may be challenging to deliver technology that mixes audited and unaudited data without clarifying the degree of reliability.

Therefore, this research extends the literature by responding to Bernard’s (1989) recommendations to take advantage of a detailed understanding of institutions and disclosure practices to progress practical accounting research. If an information system innovation is institutionalised, this does not infer that that innovation will be generally adopted (Swanson, 1994). Even when the advantages of DCR are *communicated* with firms to promote adoption, managers' perceptions can be altered due to differences such as age and gender (because every decision-maker can be different).

Therefore, some researchers highlighted the need for more research to balance the shortcomings of the DOI model (Xiao et al., 2005). Drawing on the Upper Echelons Theory UET (Hambrick, 1984), the framework proposed in this study acknowledges the influence of managers’ characteristics, such as how firms respond to ‘communications’ during the diffusion process (Rogers et al., 2014) of DCR as a corporate disclosure innovation. The next section introduces the theory that is employed to examine the DCR.

2.3.5. Upper Echelons Theory: Linking CEO’s Characteristics to DCR

2.3.5.1. Preface

> “If I had asked people what they wanted, they would have said faster horses.”
>
> **Henry Ford**

This phrase is commonly used to emphasise the difficulties of depending on existing stakeholders to forecast the future, but sometimes incorrectly ascribed to Henry Ford. It has been used by FRC (2015a) to highlight the difficulty of relying on users' demand for DCR, and users sometimes do not know what they need-this is the meaning of innovation. This paves the way to suggest the suitability of theory more than looking at DCR as any required disclosure based on CG codes.

The roots of the upper echelons' theory viewpoint lie in the behavioural theory of the firm, first introduced by Cyert and March (1963), who proposed that managerial 'adoptions' are considerably influenced by the inherent limitations of managers as *human beings* rather than assuming it always follows rational motivations. Bounded rationality is one of these behavioural factors expected to influence top management's strategic choices.

The UET argues that managerial background traits or characteristics play a significant role in estimating organisational outcomes, planned choices, and performance levels (Hambrick and Mason, 1984). It emphasises that corporate leaders, when facing complex decisions, are inclined to their 'bounded rationality' instead of perfect rationality. Therefore, they rely on their own interpretations when evaluating innovations and strategies.

This theory proposes that the personal attributes of corporate decision-makers (such as age, tenure, education and experience) heavily influence corporate preferences, structure, decisions, and strategies (Nielsen, 2010). In essence, when top corporate managers face complex situations (such as innovations), managerial attributes play a significant role in deciding their responses to such situations, influencing the organisational activities and outcomes (ibid).

Many empirical studies were carried out based on the Upper Echelons Theory. For example, researchers examine the association between top managers' demographic characteristics and organisational outcomes and strategies. Examples of these studies are Bamber et al. (2010) on

corporate disclosure, Kitchell (1997) on innovativeness, Weinzimmer (1997) on firm performance, Barker III and Mueller (2002) on research and development expenditures, and Orens and Reheul (2013) on cash holding.
However, the practical importance of such studies remains unclear to a great extent, especially in terms of the relationship between a leader’s cognitive and psychological characteristics and financial reporting innovation. The degree of disclosure innovativeness is measured by well-known proxies (such as the disclosure index) and linked to CEO characteristics. This is explained in the hypotheses’ development part at the end of this chapter.

DCR diffusion will occur when its benefits are well better communication happens. This chapter discusses the possible external pressures/encouragements (by regulators, such as FRC, SEC, ICAEW, and researchers) in developed markets. First, managerial initiatives and acceptance of innovation are measurable issues, especially when communication channels, like digital reporting, are mandatory. There is no clear mandate to use such communication channels (i.e., digital reporting) (FRC, 2015b). Complex innovations and improvements require managers' consent, which depends on their managerial characteristics (i.e., their interpretation of the matter under consideration).

Despite the fact that DCR is regarded as an innovation, developing economies' governance codes and best practices have slightly recommended using the Internet for CR (e.g., Jordan). Still, these efforts do not guarantee or are sufficient for the ‘persuasion’ stage of innovation diffusion (Rogers, 1995). The same may apply to the DCR in developed economies but to a light extent. DCR adoption is still complex, according to the analysis of FRC (2015b).

Therefore, the UET’s assumption about DCR may be best supported when examining the DCR adoption in emerging economies. The following diagram highlights the scheme of UET. The suggested CEO’s influence fits within the ‘adoption’ stage of the innovation diffusion process under the DOI. Figure 2.2 below illustrates the UET basic perspective based on Hamrick's works and others.

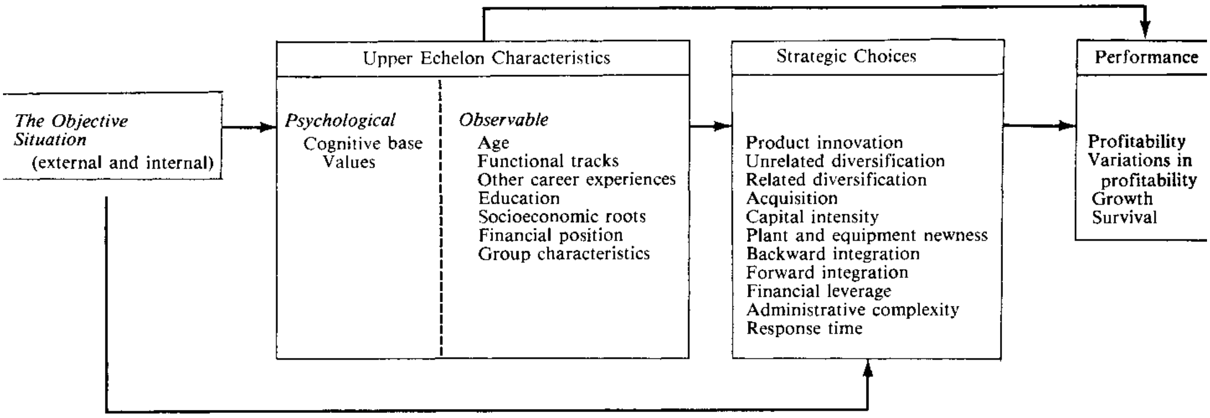

Figure 2.2 The Upper Echelons Perspective of Organizations (Hambrick and Mason, 1984).

Figure 2.3 presents a modified version of such a scheme in which some objective situations are specified, and two moderators are suggested (discretion and job demand).

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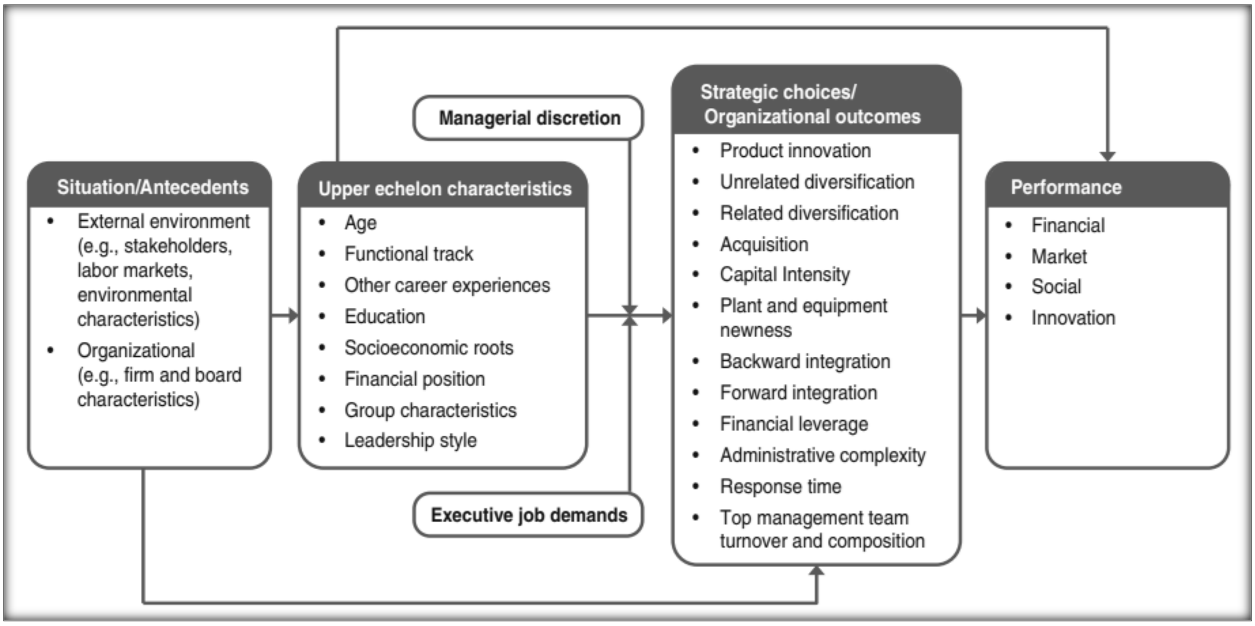


Figure 2.3 Updated Upper Echelons Theory Scheme (Hambrick, 2007)

2.3.5.2. Do DCR studies follow Competing theories?

Neo-classical and agency theories in accounting research mainly assume perfectly rational behaviour when managing the company (Gounaris and Koritos, 2012). Moreover, these philosophies focus on rational behaviours while managing the company, assuming actors are very knowledgeable in their decisions. Such a neo-classical viewpoint is described as assuming little possibility for managers' discretion, personal idiosyncrasies, inaccuracies, or irrational behaviour (Bamber et al., 2010).

On the other hand, as Bamber et al. (2010 p.1131) underlined, strategic management literature implies that noneconomic manager-specific variables may affect business activities and performance, contrary to financial economics theorists. Neo-classical philosophies are criticised for considering companies as black boxes, thus directing researchers to be interested in 'the market' more than 'the company itself and its manager (Hambrick, 2007, e.g., Watson et al., 2021). In general, a *black box* is a system having no obvious features and hence no externally observable considerations beyond those held within (Duque, 2018) (e.g., consumer behaviour). Accordingly, managers' beliefs toward complex decisions cannot be observed easily. Thus, they are difficult to be researched (Hambrick, 2016). Therefore, researchers examine the demographic characteristics as proxies for CEOs' assumptions and values. Such demographics are observable characteristics used to represent executives' differences (Priem et al., 1999). For example, boards of directors are difficult to research, given access challenges to the boardroom's *black box* (Watson et al., 2021).

Empirical evidence provides that people's characteristics can influence decision outcomes (Stumpf and Dunbar, 1991). Consistent with the proceeding criticism, Hambrick and Mason (1984) suggested that individual characteristics significantly impact a company's decisions. This is the cornerstone of the UET. He further claimed that the nature of the social system affects individuals' innovativeness, which is the main criterion for categorising adopters, which is part of the DOI perspective.

According to Plöckinger et al. (2016), the upper echelon concept conflicts with other theories and perspectives about population ecology and new institutional theory, based on which norms, structures, inertia, and external constraints of the organisational behaviour are determined. However, according to researchers, both positions could be valid as long as managers have a certain degree of discretion or leeway over the underlying matter (*ibid*). This is mainly true in the diffusion of innovations with complex stages. Accordingly, this chapter discusses managers' possible attitudes towards DCR (measured by CEO's characteristics) and how they affect the actual DCR adoption (measured later by a well-designed disclosure index). In addition, CEOs' characteristics and the reasons for bounded rationality under the UET structures are also discussed.

Hambrick and Mason (1984) stated that a top manager contributes cognitive bias and values to a choice, which filters the circumstance from their perspective. When managers are confronted with much information and complex situations, they tend to recall their values, experiences, and sometimes cognitive preconceptions for handling, filtering out, and inferring from such information and then act accordingly (Hambrick and Mason, 1984, Finkelstein et al., 2009).

Thus, the present study suggests that CEOs' dependency on intellects to react to DCR implementation incentives or pushes for improved adoption have contributed to the breadth of DCR practises. Thus, DCR adoption may be linked to CEO traits that influence managers' interpretations. For instance, inaccurate cost-benefit analysis may reduce DCR adoption, which implies that DCR costs and benefits are more highly unknown than traditional disclosure (hard copy reports) (Xiao et al., 2004).

According to the UET, CEOs behave based on their interpretations of strategic situations, which reflect their experiences, beliefs, and personalities (Hambrick, 2007). Managers have bounded rationality; thus, they can explain complicated and ambiguous circumstances but not objectively know them. This confronts the positive theory of economic principles that economic players must be rational to maximise utility (Campitelli and Gobet, 2010). Bounded rationality is a concept proposed by Herbert Simon (1958) in which postulations apply to companies' echelons in addition to any person during the decision-making process. It argues that managers try to satisfy rather than optimise their decisions (regarding the most appropriate for prospective users). This bounded rationality is vital to the UET, based on the Carnegie school's study of behavioural decision-making (Gigerenzer, 2010). Table 2.2 below explains the dimensions of decision-making under rationality and bounded rationality.

Table 2.2. Comparison between rationality and bounded rationality

Dimensions	Perfect Rationality	Bounded Rationality
○ Purpose	○ Optimise (make a value-maximising choice)	○ Satisfice (select a satisfactory or good enough)
○ Knowledge	○ Have complete knowledge of the environment and preferences	○ Incomplete knowledge of the environment and preferences
○ Behaviour	○ Calculate the optimum value	○ Search for alternatives to select a satisfactory solution
○ Limits of rationality	○ No limitation	○ Risk and uncertainty. ○ Restricted time and cost associated with gathering information about the environment and risk. ○ Complexity and costs of evaluating alternatives with the maximum return

Source : (Henrich et al., 2001, Cheek and Goebel, 2020, Newell and Simon, 1972)

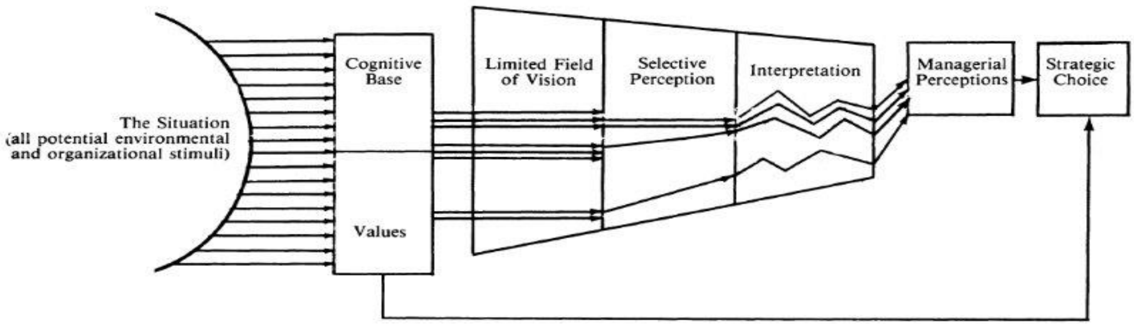
The bounded rationality concept is used to analyse DCR decisions in the context of Jordan. This may be due to the suggestion that adopters (i.e., managers) may assess DCR's usefulness based on their interpretations. However, such an argument seems in line with some regulators or persuaders (e.g., FRC, ICAEW, FASB, and IASPlus) who suggest that DCR benefits can be perceived very differently or at least not all benefits perceived (Rowbottom and Lymer, 2009). Consequently, DCR adoption may not be well supported and thus left to managers' discretion.

Generally, how companies and their leaders behave in the capital market is governed by a supposition known as 'rationality.' According to Langevoort (1997), the existing corporate research acknowledges that the rationality of top managers is 'bounded', which means they do not have access to complete facts or infinite resources (such as time, skill, and attention). Unfortunately, the owners of a company's interests may differ from those of the 'self-interested' managers. In addition, there are inadequate contractual and other instruments for resolving this incomplete rationality. Langevoort (1997) concludes that companies' managers are not expected to behave constantly in the manner that gets the most out of shareholders' interest.

Managers' decision to engage in DCR may also be complex due to factors such as perceived risks of hacking website disclosures and increased managerial responsibility. Academic and professional studies highlight many risks associated with financial reports on the Internet (see: Hussey and Sowinska, 1999). In addition, the empirical research has documented many adoption obstacles (FRC, 2015b), especially managers'/preparers' views toward DCR in developing countries (Al-Htaybat et al., 2011). Figure 2.4 is a diagram that explains decision-making under bounded rationality.

Figure 2.4 Decision-Making under Bounded Rationality. Source: Hambrick (1984)

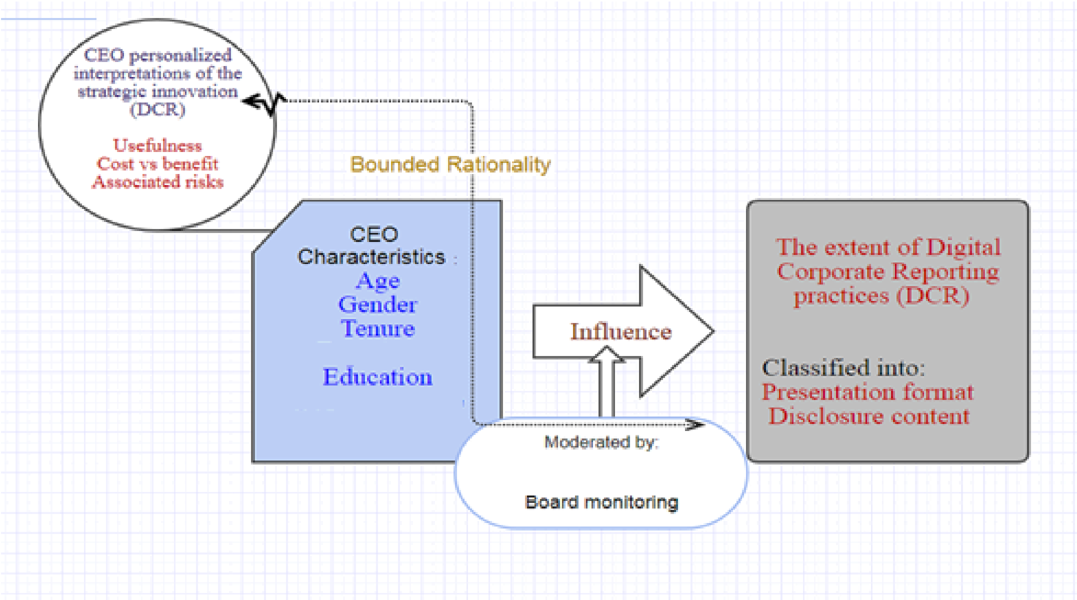
Strategic Choice Under Conditions of Bounded Rationality



Bearing to mind the above reasoning, DCR needs to be considered an innovation (e.g., technology and new idea) different from traditional reporting in nature and purpose. It is different from other types of innovations. Many issues are to be explained after adapting the existing theoretical perspectives used in the DCR literature (Poon and Yu, 2012). The uniqueness of DCR is that it is an innovative medium, allows an unlimited audience via openness (web presence) (AbuGhazaleh et al., 2012a), and can be used for other purposes such as branding (Winter et al., 2003). According to Plöckinger et al. (2016), it is still unknown how the age, education, and experience of corporate leaders influence financial reporting choices. This gap will be addressed by exploring the effects of CEOs on DCR.

As an innovation, the potential link between specific managerial-level factors and DCR is increased by the voluntary nature of web-based reporting practices. In the UK, the FRC highlighted that there is still no mandate to disclose on firms' websites except for a few certain issues (e.g., the gender pay gap) (FRC, 2015b). In most developing countries (ASE and most stock exchanges). Therefore, the adoption of DCR can depend on managers' interpretation of, for example, the DCR's usefulness. Moreover, according to the UET, high managerial discretion allows managers to rely on their understanding and behave according to their prior education and beliefs toward technology. However, the lack of regulation cannot hinder innovation in corporate reporting (FRC, 2015b). The diagram below 2.5 explains the study's theoretical framework

Figure 2.5 DCR Extent Research Framework (Source: Author)

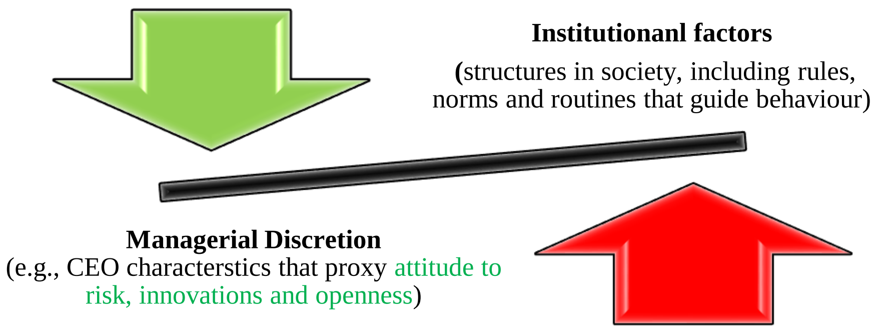


2.3.5.3. UET Updated Model

Hambrick suggested the moderators of the Upper Echelons' predictions include managerial discretion, which is relevant to DCR adoption in the context of this study. Other moderators include CEO power and job demand.

First, managerial discretion and DCR. Managerial discretion was introduced as a key moderator of the impact of the CEO's characteristics on organisational strategies. The inferences of this discretion for the UET are made straightforward by Hambrick (2007), who explained: In proportion to management discretion, UET predicts organisational results. When discretion is high, management traits will show in strategy and performance. He added in the other scenario where discretion is deficient, the personalities of top executives are then largely irrelevant. Numerous empirical studies, such as Finkelstein and Hambrick (1990), confirmed managerial discretion as a key moderator of upper echelons predictions. Figure 2.6 below explains two groups of factors that can be seen as ‘complementary’ rather than contradictory, which means that with the lack of institutional pressures, more discretion is expected (Hambrick, 2007). Indeed, taking the example of DCR, CEO characteristics can partially explain DCR adoption, especially when the CEO increases discretion and power.

Figure 2.6 Managerial discretion and institutional pressure affecting corporate decisions



Applying such UET logic to the research problem under investigation is based on two sources of discretion suggested by the UET: extra power (e.g., culture, boards) and deficiency of external pressures and regulation (Hambrick, 2007). These are relevant to the DCR context because the adoption of DCR is unsupported in underdeveloped countries, such as Jordan. It is much supported in developed countries such as the UK (FRC, 2015a). Moreover, the influence of top management on DCR practices, which lacks real regulations, could be greater in contrast to the ‘paper-based’ corporate disclosure because of the available ‘regulations’ of the latter.

The sufficiency of information published on the company’s website can be related to the strategic views of the top managers, who are key players in conducting annual and semi-annual results briefings or conferences. Increased transparency through more DCR may boost the company's and senior management's reputation. Powerful managers may not need to do this.

In summary, the high power of the CEO in DCR decisions, especially in emerging economies like Jordan, and the lack of external pressures and regulations (Jordanian laws and CG do not require DCR) can increase the CEO's role in DCR adoption. The CEO decides on many aspects of corporate disclosure; their signature is present on the most important web-based disclosures. First, initially, the discretion in DCR also stems from the point that it is considered an innovative practice. Second, manager-specific effects should be announced when there is greater uncertainty about the benefits of DCR (Li and Yang, 2019).

There are other sources of discretion, such as firm-level managerial discretion. Prior research (e.g., Finkelstein and Boyd, 1998) proposed that discretion levels differ across companies and industry types. They explain that CEOs of businesses with high flexibility should have more potential to affect firm-level outcomes than those of companies with low discretion (Finkelstein and Boyd, 1998). This could not be applied to DCR because it differs from other innovations (i.e., information needs to be assured and great responsibility over its distribution). According to the actualities of some emerging economies, including Jordan, and the DCR analysis from the DOI perspective, there is an expected high level of managerial discretion regarding DCR adoption in emerging economies.

Managerial discretion regarding DCR adoption. Companies' DCR practices substantially vary, as the literature revealed. For example, some corporate web pages are still static, with little opportunity for users to add to or interact with information providers. Possible reasons for that can include that the benefits of DCR are perceived or realised by firms (Poon and Yu, 2012). On the other hand, other companies have interactive websites that allow flexible text formats to view and download. Based on the proposed framework, the adoption stage of DCR has been seen as complex. Therefore, the high variation in adoption can be traced back to the 'adopter' attributes (i.e., characteristics). The following are some points that CEOs may consider when making decisions regarding DCR adoption and implementation.

Moreover, the intense changes in corporate reporting may have resulted from the augmented competition in capital markets with technological advances. This may affect managers' interpretation of this innovative disclosure channel's importance. Researchers and practitioners need to look at DCR differently (i.e., as innovation) and consider variations in managerial strategies that lead to different interpretations of DCR usefulness. Examples include the need to persuade firms and also end-users who can be classified as ultimate *adopters*. More research is required to examine how the DCR can improve the 'usefulness' of information to users (Clatworthy et al., 2018), especially to non-adopters.

Corporate disclosure differs from other company activities, including investment, manufacturing, and marketing. However, disclosure activity should share with these actions the ultimate aims of corporate activities, such as providing benefits and reducing costs to the firm. This applies to the traditional well-known disclosure channels (i.e., hardcopy reporting). In contrast, DCR is emerging and uses different reporting channels that can bring its own complexity and adoption situations.

Research has highlighted many barriers to DCR adoption in addition to the advantages. DCR can be seen as continuous innovation in CR. However, the early adoption years were not free from barriers to adoption. Lodhia et al. (2004) argued that there was a weak indication that corporations had highly altered their reporting methods in response to the new avenues for information distribution made possible by this technology. Such a point is supported by Rowbottom and Lymer (2010).

Unfortunately, there are still many barriers to adoption, such as lack of clarity over audited vs unaudited information and users' perceptions which relates directly to the 'persuasion' stage in the DOI model (see ICAEW, 2017). Accordingly, disclosure activity on the internet may require careful consideration and long-term planning. Further research is called for to persuade/guide firms on deciding how to attain better DCR (Clatworthy et al., 2018).

In essence, unlike traditional channels, improving DCR innovation adoption can be seen as a strategic-based decision rather than a routine disclosure decision. This is because corporate websites are an ‘on-stage’ platform where the implied audience can also include, and is not limited to, customers, employees, suppliers, investors, and regulators who are given different kinds of information (such as performance) (Evans and Wurster, 1999). A website, as a public area, can perform like a storefront or reception zone as a possible arena for manipulating perceptions of the firm (Winter et al., 1997, Winter et al., 2003). Impression management has been investigated in a variety of work settings considered on-stage areas (Grayson and Shulman, 2000). Companies nowadays can create their own corporate identity and can adopt innovations affecting their electronic artefacts, including their presence on such vastly visible platforms as the internet (Winter et al., 2003).

Concerning the guidelines used in the adoption decision-making process, managers are affected by many procedures, as suggested by the DOI model. One of these is to analyse the costs and benefits of adoption. If the costs are outweighed by the expected benefits, there will be a higher probability of adopting DCR practices as a response to innovation adoption encouragements (DCR adoption). However, it seems difficult to expect and measure the costs and benefits of an improved digital reporting environment. Accordingly, this may add to the complexity of the adoption decision, which in turn allows a high level of managerial discretion on the DCR adoption. In this aspect, the report issued by FEE (2015) explained that expenditures on such emerging technology might exceed stakeholders' and companies' benefits.

Another important point that adds uncertainty to DCR adoption decisions is the reliability of the information. The Internet, as a growing technology, has the potential to improve investor communication by speeding up reporting rotas (ICAEW, 2017). They also emphasised that some of the technologies can improve corporate reporting despite cautions being needed to ensure that the quality of the information provided is not compromised (ICAEW, 2017). Moreover, investors' judgment can be affected if there is a hyperlink between audited and unaudited information (Hodge and Pronk, 2006).

Second, BOD-CEO power. It is important to assess CEO power and the counter power (i.e., Board of Directors (BOD) and their roles in determining disclosure strategies. The CEO is eventually held responsible and accountable before the Board of Directors (BOD), headed by a chairman, who is responsible for the company's performance. The board is elected by shareholders and is responsible for protecting investors' interests, such as the company's profitability and stability.
If business failures continue over time, there should be an increased responsibility of management in financial reporting. The executives must certify the corporate annual report, according to the Sarbanes Oxley act that followed Enron's collapse, entailing that the accuracy and completeness of corporate financial reports are a direct responsibility of senior corporate executives (Rezaee, 2005, Geiger and Taylor III, 2003). Reporting entities are required to uphold disclosure controls and procedures either implicitly or explicitly.

DCR adoption is associated with the support offered by the BOD to web technologies (Lee and Blouin, 2015). Based on the agency theory deliberations, to avoid the possible conflict of interest, the board of directors' monitoring of the CEO improves the CEO's performance, including their performance in serving investors, minority shareholders, and the public needs of information via the web. Accordingly, a powerful BOD that has a disclosure committee can supposedly minimize the strength of association between the CEO's characteristics and DCR practices, assuming that CEO may have opportunistic behaviour. Even when managers are committed to improved disclosure practices, they may overlook the importance of DCR irrationally if they are not accountable to a strong board (Hambrick, 2007). Moreover, the audit committee is seen as a tool to oversee and ensure high-quality reporting. However, its existence is not associated with DCR (Aly et al., 2010), indicating that such committees seem not concerned about innovative channels such as DCR.

In summary, the two factors introduced by UET are discretion and board power. These differ among countries, cultures, laws, and regulations, and the decision matter. (see figure 1.1 study scheme). The current study will consider many of the sources of discretion to build up the hypotheses.

2.3.5.4. Bounded Rationality in DCR Adoption Decisions

Why firms disclose less or more information on their website, such as in different presentation formats, is still un-fully answered. The magnitude of the proposed relationship between the CEO's characteristics and DCR is strongly built on the nature of DCR in the AME context. CEO's decisions on using digital reporting channels might be explained in the following proposed way. A company may first define its current and potential major stakeholders clearly and maintain and update its needs. However, the literature has not yet proved systematic results association between trading volume and DCR since websites are used for many purposes. IT innovations such as DCR can be analysed based on Rogers' DOI model (Rogers, 2003). Based on Moore and Benbasat (1991) model, DCR can be evaluated as follow.

The feature of relative advantage is apparent in DCR, but there is no clear idea of whether it is important to all users (FRC, 2015b, Al-Htaybat et al., 2011). Compatibility is still a problem for smaller size firms and apparently in companies in developing countries (Al-Htaybat et al., 2011). Trialability cannot be seen as easily attainable in DCR adoption. The FRC (2015b) stated that without having previous experience in comprehensible technology development, knowing what both firms and users may want from DCR is still unclear. The two perceived characteristics, Image and Voluntariness, are new; they did not appear among Rogers' five determinants. "Image refers to the degree to which the use of an innovation is perceived to enhance one's image or status in one's social system", while "Voluntariness refers to "the degree to which the use of an innovation is perceived to be voluntary or of free will" (, p.195Moore and Benbasat, 1991). Ease of Use (or complexity as per Rogers model) refers to the criterion of adopting an 'innovation' should require low *physical and psychological effort, w*hich has not yet been perceived and solved in some emerging countries (e.g., Al-Htaybat et al., 2011).

The last two related perceived characteristics, Visibility and Result Demonstrability replace Rogers' determinant Observability. Visibility refers to the degree to which the idea of the innovation itself is visible, while Result Demonstrability refers to the degree to which the results of an innovation are visible and communicable to others. Prior researchers also assumed that the DOI framework applies to DCR. This has some extra flaws. Readers should carefully distinguish between our proposed notion of 'degree of adoption' and the concept of 'rate of adoption' developed in previous work, such as by Rogers (2003) (Moore and Benbasat, 1991).

The 'degree of adoption' observes how widespread innovation is adopted by the firm, but the 'rate of adoption' addresses how fast innovation is adopted (regardless of its extent) once that innovation appears. Having put these aspects into consideration, managers may respond to and develop more positive attitudes toward technological improvements upon receiving encouragement from regulators and governance codes. Then a strategy, which consists of a number of tactics and procedures to go for digital reporting processes, can be set up. Such a confidently taken decision should signify the managers' fearless position towards having a more internet-visible firm. That being said, such a step creates an environment where stakeholders are more able to scrutinise the management's performance.

Managers may find it useful to increase DCR adoption because they often lead to highly accessible disclosures, enhancement of the share price efficiency, and reduction of the cost of capital. However, executives possibly will vacillate to engage in extra material disclosures voluntarily because they doubt the possible benefits or disadvantages, i.e., the clarifications that are made accessible to the main users of information, the shareholders (Suijs, 2007, Huang et al., 2012). On the other hand, DCR is a strategic issue because it is part of the investor relations activities, which are one of the most important strategies. The following points add more possible considerations.

First, corporate reporting was the main area where such changes took place. Recent improvements are notable in corporate reporting. These changes are a result of increasing awareness of the consequences of corporations' failures. Accordingly, innovative managers may be key players in taking steps toward revolutionising their communication with their audience (see: Brennan and Merkl-Davies, 2018). However, there is no agreement on the best practices of DCR due to many factors, such as differences in perceived usefulness. The surveys firms by the FRC (215b) stated that they are not yet sure what they want from the DCR.

Second, companies are uncertain about issues related to DCR, like the cost of such innovations compared to the benefits, in addition to other factors. Therefore, little guidance is available to inform managers on the required levels of web disclosure. Accordingly, such conditions facilitate more discretion for managers over the choice of developing interactive digital reporting. Prior DCR empirical research has found reasonable variations in the DCR adoption among firms of the same conditions or same industry. Accordingly, recent research endeavours argue that digital reporting can be affected by the characteristics of CEOs where the relationship among the variables is strong (Hambrick, 2007).

Third, being innovative is rather linked to leadership than to technology. Digital reporting practices can be regarded as a new innovative form of voluntary disclosure because (1) not all firms hold conference calls, and (2) firms seem to be using these calls to increase disclosure. Although many external requirements and pressure to engage in DCR are at stake, unlike the traditional channels of the annual report, these requirements do not determine when, what, and in which format and what mix of features companies should digitally disclose to users. Rather, the requirements, e.g., codes of CG, and listing rules, give flexibility to companies where managers decide on which the extent of digital reporting.

How DCR Adoption Decisions are Complex

Decisions to adopt and publish information on the website are complex as any technology (Gounaris and Koritos, 2012). For instance, a question may be asked: What are the types of information that are less likely to appear online? A CEO might decide not to present a lot of information on some aspects to the public via the website. According to Jenkins (1994), some information might create competitive disadvantages, such as strategies, plans, and tactics, e.g., planned product development or new market targeting. Even if available on the hardcopy that is distributed to certain users, such information is available to the unknown user when it is presented on the website. This adds to the complexity of making DCR adoption decisions (Yap et al., 2011)

The Internet allows easier access by an unlimited number of readers who are *unknown* to the company and who can use this information easily. Some discussions reported that CFOs tend to oppose the general idea of digital reporting, such as fear of losing flexibility (Tadros, 2020).

On the other hand, some CG codes require the use of websites to disclose specific matters such as GC (Jordan), trafficking and slavery, and the gender pay gap in the UK[20]. Because of the requirements of these codes, however, companies can still choose not to comply with this generalisation, but they should elaborate on this issue (in Jordan). Therefore, website disclosure is considered voluntary, and DCR relies on discretion (Poon and Yu, 2012). Discretion is one of the main moderators of the UET.[21]

2.3.5.5. Top management team or CEO, chairman?

Most studies on UET define the Top Management Teams (TMT) as those individuals operating at the highest levels of management, such as the Chief Executive Officer (CEO), Chief Operating Officer (COO), and Human Resources Director. Demographic data on TMT is typically collected via public sources, such as annual reports. On the corporate disclosure data, suitability for the UET was discussed by Galavan (2005); he reported: "Data used in upper-echelons research has come from public sources such as annual reports, letter to shareholders and directories" (Carpenter et al., 2004), and this convenience sampling method has encouraged researchers to stay with demographic-based research in the face of growing criticism about its utility." There is a debate about whether the aggregate team's characteristics influence is bigger than individual leaders. In this aspect, Carpenter et al. (2004, p. 768) contended that studying the top management team in aggregate is useful, but it shouldn't be the only approach. Personality, power, values, and direction influence senior management team processes and achievement.

[20] Source: https://www.gov.uk/government/publications/independent-anti-slavery-commissioners-annual-report-2021-to-2022/independent-anti-slavery-commissioners-annual-report-2021-to-2022-accessible

[21] It is possibly true to consider that managers' perceptions towards the importance of having a corporate website, and then interactive website, for the businesses, which they lead, are supposed to be diverse and depend on their characteristics. Regardless of the nature of business, the activity of shares trading, and the pressure from the surrounding environment, managers might decide to response by avoiding launching a website or to respond by doing a minimal use of such technologies.

In the Jordanian context, the real team that leads the company remains unknown clearly. However, a powerful CEO may affect the collectively taken decisions (e.g., DCR). Therefore, this study depends on the CEO, not the TMT. Decision centralisation is prevalent, and the CEO signs it as cultural differences. Consistently, UET state that we only use TMT when they are involved in the decision, thus influencing outcomes Hambrick (2016).

In summary, the ability of UET to investigate DCR is based on the following additional point: First, the style and format of presentation are at the discretion of management (Dorrell and Darsey, 1991). Second, corporate disclosure is complex (Evans III and Sridhar, 2002). It is one strategic activity and thus can be influenced by the perceptions of corporate leaders (Hambrick, 2016). Third, DCR is a complex decision (Kelton and Yang, 2008) with risks such as commercial confidentiality (Jones and Xiao, 2004). Fourth, the context of Jordan is expected to provide stronger support to UET; management change influences corporate information presented on websites as well found by AbuGhazaleh et al. (2012a).

2.3.6. Hypothesis Development

This section provides the hypotheses formulated to test the UET perspective on DCR strategies. The first section is an introduction and then a discussion about suggested variables (one of the CEO's characteristics) in order to put forward a hypothesis. The selection of the independent variables is based on the UET and supported by logical reasoning and the results of prior empirical studies.

Two proposed aspects of users' perceptions regarding DCR channels are based on Davis et al. (1989), who found that users acknowledge the perceived usefulness and perceived ease of use.

This highlights the assumptions of UET that managers rely on their beliefs and interpretations when making strategic decisions. Aly (2008) suggested that interviewees' attitudes towards

DCR are highly influenced by management style, culture, organisational culture, resistance to change, technical abilities, imitating rivals, and rules and regulations.

On the other hand, the level of discretion can be dependent on firm size. In their study, Thong and Yap (1995) instituted that small companies' adoption of information technology (IT) is significantly associated with CEO’s characteristics, such as innovativeness and perception toward IT adoption. Remarkably, the role of the CEO in DCR is clarified by Amernic and Craig (2006, p.3) as they noted that: “CEOs are responsible for the words and images posted on their corporations' websites. These words and images are, indirectly if not directly, generated, edited, or supervised by CEOs, given that they are the main rhetorical themes pursued on websites.”.

Based on the previous discussion, including the upper echelons theory that is the framework in this study, in addition to the relevant literature, variables and hypotheses are put forward (all hypotheses are written in the alternative format). The following are CEO’s characteristics (demographics)[22] that supposedly influence DCR adoption.

2.3.6.1. Age

One of the main traits that can influence behaviour and performance is age. McClelland et al. (2012) reported that younger CEOs lead to lower future performance in the US, arguing that older CEOs have more experience in improving firm performance. Moreover, decision-making abilities increase with age and experience, according to prior (Li et al., 2009, Huang et al., 2012). As an innovation in corporate reporting, DCR may be affected by CEO age in many ways. In general, the predominant role of the CEO's age regarding firm innovativeness is found

[22] Since it is difficult to study what is happening inside the ‘Black box’, most researchers, such as Hambrick, suggest and use managers’ demographics that may signify relevant cognitive traits.

in numerous empirical works (e.g., Wrede and Dauth, 2020). The current research relies on the following points to argue for age influence on DCR adoption as follow.

First, innovations are significantly associated with the average age of top management (Bantel and Jackson, 1989). Younger managers can be more likely to accept innovations than their older counterparts because they devote more cognitive resources to decision-making since some cognitive capacities, such as learning, reasoning, and memory, appear to decline with age (Bantel and Jackson, 1989). Moreover, their technical knowledge is fresher with training in recent times (Bantel and Jackson, 1989), and they are more open to implementing new ideas and behaviours (Hambrick and Mason, 1984).

Second, there are some risks associated with DCR, such as hacking and auditing (Hussey and Sowinska, 1999), in addition to openness. It is argued that age determines behaviour towards risk (e.g., Gardner and Steinberg, 2005). Younger managers are considered risk-takers more than their elder counterparts. It is generally advocated that, in the business world, rewarding consequences are not always guaranteed; risk and vagueness affect all decisions managers make. Making decisions where uncertain consequences are highly possible is also considered a 'risky process,' and risk-taking behaviour is motivated by tolerance to the uncertainty that can be affected by CEO age (Tymula et al., 2012). Some studies suggest that younger CEOs are more inclined to undertake risk (e.g., Serfling, 2012).

Third, adopting DCR as an innovation includes some risks taking. Under the upper echelons' theory, high uncertainty and bounded rationality affect decision-making. If DCR is adopted, a potential risk may arise from the huge amount of information that would be available on the company's website and be made accessible to unlimited users, including competitors. One of the methods to allow access to this massive amount of digital information is to link the selected information in the internal databases to the website content pages. This is quite risky because security becomes at stake when databases are made available via the Internet, as managers believe. Fourth, age may also obstruct going for innovative ideas. Het al. (1993) explained, “Older managers have been socialised into accepting the prevailing organisational conditions and routines and have a greater psychological commitment to them; hence, they may be less willing to commit to changing them”p.23.

Recently, some physiological research suggested that older individuals are more conscientious as they are more responsible compared with younger individuals. Moreover, older CEOs are more likely to have conservatism and cautious strategies in their decision-making process (Hambrick and Mason, 1984). In addition, Huang, Rose-Green, and Lee (2012) found a positive association between CEO age and financial reporting quality. McClelland et al. (2012) reported that younger CEOs lead to lower future performance in the US, arguing that older CEOs have more experience in improving firm performance.

According to the above discussions, the following hypothesis is formulated:

***H1**: There is a negative association between CEOs' age and the extent of DCR adoption.*

2.3.6.2. Education

In the previous literature, the education of the CEO has been linked not only to a firm’s performance but also to strategy (Hitt and Tyler, 1991). One of the main strategic decisions firms follow is improving financial reporting by DCR as an innovative channel (FRC, 2016). Innovation implementation aims to resolve organisational difficulties, such as the increasing demand for more accessible information, and provide more ways of presenting this information (FRC, 2015a). The matter of how managers’ education can make a difference in DCR adoption is linked to three reasons. First, duty performance and innovative problem-solving require acquiring specific knowledge through the education of the manager (Mumford, 2000, Lee et al., 2005). Second, well-educated chairmen are more likely to use ‘complex and diverse approaches’ to decide and resolve a problem (Huber et al., 1993). Third, regarding risk, a sense of uncertainty is created by the novelty of innovation; managers’ superior ability to gain skills and knowledge to reduce such ambiguity would allow for smoother implementation of innovations (Rogers, 1995). Fourth, education inspires receptivity to new ideas, which plays a vital role in sensing the need for innovation and creating a favourable environment for its implementation. The such argument builds on the historical evidence provided by Bantel and Jackson (1989) that innovations correlate significantly with the education level of the top management team members.

In addition, within the corporate disclosure context, it was found that companies whose CEOs hold Masters of business administration (MBA) degrees do engage in more disclosures, such as CSR (Lewis et al., 2014). Specific qualities of DCR may be more associated with well-educated people, especially the advanced abilities that websites offer. This can be true with data on the subject of degree rather than the level of education. In general, education fosters openness to new ideas, which is essential for identifying the need for innovation and fostering an environment conducive to its implementation.

Despite the theoretical benefit of education to DCR adoption, graduate-level education (e.g., doctorate) can lead to prestige power which may hinder CEOs from taking rational decisions (D'Aveni, 1990). CEOs with higher-level education could prioritise maintaining their prestige and power within their organization over making rational decisions, as demonstrated by D'Aveni and MacMillan (1990). Based on the UET, the lack of objections from others is a common contributor to bounded rationality (Hambrick, 2007) (especially when leaders are powerful and within high power distance cultures). Such boundedly rational decisions regarding DCR could include fewer consultations with experts or TMT before making adoption decisions and less delegation of responsibilities to others (i.e., TMT). Centralisation of DCR adoption has been documented in previous research in the region (e.g., AbuGhazaleh et al., 2012b). In addition to the lack of effective communication channels to foster more diffusion of DCR, based on the DOI model, users' perceptions of studies on DCR in the country are supportive of the negative role of CEO education. Accordingly, the second hypothesis in this study is provided:

H2*: There is a significant negative association between the level of education and the extent of DCR.*

2.3.6.3. Tenure

Managers' tenure has been acknowledged as an important factor among scholars in many aspects of research, such as executive compensation (e.g., Lee and Chen, 2011). The power gained by long-tenured CEOs gives them more resistance to external pressures, thus making them more able to take less rational decisions. Moreover, upper managers are expected to depend on their preferences regarding voluntary disclosure, especially the level of DCR, throughout their tenure. When CEOs have long-lasting tenures, they might be more powerful (e.g., receive higher compensations) and thus more capable of inducing the parties in front of whom they are held accountable (i.e., BOD) (Chung and Pruitt, 1996). Therefore, such managers can be less motivated and encouraged to adopt advanced DCR practices or accurately realise its benefits, thus taking boundedly rational decisions

In contrast, Custódio and Metzger (2014) found that long-tenured CEOs are inclined to disclose accounting information to the public more efficiently. Tenure leads to expert CEOs who acknowledge that good information disclosures shape investors' assessments. However, a newly appointed CEO sometimes tends not to make an immediate difference in the level of disclosure, apart from preserving the previous level. Lewis et al. (2014) suggest that a firm led by newly appointed CEOs responds better to environmental disclosure requirements. This denotes high efforts when making decisions about serving stakeholders informational needs. Accordingly, deciding on publishing information on corporate websites can be done with more rationality by newly appointed CEOs. In light of that, some researchers argue that the longer period could provide better prediction on the influence of the CEO's characteristics on digital reporting (Knechel and Vanstraelen, 2007).

Firms tailor their strategies and structures to match the challenges postured by an organisation's environment (Miller, 1991). Innovative actions need to be matched with the environment. The CEO tenure may be related to the degree of matching between these. This ability can be traced to managers' characteristics. Nevertheless, short-tenured CEOs can adapt to new strategies, if widespread, compared with long-tenured CEOs. Miller (1991) also explained that CEO tenure could be associated negatively with the prearranged match between 'organisation' and environment, especially in ambiguous situations. Moreover, long-tenured managers are seen as having good relationships with stakeholders who agree with them on other current disclosure channels. Accordingly, it could be argued that the digital reporting strategy of long-tenured CEOs is less likely to engage in a high level of DCR. [23]

The newly appointed CEOs may follow new or different approaches, especially when they are outsiders (Friedman and Saul, 1991). Therefore, new CEOs are expected to be less resistant to accepting DCR as a new strategy. Regarding communication itself, long-tenured CEOs prefer the outlines of standardised communication (Smith et al., 1994; Wiersema and Bantel, 1992).

[23] A moderating factor which can be considered in building the model might be whether the CEO has previous experience in companies advanced in their DCR.

It is argued that newly appointed CEOs may use disclosure to cut uncertainty and boost their careers (Bochkay et al., 2016). Tenure could be important as a newly tenured manager can be more sentimental to be elected for a further period.

Based on the above discussions, the following hypothesis is articulated:

***H3**: Firms with long-tenured CEO are negatively associated with the extent of DCR.*

2.3.6.4. Gender

The upper echelons theory's viewpoint (Hambrick and Mason, 1984) insists that organisational outcomes are reflections of the characteristics of its influential actors and, therefore, supports the conception that women executives impact decisions and organisational outcomes. Practitioners and academics have paid considerable attention to the topic of gender in top management (Jin et al., 2014). Managerial behaviour can be influenced by their gender, in general (see: Adams and Ferreira, 2009). Basically, men and women make decisions based on their different norms, attitudes, and beliefs (Pelled, 1996). the unique characteristics of women in gender discussed in the literature (e.g., Offermann and Armitage, 1993). For example, the economic psychology literature shows that men and women are socialised differently (Gilligan, 2018).

Remarkably, several studies acknowledge that gender influences the adoption of technology. For example, Ding et al. (2006) found a significant association between innovation enactment and gender. Furthermore, a new body of literature reports that female representation as executives and directors affect corporate governance and improves the functioning and competence of the BODs (reference). On the other hand, management literature reported that females differ in their averseness and ethical behaviour (e.g., Schubert, 2006). However, women try to be active and approve of their presence in the workplace. Therefore, they may consider DCR less favourable because DCR is likely to minimise the need for continuous interaction with significant stakeholders and other parties. Moreover, based on the fact that men tend to be more experienced with technology than women because of their specific socialisation undertakings. For example, Van Slyke et al. (2002) mentioned that the "result of a study reported in the Los Angeles Times (Aug. 25, 1998), the proportion of women among U.S. computer professionals fell in the 1990s from 35.4% to 29.1%."p.5. As a result, companies are increasingly pressured to hire more females in top management teams (Adams, 2016).

Su et al. (2009) found that, in general, women are more interested in 'people' than men, who are more interested in 'things.' Technology-related occupations are concerned more with things than people. Therefore, men would, on average, be more attracted to them. It is reasoned that women are more concerned about their moral principles. Therefore, they show honesty and duty, leading to less boundedly decisions by accepting innovations (Miethe and Rothschild, 1994). This point is also applicable to the readability of FR.

On the other hand, recent studies showed that there is no significant association between gender and organisational innovations (Expósito et al., 2021). People's perceptions change over time. Even with the mixed results in the literature, the question of general gender impact on innovations is worth fresher results.

Accordingly, the following hypothesis is developed:

H4*: Firms with female CEOs is a negative relationship between and the extent of DCR.*

Some scholars have studied the impact of age on top management teams, given their role in the firm's operations and decisions in general. DCR is seen as more the responsibility of the CEO rather than the whole team. Considering all factors, age, sex, and tenure are easily distinguishable, thus more accessible traits than education and tenure (Tsui et al., 1992). In less developed countries, the CEOs seem more powerful; for instance, the CEO in Jordan must sign before any information can be published on the website.[24]

2.4. Summary

The discussion of DOI limitations draws on some DCR literature, including Poon and Yu (2012), who argued that the DOI model needs adaptation. Therefore, a managerial perspective is employed using the UET to investigate DCR to a broader extent. Specifically, the current study goes beyond the typical factors influencing DCR adoption and examines the role of attitudes and behaviours in DCR adoption (i.e., by companies). The formulated hypotheses suggest that CEO age, education, gender, and tenure as potential determinants of DCR in the AME context. This theory has the ability to explain differences in DCR adoption incrementally. It can complement previously used theories.

Chapter 3 provides the literature review and theoretical perspective for investigating another aspect of an enhanced level of DCR, the readability of narratives disclosed on corporate websites.

[24] These facts have supported the rationale to study the CEO, not the TMT, in the current research.

CHAPTER 3: LITERATURE REVIEW AND THEORETICAL FRAMEWORK (DIGITAL NARRATIVE REPORTING READABILITY)

3.1. Introduction

This study investigates the influence of Upper Echelon (UE) characteristics on digital corporate reporting (DCR) in the Arab Middle East (AME) context. Chapter 2 reviewed the literature and hypothesized the influence of CEOs' characteristics on utilising corporate websites as an innovative contemporary corporate reporting channel. The results supported the Upper Echelons Theory (UET) by confirming that executives of different educational levels and tenures are associated with the extent of DCR adoption in content and presentation format. Drawing on the UET, this chapter builds on such an argument by investigating the quality of important content of firms' websites. Specifically, it provides the literature review to investigate the relationship between chairman characteristics and the readability of Letters to Shareholders (LTS) published on the website as an essential component of quality DCR content. This chapter begins with the background on corporate reporting's development and such reports to provide a foundation of knowledge on the topic. The review aims to uncover some best practices around narrative textual features. Then, a brief discussion of the meaning, origins, and development of readability research is offered. Afterwards, the review focuses on previous studies on the readability of corporate reporting. These include consequences and determinants of readability. Then, the debates, scope, and results of relevant earlier studies on corporate reporting readability and other textual features. The last section discusses the research gaps in the literature.

3.2. Background

It is believed that "reporting has been and always will be, a means to an end, not an end" (White, 2014, p.1). Bearing this in mind and applying it to DCR, the goal of more DCR is to provide high-quality disclosure that benefits users, such as reducing asymmetry. Managers can provide the most useful information to outside parties when the numerical part is combined with other types of information, known as narrative reporting (NR) (Woods and Marginson, 2004, Loughran and McDonald, 2016). NR in annual reports informs users about the performance and offers future projections while delivering a broad and meaningful representation of the company's market position, operations, and strategy. Companies communicate with their audience mainly through useful written statements (i.e., narratives). One such narrative is the letter to shareholders issued by the chairman, which delivers critical information and reaches a wide audience. These narratives are increasingly published on firms' websites and financial statements (Hodge and Pronk, 2006, Rowbottom and Lymer, 2010, Al-Sartawi, 2016).

The DCR content coverage and quality (i.e., clarity) are indispensable since both enhance disclosure transparency for shareholders and other stakeholders (FRC, 2015a). NR can be useful depending on several factors, such as their ability to be readable and understood (Courtis, 1998). Reading ease is an essential quality of corporate reports that influences their comprehension, representing a key measure of communication effectiveness. The core benefit of easy-to-read narratives is that they help the content reach most information users (i.e., audience members), meaning that the message is conveyed with little effort required to understand. When firms present less readable financial communications, users are forced to devote more time and effort to extracting the relevant information (Bloomfield, 2002), which limits their interpretation ability. Equally, the adverse impacts of textual complexity are well-documented in the literature.

Previous studies continually showed that accounting practices disregard the importance of readability in corporate disclosure (Besuglov and Crasselt, 2021), whether presented via traditional or digital channels such as websites. Nonetheless, the relevance of readability studies to accounting was highlighted by early scholars. For instance, Riahi-Belkaoui (1995) stated that studying aspects of accounting's readability and understandability is essential for mastering this field as a language. Harris and Hodges (1995) held a similar view, affirming that the style of writing in accounting texts can affect the ease of grasping the meaning of the texts' contents.

Transparent corporate reporting that satisfies shareholder interests is a key goal of many worldwide regulatory bodies, such as the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB). However, narrative reporting complexity diminishes such attempts to protect the interests of shareholders and promote transparency. In fact, regulators have raised concerns about the increasing complexity and the decreasing relevance of corporate reports over the years. For instance, the Financial Reporting Council (FRC)[25] highlighted complaints about disclosures, revealing several common problems (e.g., important messages lost in the confusion of lengthy disclosures and regulatory jargons) (FRC, 2009b). Legislators worldwide must review or expand national and international regulations to ensure best practices of narrative reporting readability are upheld

Despite that, accounting practices still neglect the readability of corporate narratives (Besuglov and Crasselt, 2021), and the undesirable effects of this are expected to continue, meaning only

[25] The United Kingdom's Financial Reporting Council (FRC) aims to encourage investment by promoting high-quality corporate reporting and governance based on it role as is an independent regulator.

a limited group of audience members can fully comprehend the messages of the narrative reporting (Smith and Taffler, 1992).

Readability is more important than one would think. Recent results indicate that a company's future bankruptcy risk is proportional to how readable its content is (Ertugrul et al., 2017), suggesting that readability is a measure of impression management (Brennan and Merkl-Davies, 2013a). It is difficult to confirm that obfuscation is done deliberately; however, a complex narrative still has the same adverse consequences. Given the detrimental impact of poor readability, it is crucial to investigate potential factors influencing corporate reporting readability. Research on textual disclosures has grown in importance as external corporate reports have evolved, notably becoming more complex (Loughran and McDonald, 2016, Habib and Hasan, 2020). Numerous narrative categories have been investigated in the accounting literature. Examples include CSR (e.g., Dhaliwal et al., 2011), forward-looking (Schleicher and Walker, 2010), and risk (e.g., Ibrahim and Hussainey, 2019). LTS represents an important narrative component of corporate annual reports. Most LTS worldwide is directed towards shareholders as one of the primary resource providers, arguably reflecting their crucial role in the success and expansion of businesses and society, along with how the interests of shareholders are of concern to the CEO. LTS must be more transparent (i.e., readable) to be effective, requiring the preparers to make it as simple as possible (FRC, 2015b, SEC, 2013).

Following the UET, UE characteristics are suggested as factors affecting LTS readability. Determining the characteristics of best performers (i.e., who issue high-quality disclosures) can play an important role in the appointment or election of corporate executives. This study aims to contribute to the existing body of scholarship that underlines the need for ongoing research into language choice in corporate annual reports, owing to its influence on corporate reputation and transparency (Craig and Brennan, 2012). The core aim of this research is to examine how information is presented to the intended users (i.e., quality) (Blankespoor, 2018), which is as essential as examining the quantity or 'coverage' of DCR. The study contributes to the previous research on UE characteristics and corporate reporting quality.

3.3. Literature Review

3.3.1. Corporate Reporting and Narrative Reporting

Traditional financial reporting has been thought incapable of effectively supplying valuable information[26] to meet the growing demand for quality future-oriented information (Beattie, 2000, Beattie et al., 2002). In particular, recent accounting scandals (e.g., Enron) have highlighted numerous limitations of such reporting models, including their integrity (ICAEW, 2003). As a result, financial reporting has been the target of several improvement initiatives to restore public confidence (ICAEW, 2003). Narrative disclosure has increased in response to debates about the ability and effectiveness of traditional financial reporting. In other words, to ensure an adequate and effective transmission of information between issuers and users of corporate reporting (CR), narrative and numerical disclosures must complement each other (Woods and Marginson, 2004). In addition to the emergence of corporate websites as new channels for corporate reporting, several studies have focused on CR reforms, such as improving the coverage (e.g., scope) and quality (e.g., readability).

For instance, the American Institute of Certified Public Accountants (AICPA) issued a significant report (called the Jenkins Report) on an improved business reporting model (Jenkins, 1994). This model covered several core areas, including financial and operating data, management analysis, forward-looking information, and objectives and strategy (Beattie et al., 2004).

[26] A study that addressed the decision-usefulness of disclosures in the food processing industry showed that just 1% were quantified and forward-looking (Beattie et al., 2002).

In response to that report, the FASB launched the 'Business Reporting Research Project' to assess different types of information and the best means of delivering them. In essence, it stated that the growing changes in the business environment lead to the expected increase in information companies provide voluntarily (FASB, 2001). Deloitte (2006) reported that by 2006, narrative writing made up around 52% of the usual annual report. Additionally, some studies have noted how CR can be improved by narrative-based reporting delivered via different mediums, such as websites (e.g., Beattie, 2014; Beattie and Smith, 2013).

The official corporate communication tool, the hardcopy annual report, and the voluntary communication medium of choice (commonly the corporate website) are the key channels for conveying numerical and narrative information. Narratives cover a company's previous, present, and anticipated financial statuses and directions. In addition, narrative reporting generally includes footnotes, audit reports, management discussion and analysis (MD&A), and letters to shareholders (LTS). In brief, many define it as anything that appears in a company's annual report beyond the financial statements, notes, and external auditor's (Deloitte, 2005).

The quality of narrative reports is based on three important elements: content, presentation, and timing. Yes, it is judged according to its readability and understandability (Courtis, 2004b) as perceived by external users. Readability is an important quality of corporate disclosure narratives (Courtis, 2004b). Initially, Gilliland (1975) used the terms' readability' to denote the procedure of matching the text and its user (i.e., the reader). Often denoted by the term 'reading ease', readability refers to the ease with which a reader can comprehend or understand a written text. To illustrate, a script is readable if it is clear, high-quality, and understandable to the intended audience (Collins and O'Brien, 2011, Iatridis, 2011).

The importance of texts' readability has been addressed by regulators and standard setters, such as the IASB, which has outlined qualities of good narrative reporting, such as being clear and concise. Similarly, Firtel (1998) discussed the US SEC plain English rule, which sets out how to write in plain English to improve corporate disclosures. On the other hand, complicated reports require specific skills, more time, and greater effort to extract the most important information (Bloomfield, 2002). In particular, Gordon-Salant et al. (2015) noted how multisyllabic words are lengthy and thus harder to read, putting extra pressure on the reader's working memory.

Several methods can be used to help know the audience as suggested by SEC (1998): (1) by gauging the sophistication of stockholders; (2) by learning the demographics of investors through polls and other market survey research tools; (3) by depending on investor relations or their underwriters to identify the investors who have purchased or are expected to purchase their securities. Certain regulators have stressed that disclosure materials must be prepared in a manner that investors can easily comprehend since numerous investors are not professionals (not attorneys, accountants, and investment bankers) (SEC, 1998). Hence, any argument that financial narratives may be too easy (i.e., too simple) cannot reasonably justify leaving texts complex (Wylie, 2022). Instead, if the 'average' shareholders cannot comprehend the message due to complexity, this introduces inefficiencies to the capital market (Li, 2008).

It is critical to create trust and build a sustainable competitive advantage among stakeholders with effective information disclosure and transparency (das Neves and Vaccaro, 2013). Otherwise, external financial information users may receive complex (i.e., poorly readable) information, which negatively impacts corporate transparency and its role in establishing market confidence (ICAEW, 2003). Consequently, the quality of narrative reporting has come under great scrutiny in the prior empirical literature. Through such studies, a higher equity capital cost was found to be associated with greater textual complexity (Rjiba et al., 2021, Dalwai et al., 2021a). Moreover, several studies investigated potential impression management through readability, including those of Jones (1988), Baker and Kare (1992), Kohut and Segars (1992), Smith and Taffler (1992), Subramanian et al. (1993), (Courtis, 1998, Courtis, 1995), and Clatworthy and Jones (2001).

A lack of effective communication may happen when communications are provided at a fluency level higher than the average target audience. The linguistic nature of annual report information is complicated (David, 2001). Such issues are fundamental to maintaining a virtuous level of communication transparency with firm shareholders. Transparency is conceived as an informative process required to execute the virtues of truthfulness, fairness, and prudence (das Neves and Vaccaro, 2013).

Given the importance of narrative clarity, major regulators have recommended solutions to tackle current practices' issues. Issuers should not be allowed to neglect narrative clarity, especially in developed markets. Instead, issuers are advised to review the narrative information and check its clarity and conciseness (readability) before releasing it (FRC, 2015b). In addition, regulators, such as FRC, have stressed 'considering the audience' in annual reporting (FRC, 2015b). Team members can help by checking one another's narratives before reports are released (FRC, 2015b). Similarly, readability formulas can be used to rate the reading ease of text, as suggested by the SEC (1998). These greatly assist firms today; while in the past, it was by no means an easy task to prepare adequate and concise reports that can no longer be considered the case (Pashalian and Crissy, 1950).

The qualities of good narrative are indirectly highlighted as part of the USA's Plain English rule (Firtel, 1998). The six basic principles of Plain English are as follows: short sentences, definite, concrete, everyday language, Active voice, and Tabular presentation or bullet lists for complex material, whenever possible. Similar attempts to highlight the importance of readability are also apparent in the FRC initiative (clear and concise). Such guidance/regulations on this matter are supposed to increase the quality of narrative reports. In the UK, private sector campaigning started as early as the 1970s against reports' complexity, directed toward achieving clearer and more concise material. An example is the 'Plain English Campaign, commercial editing and training firm that works with governmental departments, official organisations, and companies to promote clear English writing. Several banks and insurance companies, among others, have secured the 'Crystal Mark', a seal of approval to certify that clear language is used in their documents, launched in 1990.

Likewise, the FRC issued a discussion paper titled Louder Than Words (FRC, 2009a), which proposed dealing with narrative disclosure problems by recognising and evaluating research initiatives related to corporate reporting's complexity and significance. In addition, the FRC has also addressed narrative complexity by publishing several documents and research project updates, such as a research lab report on the clarity of narrative reporting (FRC, 2014). Yet, UK-listed firms have no direct mandate to use plain English. Such efforts are lacking in developing countries, leaving more discretion to issuers. The theoretical background section discusses these differences.

3.3.2. Measures of Complexity in Narrative Reporting

The importance of reading ease is nothing new. Over the years, since the 1920s, the issue of the textual complexity of corporate narrative reporting has been raised in several research projects and surveys. One major line of narrative reporting research has focused on describing the complexity of corporate reporting and its. Early researchers paid particular attention to the idea that effective communication involves writing financial reports in a style that is easy to understand (Flesch, 1946, Gunning, 1952, Karlinsky and Koch, 1983). However, decades have passed without any regulation to mandate that companies provide financial narratives in a more understandable formula until the SEC's Plain English rule has been issued in 1998. However, regulators have failed to provide a specific definition of readability, referring to its dimensions and forms (e.g., text, word, passage lengths, and legibility).

The readability of corporate reporting can be defined as investors' and analysts' capability to conform to financial narratives from a valuation perspective (i.e., to make proper decisions) (Loughran and McDonald, 2014). The literature usually associates 'textual complexity' with reading ease and readability; textual complexity and annual report document length and size are used to proxy the notions of both readability and complexity (e.g. Loughran and McDonald, 2014, Bonsall et al., 2017), denoting these two as thoroughly connected. As early as the 1920s, vocabulary difficulty and sentence length were used to quantify transcripts' complexity (DuBay, 2004). Further measures have since been added, such as the number of sentences, words, and syllables, the report length or word count, and the legibility. Those measures are explained below in detail.

3.3.2.1. Reading Ease

Readability is measured by several reading ease formulas that usually give a numerical 'score' or rank for the examined text. Such a score denotes the 'grade' of school education required to read the text without difficulty (i.e., average effort). Yet, in reality, people normally read at a level lower than their actual grade/education (DuBay, 2004). For instance, the average adult in the USA reads at a 6th-grade level (Nietzel, 2020).

Over the years, several scholars have developed formulas to assess reading ease (e.g., Flesch, 1946, Gunning, 1952, Karlinsky and Koch, 1983). Early accounting and finance studies used Flesch's reading ease formula[27] as a straightforward and easy-to-apply measure. It quantifies readability into a number from 0 (incomprehensible, 12th grade) to 100 (easy, equivalent to 4th

[27] The first edition of *The Art of Plain Talk*, written in 1946 by Rudolf Flesch, was a best-seller. The readability formula it featured started a revolution in journalism and business communication.

grade). It became the most popular approach, allowing for easy comparability (Courtis, 1998). Alternatively, a text is written in plain English, scoring between 60 and 70 (Flesch, 1979). As a rule of thumb, for a business script, the good readability score is around 65 (level 8–9th grade).

Despite their usefulness, some are critical of readability formulas. It has been proposed that a clear and understandable text does not necessarily have all the characteristics of a usable and useful document (Klare, 1976). Redish (2000) admitted that readability formulas have some flaws but are still valuable assessment tools. Alternatively, he described using typical readers to score the readability, but that approach is not as cost- and time-efficient as computer software that processes texts to calculate their readability (Redish, 2000). It has been argued that accounting complexity is hard to measure empirically (Hoitash and Hoitash, 2018). Other regulators gave further advice to improve the quality of corporate reporting, such as the FRC's suggestion of using human review over the clarity of reporting (FRC, 2015b). For instance, the SEC addressed the necessity for using readability formulas and style checkers (SEC, 1998). Continuously, it recommended using them, such as Flesch and Gunning-Fog, to formally assess compliance with the plain English rules (Cox, 2007).

3.3.2.2. Word Count (Length)

Measures of word count and reading ease are the two most used computational linguistics methods in the literature (El-Haj et al., 2019). Word count indicates corporate narratives' complexity (Loughran and McDonald, 2014, Bonsall and Miller, 2017, Li, 2008, Lawrence, 2013). The annual report and its component parts are lengthy (Courtis, 1987), especially nowadays, which can make reading overly time-consuming and potentially misleading. Although Cheung and Lau (2016) did not find evidence that length comes along with more complex narratives., some of the content may be immaterial information (i.e. unnecessary), described as 'clutter' FRC (2011). Such text should be deleted; otherwise, it impairs the readers' understanding and obscures relevant information (FRC, 2011). Despite that, high word count may not be an issue (e.g., regulators such as prohibit deleting material information, or certain explanatory information remains the same over time) (FRC, 2011). However, an excessive word count produces a lengthy disclosure, one of the issues raised by both users and regulators (FRC, 2009b). In summary, narrative length is a controversial issue (KPMG, 2013).

3.3.2.3. Legibility

Another readability factor concerns the typeface, often called legibility. Legibility can be seen as a prerequisite for readability. It refers to the degree to which individual words are distinguishable to the human eye. Generally, researchers argue against convoluted text design or irregular spaces between words, which slow reading (SEC, 1998). Similarly, the FRC (2015b) advises that "most readable reports break up dense areas of text, use font sizes and styles that are easy to read, and avoid printing text on a background that is a similar colour to the font" (p. 23). Tables A.6-A.8 in the appendix present examples of texts with different levels of legibility.

These important textual features collectively determine the effort required to read the text. Different typefaces have different connotations and can influence the readability, interpretation, and impact of the words they represent (Thangaraj, 2004). Redish (2000) noted that readability formulas dismiss the layout of text. Adding considerations of the legibility aspect may boost text reading ease formulas to improve their efficacy. Legibility can be a complement to readability.

Legibility's impact has been highlighted in several key areas, such as medication, driving instructions, and traffic signs. Illegible texts can create serious safety issues for a community. Similarly, adverse impacts of illegibility can happen in the case of CR since illegible narrative reporting cannot satisfy users' needs for clear and easy-to-use financial reporting. Likewise, Fakhfakh (2016) demonstrated that audit reports' illegibility might be destructive to corporate governance.

The SEC (1998) has discussed legibility in detail and suggested some conditions for legible text. Despite providing guidelines for better typography (i.e., font type, size, and colour), the plain English rule gives some discretion to the firm in enhancing the text's legibility. Scholars have highlighted how annual reports often include examples of visual rhetoric (e.g., Courtis, 2004a). Legibility may be harmed by a small design problem rather than bad practices. Like readability, writing may be purposely or unintentionally unreadable. In this regard, information-focused graphic designers could ensure the legibility of plain English, for instance, by working closely with authors to visualise complicated content (SEC, 1998). The visual and structural effects of narrative reporting were addressed by Brennan and Merkl-Davies (2013a). Some researchers discussed readers' skills fit among the other concepts. It also explains how legibility can be understood among the qualitative features of textual complexity

Moreover, firms' leaders must value quality in disclosure and set the standards for clarity, particularly when writing narratives to shareholders, the legibility of which should be checked before releasing the information. In summary, with the growing use of textual analysis and regulators' emphasis on plain English, the measurement of readability in corporate reporting can be beneficial.

3.3.3. Previous Descriptive Studies

The interest in readability started as early as the previous century. Prior research has historically disclosed that word and sentence structure (i.e., length) are the two most significant readability indicators (e.g., Kitson, 1921). A text's readability is decided by its ability to be understood by individuals with varying educational levels. Factors used in the formulas include the number of characters, the count of hard and complex words, and the number of syllables[28] in each word. Since then, several popular readability metrics have been introduced, such as Dale and Chall (1948), Fog (Gunning, 1968), and Flesch (Kincaid et al., 1975). The first published readability study on an annual report that used Flesch was (Pashalian and Crissy, 1950).

Several previous readability research papers are descriptive and focus on describing how difficult corporate disclosures are, comparing readability among different parts of the annual report or tracking readability over time. This line of research started early. The previous studies used different readability formulas and found the annual report difficult to read (Soper and Dolphin, 1964). Such results are confirmed by Courtis (1987, 1995, 1998, 2004), Linsley and Lawrence (2007), Bradbury et al. (2018), Clarke et al. (2009), Richards and van Staden (2015); Moreno and Casasola (2016), Fisher et al. (2019),

The readability of 10-K reports also is difficult (Bushee et al., 2018, Hoitash and Hoitash, 2018). In Egypt, results show that the reports for EGX100 companies are complex and difficult to read (Ezat, 2019). Barnett and Leoffler (1979) documented unacceptable levels of complexity (extreme difficulty) in financial statement notes and auditor reports[29] using the FRE. Few scholarly works focused on longitudinal trends. Historically, Barnett and Leoffler (1979) found that financial statement notes readability has significantly decreased over ten years. Moreover, Courtis (1995) found that the readability level dropped over five years.

Extant studies have been conducted on the entire annual report or its explicit sections (e.g., Pashalian and Crissy, 1950, Soper and Dolphin, 1964, Courtis and Hassan, 2002, Dalwai et al.,

29 athought it is part of the annual reporting, it is the responsibility of auditors to ensure that the auditor report is written in understandable format to the target audience.

2021a). Most studies constantly concluded a low level of readability; thus, simpler writing methods have been requested. Advocates for text simplicity aim to reduce complexity and improve disclosure clarity and understanding (Loughran and McDonald, 2014).

3.3.4. Previous Studies on the Determinants of Narrative Complexity

Prior corporate disclosure research depicts that readability is influenced by variables such as country and firm level. For example, firm age was significantly associated with narrative reporting (Bakarich et al., 2019). The ownership structure and readability link have been studied. Companies with more readable annual reports have larger ownership dispersion (Kumar, 2014) and institutional ownership (Lang and Stice-Lawrence, 2015). Dispersed ownership gives management more control over a firm's activities and results (Crossland and Hambrick, 2007).

In a longitudinal study, Jones (1988) investigated the chairman's reports of a single company from 1952 to 1985 using the Flesch formula. He found that readability declined with increasing firm size and complexity and suggested that further research be undertaken using larger samples to confirm his results. Inconsistent with that, Courtis (1995) found company size, industry, and profitability were not associated with readability levels. Moreover, Jones (1988) used the Flesch method to evaluate a company's chairman's reports from 1952 to 1985. He proposed utilising bigger samples to support his findings that readability decreased with firm size and complexity. In contrast, Courtis (1995) found no correlation between readability and company size, industry, or profitability.

On the other hand, Clatworthy and Jones (2001) investigated 120 chairman's reports focusing on the relationship between Flesch scores and firm performance and found that it is unrelated to readability. Moreover, the results of Dorrell and Darsey (1991) suggest that executives who were 'highly successful' in their companies are more effective in reaching their target addressees (by more readable narratives) than average-performing executives. Similarly, Li (2008) found that the annual reports of firms with lower earnings were harder to read. Rahman (2014) found a significant positive relationship between profit and readability and a significant negative correlation between the number of financial statements and readability from 1962-2009 for one Malaysian company.

Ownership concentration is another area that is found to be associated with readability. Accounting research literature generally determined that macro-level undesirable externalities are connected to ownership concentration, including fiscal transparency, competition, and wealth distribution. In contrast, ownership concentration can adversely affect corporate sustainability and minority shareholder rights on the micro-level (Amico, 2020). Therefore, less sophisticated users are expected to be highly impacted when provided with less readable texts.

In addition, a negative association exists between a company's size and industry and the readability of risk disclosures disclosed by listed firms in Portuguese (da-Silva Oliveira et al., 2019). Efretuei et al. (2021) found that the negative tone in narrative reporting is associated with less readability. Similarly, readability moderates the link between tone and investors' profitability evaluations (Tan et al., 2014). On the other hand, others found a negative and significant relationship between real earnings management and audit report readability (Salehi et al., 2022). Moreover, Ginesti et al. (2018) found that female board membership improves disclosure readability in small enterprises but not large ones.

International Financial Reporting Standards (IFRS) are the accounting standards issued by the IFRS Foundation and the International Accounting Standards Board (IASB). These standards set out how a company prepares its financial statements. IFRS adoption is another factor that may be relevant to the readability levels of corporate disclosures. Instead of directly emphasising corporate disclosure readability, the standards have stressed understandability. Empirical results of Hidayatullah and Setyaningrum (2019) show that IFRS adoption is significantly associated with less readable disclosures in Indonesian public companies. In addition, Similarly, Jang and Rho (2016) found that financial statement notes based on IFRS are significantly less readable than those based on Korean accounting standards; nevertheless, minority shareholder population and firm age have a significant positive influence on this association. Moreover, Cheung and Lau (2016) found that financial statement notes in Australia have become lengthier but more readable after the implementation of IFRS.

Moreover, Zudana et al. (2022) found that a greater degree of narcissism among CEOs is also linked to more readable tax footnotes. Moreover, managerial narcissism correlates positively and significantly with audit report readability when measured by the FOG formula (Salehi et al., 2022). A principal literature review study consistently shows that senior management executives strongly affect financial reporting decisions, especially disclosure quality (Plöckinger et al., 2016). Moreover, the enhanced readability of financial sector companies' annual reports is correlated with a decline in intellectual capital efficiency in Oman (Dalwai et al., 2021b). Staw et al. (1983) have suggested that top managers' age impacts the text features (e.g., complexity) of letters to shareholders when managers try to justify the organisational performance. Other groups of determinants, such as cultural values, are discussed in later sections.

3.3.5. Readability as an Impression Management Tool

The growing prominence of descriptive sections in business documents allows organizations to overcome information asymmetries by providing more information and explanation, enhancing decision-usefulness. However, they may also be used to highpoint financial performance and prospects (through impression management), which has the opposite impact (i.e., causing damage to accounting communications). One school of thought sees the low readability of narrative reports as a method of obfuscation (Bushee et al., 2018).

Text complexity is considered one function of impression management (e.g., Brennan and Merkl-Davies, 2013b). The literature suggests that managers with incentives to conceal figures construct less readable annual reports (Li, 2008). Li further explained that less readable reports require greater understanding and processing costs, making readers search harder for relevant information. Impression management (IM) is the opportunistic managerial behaviour of presenting corporate information selectively and using multiple disclosure tactics to distort and influence the user's impression of the company's performance and accomplishments (Clatworthy and Jones, 2001). The impression conveyed could match reality; however, it may emphasize the positive aspects of the organization or obfuscate negative ones to present a more favourable image to their organizational audiences (Gioia et al., 2000). To accomplish this, organizations may use financial statements (earnings management) or corporate narrative documents (e.g., annual reports, corporate social responsibility reports, press releases, websites, etc.) to bias their financial reporting.

Much more research has been conducted on interpersonal impression management in social psychology than in the corporate realm (Connolly-Ahern and Broadway, 2007). Impression management involves corporate actions to appeal to shareholders, stakeholders, the public, and the media (i.e., administrative members construct a public impression) (Bozzolan et al., 2015). It can be a considerable problem for many reasons. Firstly, if corporate information is used to manage readers' impressions, it will mislead capital allocation decisions. Secondly, in a broader interpretation, impression management may have other consequences of a social and political nature (Stone and Lodhia, 2019). In general, readers of corporate narratives may be vulnerable to cognitive and social biases, among other impacts. As a result, they cannot evaluate whether corporate narrative papers suffer from reporting bias due to the selective presentation and omission of key facts (Frederickson and Miller, 2004, Krische, 2005, Elliott, 2006, Merkl-Davies et al., 2011).

Prior relevant research argues that readability itself is an IM technique that is an indirect but potent method of influencing how people on the outside see the results of an organization's efforts (Brennan and Merkl-Davies, 2013a), especially because of the increasing narrative disclosures nowadays. However, Merkl-Davies et al., 2008) underlined that the study of readability implicitly attempts to examine another proposition: informational complexity, which means the complexity intends to support the reader. Given the lack of guidance on readability and difficulties in knowing the audience, the current study argues that other reasons can cause text complexity based on the writer's bounded rationality.

3.3.6. Previous Studies on the Consequences of Narrative Complexity

Readability is a widespread issue considered critical in contexts other than financial reporting. Examples include laws and regulations, military documents, and healthcare publications (e.g., medication leaflets) (Bonsall et al., 2017). Some researchers examined the differences in complexity between annual reports and other documents of local governments in the US (Clarke et al., 2009). Generally, if the language in these texts is too complex, the message could be lost, confusing readers. The previous sections discussed some significant impacts of complexity on the general reader. The consequences of narrative reporting complexity can be severe and measurable, and literature documenting issues and real problems, such as misallocations of capital. The danger of financial reporting complexity is due to its ability to impact individual investors and sophisticated users of financial reports, such as analysts (Lawrence, 2013). Readers unfamiliar with accounting (e.g., unprofessional) can be more severely affected as they rely only on the chairperson's LTS to comprehend the firm's situation (Still, 1972). For this reason, it is highly recommended to consider issuing simpler letters. Readability is primarily used as a metric to assess the efficacy and quality of annual reports (Courtis, 2004b).

Even when it is difficult to verify that obfuscation is an intentional practice, poor readability will still have the same consequences for stakeholders (Rutherford, 2003). While studies on the effects of poor readability are essential for the attention of regulators, studies based on UET can also help investors and regulators raise awareness of poor readability that can be avoided.

Some scholars have addressed market reactions to different readability levels; stock prices are sensitive to disclosures (Gu and Li, 2007). Moreover, bond market intermediaries and firms' debt costs are affected by the linguistic qualities of corporate disclosure (Bonsall and Miller, 2017). In particular, there is an association between less readable financial disclosures, lower bond market ratings, increased disagreement between bond rating agencies, and higher debt costs (Bonsall and Miller, 2017). Moreover, (Loughran and McDonald, 2014) found that more readable 10-Ks are significantly associated with less stock return volatility following the filing date. These are consistent with the view that higher capital costs could be one drawback of inferior communication (FRC, 2009a, Hoogervorst, 2017).

Moreover, a few studies examined the severe impact of text manipulation on the chance of business failure. For example, firms with larger 10-K file size (i.e., lengthy and, thus, complex) are associated with a higher probability of bankruptcy (Le Maux and Smaili, 2021),[30] which confirms the study of Smith and Taffler (1992) on the readability of narrative and corporate bankruptcy. One stream of research has suggested that readability can be used as a form of impression management: managers can manipulate investor reactions through obfuscation (Bushee et al., 2018). This can be done through many tactics, such as self-presentation and text

[30] The size is measured in megabytes of the text file for Form 10-K on the SEC's EDGAR system.

complexity. The intentional use of text complexity as an impression management device is discussed by (Merkl-Davies and Brennan, 2007), assuming that managers may have incentives to obfuscate readers (unbounded rationality based on neo-classical theory).

LTS can be used, more than in other narratives, by managers to introduce external factors affecting performance. Thus, theoretically, LTS can be used to obfuscate readers more than other narratives. Similarly, a company's disclosure tone can have a short-term market impact through its fundamental information and manipulation methods (Huang et al., 2014, Arslan-Ayaydin et al., 2016). Some studies argue that market reaction is an appropriate quantification of the effectiveness of impression management.

Among the pressures for better clarity and stability in reporting (to ensure shareholders' best interests) is the failure of CG and CR to ensure accountability (e.g., Maxwell, Enron, WorldCom). Prior research on such worldwide business failures revealed considerable misconduct associated with elite corporate characteristics. For example, the narcissism of Enron's top management staff is empirically well documented in the literature (e.g. Amernic et al. (2007). This could explain why statutory regulations seem more concerned about readability than accounting standards (the plain English rule vs IFRS general idea of understandability). Companies, as well as regulators, are essentially making efforts to make annual reports more useful and easier to read.

For example, Firtel (1998) pointed out that the US Securities and Exchange Commission (SEC) has consistently emphasized the need to make public company disclosure documents more readable: The Plain English Disclosure Handbook, issued by the SEC on January 22, 1998, illustrates how to utilize well-established plain English writing approaches to develop simpler and more valuable disclosure materials (SEC, 1998). The rule covers many aspects, but the most relevant is readability.

Moreover, corporate narrative information influences not only users but also providers who expect unpleasant analyst reports, credit ratings, or media exposure (Prakash and Rappaport, 1977). This is contrasted with retrospective sense-making (discussed by Merkl-Davies et al., 2011). Lastly, the consequences of narrative complexity are yet to be fully agreed upon since accounting complexity is hard to measure empirically (Hoitash and Hoitash, 2018).

3.3.7. Sections of Annual Reports Covered by Previous Studies

Corporate communication is an important management function that provides a framework for effectively coordinating all internal and external communication for founding and maintaining positive relationships with firm stakeholders (Cornelissen, 2020). Narrative reports are crucial aspects of overall corporate reporting. According to Lim et al. (2018), 80 per cent of an annual report consists of narrative disclosures, which supposedly enrich user understanding of the numbers presented. However, they are subject to manipulation or negligence regarding quality aspects. Moreover, research has shown the level of difficulty of these narratives is increasing over the years. Communication is effective if a message is understood by the reader as intended by the sender (Courtis, 1995). One factor that increases comprehension is reading ease.

Many companies include a letter from their upper echelons (CEO and Chairman) with their annual reports or at the beginning of their proxy statements (SEC, 2018). For instance, a study on SEC (2018) filings showed that 80% of Dow 30 firms contained at least one letter in their annual reports. Some companies sometimes include two LTSs: a robust one in their annual report and a shorter one in their proxy statement. The importance of the LTS stems from it being a tool for communication with the audience, including shareholders, in the narrative form (Gibson and Schroeder, 1994). Through an LTS, corporate leaders may introduce themselves, assess the company's previous achievements, and discuss how it might improve concerning long-term objectives. Therefore, it is argued that there is no reason to waste or undermine this once-a-year opportunity to introduce the company to employees and shareholders (Dorrell and Darsey, 1991).

Many studies have addressed the entire report and those that addressed specific sections. Few studies focused on integrated reports and found them to lack reading ease and even not improve over time (e.g., Stone and Lodhia, 2019). Some researchers studied risk disclosures (da-Silva Oliveira et al., 2019) operating and financial review section (e.g., Rutherford, 2003).

Several scholars focused on the readability of specific parts of corporate annual reports, including LTSs, Directors' Reports, audit reports, and footnotes to financial statements (Pashalian and Crissy, 1950; Soper and Dolphin, 1964; Smith and Smith, 1971; Dolphin and Wagely, 1977; Adelberg, 1979; Lewis, Parker, Pound and Sutcliffe, 1986; Jones and Shoemaker, 1994; Bayerlein and Davidson (2012); Zudana et al. (2022); MD&A: Schroeder and Gibson (1990), Schroeder and Gibson (1994) annual report footnotes (Healy, 1977) for New Zealand firms, and audit reports (Pound, 1981) in Australia.

Courtis (1998) explained that LTS (such as the chairman's statement) is the most-read section in an annual report. A LTS provides a broad overview of a company's operations during the year through a letter written by its top leaders (e.g., the CEO or chairman). This important part of the annual report is normally located within the non-financial reporting and can be displayed stand-alone on the website or within the annual report. It allows the firm to discuss previous, current, and future performance (Bayerlein and Davidson, 2012). LTSs contain important and relevant information (Abrahamson and Amir, 1996). Yet, their nature is sometimes unique. Regulations, such as company laws or listing rules, do not decide LTS content (e.g., Abrahamson and Amir, 1996), allowing more flexibility regarding length and style. As such information is not audited, high variations in LTS quality are expected among firms. It can be used as an impression management tool. Therefore, an essential feature of an influential chairman's statement is its ease of understanding.

Historically, the chairman's letter to shareholders has been studied frequently (Still, 1972). Several studies have addressed the readability of LTS issued by chairmen (Bayerlein and Davidson, 2011; Clatworthy and Jones, 2001; Courtis, 1998; Fisher et al., 2019; Jones, 1988; Smith and Taffler, 1992) and CEOs (Barkemeyer et al., 2014; Hyland, 1998; Jones and Smith, 2014; Moreno and Casasola, 2016). However, many of these have overlooked the factors that drive underlying decisions to manipulate readability. For example, disclosure preparers' observable personality traits (e.g., narcissism) may influence such incentives as self-interest (Buchholz et al., 2018). Examining these factors would provide insights into user perceptions of the entity and the financial and non-financial considerations arising from such disclosure. (Craig and Amernic, 2011). Because managers tend to identify themselves with corporate financial success, the chairman's statement might be manipulated for impression management purposes (Clatworthy and Jones, 2006). Likewise, a study of 30 successful and 30 unsuccessful companies listed on NASDAQ OMX Stockholm was conducted by Pasko et al. (2020) to determine what textual features are found in CEO statements. They found that six out of seven results contradict claims made by impression management research (Pasko et al., 2020).

There are two other reasons for selecting the chairman's letter for the current study. Firstly, because it is the most read part of the annual reports (Clatworthy and Jones, 2003), investors often use it to make investment decisions (Courtis, 2004). Secondly, the letter from the chairman is the venue where top leadership sets out the company's aims and strategy for the future after it informs users what a phenomenal job it did over the past year. Moreover, it can be an excellent location to discover apologies or justifications for situations that arose during the year; thus, it could be a good source for detecting leaders' styles, including their impression management strategies. Legal constraints deficiency gives the managers considerable freedom to shape the content of this part of the narrative (Patelli and Pedrini, 2014).

Given the results in the literature documenting complex corporate narratives worldwide, Gibson and Schroeder (1994) suggest that irrespective of the country, users of English-language annual reports will struggle to comprehend narrative financial information. English language use in external reporting is found to decrease information asymmetry (Jeanjean et al., 2015). And highly readable foreign language reporting improves investors' willingness to undertake beneficial risks based on management accounting (Besuglov and Crasselt, 2021). Regarding non-English annual report narratives, it was found that those prepared in Spanish have improved reading ease over 20 years but are still ranked as difficult to read and positively associated with profitability (Moreno and Casasola, 2016). CEOs highlight positive information by making it more readable (Asay et al., 2018).

3.3.8. Previous Studies to Highlight Developing vs Developed Countries

The scholarship on readability concentrates on examining materials created in developed countries. The AME, for example, like many other developing regions, has not yet taken the necessary steps (e.g., regulations) to tackle the issue of reading difficulty. Similarly, a comparative study on LTS issued by CEOs listed on the New York Stock Exchange found that letters from Latin American-based firms have a more complex writing style (Conaway and Wardrope, 2010), and a longitudinal study covering the years 1962 through 2009 found that the chairman statements of a Malaysian shareholding company were difficult to read (Rahman, 2014). Thus, the issue of poor readability appears to be common in developing countries. On the other hand, Lundholm et al. (2014) found that the text readability of foreign companies listed on U.S. stock exchanges is generally more readable than their U.S. counterparts. Moreover, foreign companies with more readable texts are more likely to be geographically farther away from the U.S.

In the context of developing countries (in this case, Mauritius), three qualities of LTS have been evaluated, including the length of the sentences, the variety of sections, and the inclusion of supporting images or graphs, and no correlation was found between these attributes and firm profitability (Mahadeo, 2010). Hossain and Siddiquee (2008) found that most of the management reviews – i.e., the chairman's letter and directors' report of selected companies listed on the Dhaka Stock Exchange – in Bangladesh are more difficult to read using the FRE.

Thus, the current study argues that major discrepancies in UE roles in corporate disclosure clarity may exist due to differences between developing and developed countries (in this case, the AME). Furthermore, based on the UET model (Hambrick, 2007), many scholars discussed differences in disclosure and style choices based on manager discretion (e.g., Bamber et al., 2010). Therefore, we can argue that deciding on the level of communication complexity is based on the availability of guidelines.

It is argued by Guay et al. (2016) that a firm's informational environment has an impact on how information is communicated. For example, countries with low legal protection at the country level may disadvantage minority shareholders (La Porta et al., 2000), especially when ownership is concentrated (Shleifer and Vishny, 1997). The findings of La Porta et al. (2000) lend credence to the idea that investors' rights are more protected in common-law nations than in civil law. In addition, it has been noted that most English-speaking states essentially follow the common-law system, while non-English-speaking countries follow civil law systems (Lundholm et al., 2014).

Some cases from developed countries show how large firms can improve their corporate reporting transparency. For example, investors can be surveyed about their evaluation of the overall readability and clarity of financial statements. Examples include *Orange* imitative, whose improvements included setting up oversight committees to enhance transparency, and the feedback survey results showed that the readability notes to its 2013 financial statements had improved (Hoogervorst, 2017).

Theoretically, the idea that samples drawn from certain countries (or contexts) are more likely to produce results more supportive of UET than other countries has been well discussed and justified. For example, Hambrick (2007) argues that American CEOs have greater discretion than most developed countries. Highly diverse executives and firms fostered by entrepreneurial investors, strong social beliefs in individualism, and flexible institutional structures are reasons for creating great discretion in the US (Hambrick, 2007). Moreover, a few scholars have addressed the differences in CEOs' influence across countries or developing countries. For instance, Crossland and Hambrick (2007) argue that CEOs vary in how much effect they have on the company's actions and performance because they have varying degrees of action freedom. They found strong indications of a greater effect of CEOs on firm performance in the USA than in German or Japanese companies (Crossland and Hambrick, 2007).

In summary, the differences between developing and developed countries regarding readability can be due to legal and regulatory factors and a lack of awareness of the consequences. Additional two points are cultural differences and the use of the English language, which are discussed in the following two sub-sections.

3.3.8.1. Studies in Non-English Speaking and Emerging Economies

Early readability studies were mostly undertaken in English-speaking developed nations) (El-Sayed et al., 2020) such as the UK, Canada, Australia, and the USA. Readability formulae are based on English, which may explain this. Since most disclosures in these studies are written in English, and the primary audience is native speakers, the generalisability of such studies can be problematic. Consequently, researchers advocate for more studies on narratives in languages other than English (Li, 2010). Other languages have been studied, such as French, Portuguese (da-Silva Oliveira et al., 2019), German, Swedish, and Chinese (François, 2015).

Importantly, many studies have been carried out on corporate reports prepared in English in non-English speaking countries. This highlights the importance of English as a universal language in business. This may be connected with IFRS; however, it was found by Jeanjean et al. (2015) that the benefits of using English for external reporting do not depend on adopting IFRS in preparing FS. In contrast, some studies have attempted to examine the phenomenon of text complexity in other countries, including developing economies such as Bangladesh, Malaysia, Iran and Oman. Most of these have documented that the level of readability is low.

Some researchers have investigated non-native English language use in CR. Courtis (1995) study of the English versions of Hong Kong business reports and raises compelling implications for utilizing such reports in non-English-speaking nations. Jeanjean et al. (2010) found that 50% of 3,994 firms from 27 non-English speaking countries issued annual reports in English in 2003. They further discussed the benefits of doing that, mentioning it is likely to reduce information asymmetry, increase the participation of foreign investors, and improve international organizational legitimacy (Jeanjean et al., 2010). The concerns about text complexity are even more pertinent because English is frequently used as a global corporate language. Thus, local firms that want to be listed in English-speaking countries' markets are expected to attract more finance if their readability is higher. For example, Lundholm et al. (2014) found that foreign companies listed on U.S. stock exchanges are likely to attract greater U.S. institutional investment when their disclosures are considerably more readable.

Concerning AME, a few readability studies in the Arabic language focused on corporate reporting. Most readability studies started on school textbooks and news articles. This is understandable as junior students may enjoy reading texts with high readability. A recent study by Cavalli-Sforza et al. (2018) has reviewed and evaluated the current state of progress in Arabic readability assessment based on Arabic adult readers in academic and non-academic settings. They found that Arabic readability evaluation has followed trends in other languages, particularly English, but has experienced obstacles owing to its specificities and the relative shortage of corpora and methods compared to languages with richer resources (Cavalli-Sforza et al., 2018). Previous studies have covered corporate reporting readability in the AME, evidencing text complexity. These focus on reports in English, spreading in the Arab world and AME in particular[31]. Prior literature documented the relevance of text complexity and its adverse consequences. For instance, Dalwai et al. (2021a) found that higher equity capital cost is associated with greater textual complexity in Oman. In Egypt, results show that the reports for EGX100 companies are complex and difficult to read (Ezat, 2019). On a wider scope, the findings of Hassan et al. (2021) on the Gulf Cooperation Council (GCC) countries' banks indicate reading difficulty is negatively associated with a negative tone and a bank's financial risk, which suggests that managers write simple language to explain the reasons for high risks (Hassan et al., 2021). This may initially refute the obfuscation hypothesis. Lastly, a few papers focused on common Islamic banks in the AME. For example, Ahmed et al. (2013) found their mission

[31] French continues to be commonly spoken in many arab countries such as Syria, Morocco, Algeria, Tunisia, and Lebanon as a result of France's colonial history.

statements difficult to read and grasp the meaning. Hassan et al. (2018) found that the readability of annual reports in Qatar is associated with more profitability and lower agency costs indicating obfuscation.

Studying English-text readability in non-English-speaking nations is recommended by Xu et al. (2018), stressing the need to understand whether similar results to those in the USA can be obtained in different cultural settings. This study contributes to the literature by responding responds to such calls and also advances the generalizability of the UET as it extends executive dynamics to AME firms.

3.3.8.2. Culture and Readability

Culture is defined as a shared cognitive framework that defines the characteristics of a certain social group and differentiates it from others (Hofstede et al., 2010). House et al. (2004) consider that the degree of power, prestige, and privilege accorded to leaders varies significantly between cultures. While some cultures are known for their severe boundaries determining what leaders can and cannot do, others give considerable power and high status. Even though culture influences the behaviour of cultural groups, individuals within each culture can respond differently from others. Kumar (2014) explained that when power distance is considerable, managers should suppress facts and information to maintain power inequities, resulting in increased secrecy. (Gray, 1988)theory explains how culture affects the development of businesses and their institutions, including accounting systems. Gray's model defines four accounting values linked to Hofstede's societal values. These accounting values are professionalism, uniformity, Conservatism, and secrecy. Transparency is explained by comparing it to secrecy (Gray, 1988)

Conaway and Wardrope (2010) argued that corporate writers affect public opinion and attitudes, especially among prospective investors, to promote or oppose organisational activities. The UET's assumptions are influenced by culture (Crossland and Hambrick, 2007). In other words, managers respond to the cultural impact differently. Empirical research supported this view. For instance, a study on Asian companies found that companies whose domestic culture is more secretive publish less readable financial information (Kumar, 2014).

Lastly, the readability of LTS is argued to be associated with organisational ethical climates (Wagstaff et al., 2021). Firms with higher levels of care in their organisational ethical cultures are reported to tend to avoid obfuscating complex text and focus instead on communicating effectively with their stakeholders (Wagstaff et al., 2021). Moreover, the empirical results of Noh (2021) suggested that a company's annual report's readability, covering 1994-2019, is positively influenced by the US-state degree of cultural tightness in which it is placed, and litigation risk strengthens this association. In a tight community, there is a higher need to lessen ambiguity since people seek knowledge to alleviate their discomfort in uncertain circumstances (Noh, 2021). The cultures of the selected AME countries are similar; they share similar values and religions which increases the homogeneity and isolates many unobservable effects.

3.4. Discussion and Research Gaps

The review of prior studies has uncovered the high complexity of narrative disclosures and their impact on firms' performance and other important areas, such as agency costs. The review identified different lines of research on readability ranging from descriptive, determinants, and consequences of readability. However, the fundamental question of the entire prior scholarship on readability is how difficult annual reports are to read (Linsley and Lawrence, 2007).

Most studies generally document the continuously decreasing readability of annual reports and their sections worldwide. Therefore, another line of research has emerged with more in-depth aims, such as examining relevant aspects of readability and covering its determinants. In this domain, a large amount of previous research focused on performance and firm characteristics as determinants of readability after classifying it into normal or an impression management tool (i.e., obfuscation[32]). Another line of research has focused on the consequences of text complexity, documenting the increasing cost of debt and audit fees, for example.

Moreover, the literature review has voiced many differences between developing and developed countries concerning narrative reporting. These differences are due to factors ranging from country-level aspects (legal, cultural, and economic) to firm-level (e.g., size, profitability) and managerial-level factors. Several studies have identified factors influencing readability in both developed and developing countries. However, numerous questions remained unanswered regarding their impact on DCR, particularly readability.

For instance, there is a lack of regulations and guidelines for improving narrative reporting quality and textual features in the AME. According to UET, the lack of regulations increases the influence of individual styles and interpretations of top management when making decisions (Hambrick, 2007). Therefore, such differences allow the current study to suggest a stronger role of UET in exploring readability determinants (Firtel, 1998). UET literature has studied UE impacts on different areas but overlooked top leaders' increased influence on firms' performance and major decisions.

Moreover, it is noticed that the scope of the readability studies is not well diverse. Although many determinants of corporate narratives' readability have been documented in the literature,

[32] Certain conditions were used to justify such classification such as loss period or declining profit.

these are based on studies using neo-classical theories. These theories assumed rational opportunistic behaviour of managers to obfuscate users during poor performance periods. These ignored the incremental impact of managers' bounded rationality when they make decisions about communicating information with the audience. A few studies focused on top management teams' characteristics (e.g., Xu et al., 2018), yet little is known about other characteristics. For this purpose, the expanded theoretical perspective aims to explain more variations in the readability of narrative reporting. Several researchers have attributed the lack of empirical research to the difficulty in gaining access to top and senior management teams. This can be solved by using demographic characteristics as proxies for cognitive differences and preferences of UE. The current research aims to fill in the gap in our knowledge since the factors found to be associated with readability in literature are not yet comprehensive. Moreover, most prior studies focused on a single country; a few multi-national studies on readability are available. The UET has addressed the ability of different cultures to alter managers' level of discretion regarding narrative reading ease (Hambrick, 2007).

Discretion can be caused by bounded rationality in writing by making inaccurate assumptions about the audience, possibly worsening the reading ease of corporate reports. The FASB recognised that when it claimed that reports are mostly intended for those with economic and business knowledge. It can be argued that this negatively impacts the understanding of corporate reporting that can be achieved by stakeholders other than investors. It can be difficult to know the potential investors, so they may be affected. The level of understanding of reported information should arguably be opened to a wider audience. As the FASB assert, the information should be understandable to individuals who understand economic and business activity and are eager to grasp it (see: Ewer, 2007). The neglected narrative reporting quality could have wider consequences given the wider audience of website users.

On the other hand, Efretuei et al. (2021) found that implementing IFRS has elevated corporate reporting complexity but not necessarily their obfuscation. Readability is often used to describe understandability; the latter is essential to decision-useful financial information and is included in financial reporting conceptual frameworks. Financial report users need to grasp the information and, thus, be transparent (Barth and Schipper, 2008). Readability supports understandability: financial disclosures must be easy to read and understand for the reader's desired message (Smith and Taffler, 1992). Consistent with that, readability is one quality in understandability; the IASB (2005) stated that aggregating, categorizing, describing, and providing information clearly and simply assists in its comprehension. A literature review by Jones and Shoemaker (1994) concluded that factors affecting the textual complexity of chairs' statements, notes, and MD&As are inconclusive and contradictory.

In summary, corporate narratives' readability has rarely been approached from the perspective of UET. Therefore, this research uses UET to view readability determinants with wider groups of variables. The rationale for studying upper echelons' characteristics is to contribute to our knowledge about these known factors associated with the readability of the digital LTS. One of the main motivations for the current research is that the results of readability determinants are inconclusive (Jones and Shoemaker, 1994). Moreover, what makes the current investigation relevant is its emphasis on those variables with limited literature, such as executive age (Walter and Scheibe, 2013) and educational level.

3.5. Research Objectives and Questions (RQ 4 and 5)

This study examines UE's influence on DCR, with this part focusing on its readability and aiming to achieve the research objective of *investigating the association between the chairman's characteristics and the online chairman's LTS readability by companies listed in the AME.*

Therefore, this part of the study attempt to answer the following research questions:

RQ4: What are the extent and patterns of the readability *(reading ease and word count)* of LTS accompanying digital reporting?

RQ5: What is the relationship between chairman characteristics (age, tenure, education, overconfidence) and the readability of LTS accompanied within digital reporting?

Four research hypotheses arise from the fifth research question. This study can also answer other questions on how the dimensions of readability of LTS vary across different countries, industries, and levels of chairperson characteristics.

3.6. Research Importance, Motivation and Anticipated Contribution

The study responds to the recommendations for examining managers' influence on disclosure. For example, the calls from Davis and Tama‐Sweet (2012) that managers' disclosure strategies across different venues should be examined, including the language used in narrative disclosures. Investigating corporate reporting readability is pertinent to accounting research. The current research focuses on the UET's role in explaining variation in the reading complexity of web-based LTS in the AME context. The research is deemed important based on the following points. First, this research builds on the extant body of literature that emphasises the necessity of continued inquiry into language choice in corporate annual reports due to its impact on reputation and accountability (Craig and Brennan, 2012). As external corporate reporting became increasingly complex, textual disclosures became increasingly significant (Loughran and McDonald, 2016, Habib and Hasan, 2020).

Second, the second part studies the upper echelons theory's ability to explain some noticeable variations in corporate reporting practices across listed companies in seven AME countries.

Such context allows more elaboration since the readability levels vary due to internal factors, national-level differences, and the proposed decision-makers' influence. Third, the literature documented the relevance of text complexity and its adverse consequences. For instance, higher equity capital cost is associated with greater textual complexity (Rjiba et al., 2021, Dalwai et al., 2021a). Such issues deepen the information asymmetry since managers have real data compared to outsiders, especially unprofessional investors.

Fourth, with the growth of the Internet, the volume of written corporate information presented has grown exponentially. Therefore, the upright match between reading skills (perceived as low) and reading ease is even more essential in contemporary society than before (François, 2015). Fifth, employing a UET perspective to understand how managers are biased regarding communication clarity is essential to provide executives with relevant practical insights. Such insights help to prevail over the prejudices associated with their prior views and dispositions on narrative reporting quality. Sixth, the study is motivated by and responds to the demands of scholars (e.g., Hambrick, 2007) to address the inadequate research exertions to research the inner makeup of company executives. The study then incorporates demographic and psychological variables to examine the readability of corporate reporting. Seventh, the UET's line of investigation embraces a considerable potential for examining how and why key leaders conduct explicit judgments and actions. This is despite the consequences of such actions being mainly adverse to the company and having no or limited benefits to the leaders themselves (Gamache et al., 2015).

Eighth, scholars stressed that AME desperately needs more research (e.g., Zahra, 2011), especially from a UET perspective, to investigate how capable and innovative the leadership are. It has been stated that most empirical studies of companies' UEs have been based on American firms, especially during the early decades. However, a growing body of studies has been conducted in different contexts. Thus, this study draws on the calls for more research outside the US. Ninth, studying the readability of corporate disclosures is perceived as necessary. Gu and Li (2007) found that stock price reactions are sensitive to disclosures. Communication needs to be seen as a purposeful action, and one of the corporation's key communication objectives is image maintenance (Benoit, 1995). Public relations departments or businesses that create or rebrand companies support this. Hooghiemstra (2010) stated that biased disclosures of firms' performance are considered impression management in accounting and organisational literature.

Studying this issue is motivated by perceived differences between countries. In contrast to developed nations, the lack of responsiveness to the problem of disclosure clarity in developing countries and AME particularly necessitates more study on the role of management in such issues. Given the lack of publicity or thoughtful research on the role of managers in business failures in the AME (Omet, 2005), this research aims to depict the characteristics of good leaders who are more accountable. Complex narratives can erroneously be used as indicative of bad management. Utilising the UET perspective is useful to management and accounting research in highlighting the relationship between different characteristics of UE and firms' strategies and outcomes. Understanding such relationships is valuable and offers real-world implications for guiding organisations' appointment of executives and boards. In other words, focusing on leaders who hold characteristics associated with higher-quality narrative reporting promotes shareholders' interests.

Lastly, most of the prior readability studies have focused on developed economies. Therefore, the current research contributes to the existing literature by investigating the issue in the context of emerging economies. Studying more than one country allows for valuable comparisons.

These countries need to expand their capital markets, and oil-rich countries need to strengthen alternative sources of income.

There is a lack of theoretical and empirical research on the quality of narratives presented on the corporate website, such as their linguistic features. The uniqueness of LTS is not well discussed in the literature, especially with its presentation on companies websites. Moreover, there is a lack of studies that examined corporate reporting released in the English language on non-English speaking countries, especially in the AME (e.g., Hassan et al., 2018, Jeanjean et al., 2015).

3.6.1. Narrative Reporting on Corporate Websites

Essentially, concise text is desirable for traditional hardcopy and web content, which is increasing in this modern age. Corporate websites provide real-time stakeholder engagement (Florio et al., 2022); thus, information that can be promptly published online must have high clarity. A study by Morkes and Nielsen (2009) that measured the effect of improved web writing found that concise text has a 58% usability improvement (relative to the control condition text size). Moreover, Cheung and Lau (2016) did not find evidence that length comes along with more complex narratives. Website content is unique when studying its readability in the following ways:

First, online narratives serve as a valuable resource for those who may not have had ready access to a printed copy of the annual report with which to understand the organisation in its entirety (Rowbottom and Lymer, 2010). The information available on websites differs from hardcopy information because it has an unlimited audience. Such readers may be unknown to the firm; thus, it should be cautious (by issuing readable information) when evaluating their reading abilities. Second, it concerns how, on the other hand, digital narratives can result in information overload. For example, problems stakeholders[33] may face when using the DCR were highlighted by ICAEW (2004), such as being misled by missing part of the information required to gain a comprehensive picture of the firm. Accordingly, regulators have stressed the issue of the lengths of corporate narratives as a sign of a lack of clarity.

Third, the website is open access, meaning the firm has no control over who can obtain the information provided. Correspondingly, any deliberate obfuscation risks unfavourable publicity that may damage the management's reputation by the negative signal perceived by users and the market (Courtis, 2004b). Lastly, though there is little research on this, digital narratives may function as legitimising tools during scandals. If that is the case, stakeholders need to be educated on corporations' tactics in such extreme situations. For example, after the 'Diesel-gate' event, press releases, tweets, annual reports, and sustainability reports were examined for legitimation. In these, Volkswagen sought to minimise the controversy and conversation around Diesel-gate and reassure shareholders, while Daimler and BMW demonstrated that they had learned from Volkswagen's disaster (Florio et al., 2022).

The issues of readability and the DCR channel seem to be interrelated. For example, the FRC (2011) identified improving the disclosures and cutting the clutter by partly moving explanatory information onto a website.[34] Similarly, IIRC (2011) stated that corporate leaders who are in charge of the governance of the company must exercise judgment in determining which information is material and should be included in the Integrated Report, determining whether a certain type of information should be included in the report on the organisation's website. In

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34 FRC assured that they are “aware that currently, where required by law or IFRS, explanatory information would still have to be provided and included in an appendix within the annual report, rather than separately on a website. While this isn’t ideal, as it requires preparers to continue to produce the information year on year within the annual report, it lessens the clutter effect for users.”. FCR (2009, p.12)

summary, the web increases the chances of confusing readers intentionally or unintentionally, and the audience base is unlimited.

3.7. Theoretical Framework and Hypotheses Development

This study examines the relationship between the chairman’s characteristics and LTS readability. This section starts by discussing the theories used in previous research on narrative reporting readability. Those include agency and signalling and stakeholders theories. Then the Upper Echelons Theory (UET) is then discussed as a complement to these theories in examining readability determinants. Such discussion is strengthened by illustrating the concepts of readability and narratives in an emerging context, particularly the AME. Finally, hypotheses development is presented in the last section.

The analysis of data collected based on different theories (as interest variables and control variables) is consistent with the ideas of Eisenhardt (1989) on 'multiple theories' usefulness to research. In particular, UET is a complementary theory along with agency theory since the latter presents "a partial view of the world that, although it is valid, also ignores a good bit of the complexity of organisations" (Eisenhardt, 1989, p.71).

As the study focuses on the determinants of readability, two main types of determinants can be found. The first group is higher-level characteristics, such as firm-level factors, and the second is ‘internal’ or managerial factors. The latter group of factors can be suggested based on UET, which states that top management characteristics partially predict strategic choices and firms’ outcomes (Hambrick and Mason, 1984).

3.7.1. Theories Used in Previous Readability Research

The theories used in previous studies are discussed to outline the theoretical framework that matches the current study's objectives. Such theories address potential reasons behind narrative reporting complexity. In general, it is evident from prior research that management can manipulate textual characters to deter investors from information extraction (Li, 2008). One way of assessing whether the narrative's intended messages can effectively reach the audience is to compute a measure of the readability. The theories used in previous studies of readability are embedded in the following discussion.

7.6.1.1. Agency and Signalling Theories

The Agency Theory and the Signaling Theory examine the disclosure strategy of a firm in terms of its economic effects on the company’s success (Watts and Zimmerman, 1990). Agency theory is essential in explaining the association between CG and disclosure practices to outline suitable mechanisms to enhance corporate disclosures. It is based on the contract between the principal and the other separated party, the agent. Such separation between ownership and management creates an agency problem based on this contract. The contradiction between ownership and management refers to the fact that management is motivated to maximise their interests instead interests of shareholders (Schleicher and Walker, 2010). As a result, managers normally use different mechanisms to mitigate this problem, such as releasing more disclosures. This permits investors to assess managers’ performance and behaviour and reduce information asymmetry, which is one of the agency costs (Arena et al., 2015).

The agency theory has been used by many researchers as a lens to deal with readability and other features. This theory suggests a conflicting relationship between managers and shareholders. Managers benefit from the information the investors do not have access to (i.e., asymmetry). According to Jensen and Meckling (1976), this information asymmetry may result in adverse selection or moral hazard problems. Concerning corporate disclosure, this suggests that managers may mistreat the information asymmetry and provide misrepresented communication to the firm's resource providers about its accomplishments (i.e., impression management). Under agency theory, impression management involves managers opportunistically selecting presentations and content that are beneficial to them, causing a reporting bias (Merkl-Davies and Brennan, 2007). Managers apply this disclosure strategy deliberately and consciously (Bowen et al., 2005). Several factors affecting narrative reporting complexity have been suggested under this theory, such as firm size, firm age, volatility of operations and complexity of operations.

Signalling Theory has a similar perspective to agency theory with some differences. In general, to lessen informational asymmetry, managers aim to send signals to investors (Morris, 1987). Rutherford (2003) argued that businesses with strong performance would communicate their strength when they want to address information asymmetry. They do so by releasing clearer narratives, but if the firm is underperforming, they tend to use less readable reports to prevent users from grasping the bad news. Signalling theory has been employed by many researchers, such as Abu-Bakar and Ameer (2011), to argue that executives use narratives' readability to send signals to shareholders based on their performance. Specifically, firms with good outcomes tend to express the strength of their performance by constructing their annual reports more simpler. In contrast, companies with unfortunate outcomes may issue complex reports to obfuscate negative information (Rutherford, 2003). Moreover, some scholars used multiple theories; Smith and Taffler (2000) used agency and signalling theories.

7.6.1.2. Obfuscation Hypothesis

The signalling theory premise was modified to argue that releasing clear/readable disclosures is the way for those companies to send signals about superior performance (Smith and Taffler, 1992). The term obfuscation hypothesis was used by Courtis (1998) based on the association between obscuring narrative messages and poor financial performance. The obfuscation model posits that leaders have motivations to obscure information when business performance is weak because the market may postpone reactions incorporating these complex disclosures (Bloomfield, 2002).

Such reasoning is based on an underlying premise called the ‘incomplete revelation hypothesis’ that is an alternative to the Efficient Markets Hypothesis. It is, therefore, likely that managers may deliberately try to conceal unfavourable information by using less clear narratives (i.e., to keep certain information uncoverable). As a result, such ‘difficult to process’ material could be less accurately represented in market prices; thus, it is kept protected (Grossman and Stiglitz, 1980, Bloomfield, 2002).

Based on this theory, researchers suggested there is a negative relationship between a company's current performance and the amount of sophistication of its annual report. Asay et al. (2018) found that CEOs highlight positive information by making it more readable. Some researchers show that lower profitability is associated with less readability which supports the obfuscation hypothesis Smith and Taffler (1992), (Subramanian et al., 1993). The assumption is that businesses actively communicate positive news while suppressing, maybe intentionally, messages conveying negative news.

Conversely, many scholarly works, such as Rutherford (2003), did not empirically support the obfuscation hypothesis. Similarly, unsupportive evidence for the obfuscation intention was found by Smith et al. (2006a) when they examined the chairman's LTS and corporate performance. Moreover, it is argued that LTS are less necessarily complex because preparers are not required to adhere to or comply with any regulations that may be complex themselves.

Some researchers have declared two forms of readability management. First, reading ease manipulation is when companies use readability opportunistically to obfuscate failures and emphasise successes (obfuscation hypothesis). Second, reading ease support is when they accommodate the reading strategies of target readers so that information value-relevance would be enhanced (called incremental information hypothesis) (Merkl-Davies and Brennan, 2007).

The inclusiveness among studies concerning obfuscation was addressed (Rutherford, 2003), suggesting different measures of the actual complexity. Therefore, the current study uses a more recent proxy for the complexity of operations based on the work of Rutherford (2003) and Xu et al. (2018). They used total assets as an indicator of size and complexity.

Moreover, scholars believe that LTS provide a useful source of UE values, beliefs, and insights (examples are: Short and Palmer, 2003, Daly et al., 2004). Kabanoff et al. (1995) stated that "the possibility that not everyone in an organization shares given values does not, in our view, preclude us from calling them organizational values, since senior managers have both the right and responsibility to express a set of values on behalf of their organization" (p, 1099).

On the other hand, a few researchers argue against obfuscation as the main reason behind text complexity. Instead, they alternatively argue that it is incremental information. Advocates of the incremental information explanation deny the existence of impression management (Baginski et al., 2004). Discretionary disclosure strategies, such as the disclosure of Pro-forma earnings or the adoption of a positive tone in corporate narrative documents, are thus interpreted as useful incremental information rather than impression management.

7.6.1.3. Stakeholders Theory

Stakeholder Theory emphasises the linked interactions between a firm and its customers, suppliers, workers, investors, and society, which implies that a corporation should provide value for all these stakeholders, not just shareholders (Freeman, 2010). Accordingly, firms tend to communicate diverse aspects of their CSR accomplishments to build trusting relationships with the public via annual or sustainability reports(Wang et al., 2018).

Stakeholder theory announces a paradigm shift in strategic management and corporate transparency policies centred on studying existing interactions between organisations and stakeholders (Wachira et al., 2016). From this perspective, scholars argue that larger corporations may be committed to and use more readable integrated reporting to fulfil or alleviate stakeholder pressures and prevent government intrusion in executive leadership (Raimo et al., 2022).

Accordingly, the readability studies have focused on disclosures such as CSR within the integrated reports (e.g., Du Toit, 2017, Velte, 2018, Stone and Lodhia, 2019). On the other hand, the readability of corporate social responsibility (CSR) or sustainability reports has been studied (Abu-Bakar and Ameer, 2011, Wang et al., 2018, Adhariani and Du Toit, 2020, Smeuninx et al., 2020).

Studies revealed a positive association between CSR performance and document readability, suggesting that organisations with greater CSR performance have more readable CSR reports (stronger with social performance than environmental performance) (Wang et al., 2018).

Lastly, this theory overlaps with the legitimacy theory. The latter suggests that a firm issue readable disclosure legitimises its existence and actions to society (Prasad et al., 2016). These two theories are stronger in examining CSR disclosures than other types of information. Thus are not useful to the current research aims and objectives.

Given the different theories guiding readability research, Raimo et al. (2022) argued that these investigations should take varying theoretical positions and reveal that a leading theory is needed to explain more variations in accounting narrative readability. The previously mentioned theories have relied on the neo-classical

Practically, research based on neo-classical theories has assumed that similar choices are expected via proper 'monitoring, and contractual incentives' since agents studied are 'representative' or homogeneous and can be induced to these decisions. However, in addition to regulators overlooking the readability, CG compliance is weak in the AME (EBRD, 2016). Together with the lack of calculable solutions for adequate clarity, this supports the relevance of UET in examining the readability phenomena in this region.

Therefore, the current study argues for another theory that can provide more explanations for managers' biases via their perceptions about clarity and the ability of UE's characteristics to partially explain variations in readability level. Moreover, the section in corporate reporting that is studied influences the theory that guides the investigation of that particular section. The type of narrative section may affect the complexity's intention or motivation. Courtis (2004b) argued that because different individuals are responsible for writing various parts of business reports, obfuscation is inevitable.

3.7.2. Proposed Research Framework: Upper Echelons Theory

The previous theories rely on the typical view that executives behave rationally and orderly according to their economic circumstances (i.e., homogenous) (Davis et al., 2015). In contrast, the Upper Echelons Theory (UET) assumes immense influence of executives and key players on their firms (Hambrick, 2007), more than what is commonly believed under the previous theories. Moreover, unlike what the agency theory does imply, managers are less rationally responsive to the company's governing mechanisms and contractual inducements (Bamber et al., 2010). Finally, bounded rationality is expected to be more profound regarding the chairman's LTS as they are normally busy; the time to know the audience and then decide on a suitable readability level can be limited and shorter.

A main assumption of UET is that the rightness of managers' decisions and actions is sometimes bounded by limited information about the subject matter. Basically, the theory focuses more on non-economic manager-specific influences and preferences and less on response to governance mechanisms (Bamber et al., 2010). Cognitive and temporal limitations make managers less motivated to realise all the essential information to make optimal choices or judgments. Rendering this assumption on the decision-making processes around writing complexity, managers decide how they communicate via LTS and seek a 'satisfactory' level of clarity and style instead of looking for the best level.

The following points support UET's ability to investigate readability LTS in the AME. First, in the AME, like many developing contexts, there is not enough debate concerning the financial reporting quality (at least text complexity) compared to the developed economies[35], at least in terms of research projects by regulators or private initiatives, to address the complexity of narratives. Second, boards' chairs are argued to be boundedly rational decision-makers (i.e., narrative issuers) who would rely on their understanding of readability, LTS' complexity level, or importance. Third, UEs can also be bounded by the limited knowledge about actual audience preferences and abilities.[36] Fourth, discretion could be upsurged due to the lack of objections from stakeholders (lack of alternatives) and the cultural values in society (Hambrick, 2007).

35 One example from the UK is "Louder than Words: Principles and actions for making corporate reports less complex and more relevant" project (FRC, 2009) and the private sector imitative called "Plain English Campaign".

Lastly, the chairman can be busier than others which is one suggested factor that increases bounded rationality (Gigerenzer, 2010).

Deviating from the conventional view that complexity is used to obfuscate readers by intention (Bushee et al., 2018), it is not always true that complexity is intentional. Rather, companies may neglect its importance unintentionally. However, in both situations, investors are misled and expected to respond less properly when offered less comprehensible disclosures (Lawrence, 2013, Tan et al., 2015). Thus, the intentions behind complexity do not eliminate the need to study its determinants.

Applying these to readability in the AME, we can confer two things: a lack of awareness of readability or clarity and the high-power distance culture. First, there is a lack of guidance on the clarity of narrative reporting in the region. Regulations in the AME are not yet addressing the readability/clarity issue like in the west.

A third reason is that shareholders appear to lack awareness regarding narrative importance in the context of developing countries, such as the AME area. Shareholders are then expected to undervalue the importance of corporate narrative clarity. The lack of research projects, regulators and listing authorities' intervention concerning text complexity increases the level of managerial discretion (issuers of narratives). This is again contrasted with the guidelines in developed economies. These include knowing the 'audience', redrafting and reviewing narratives and using readability formulas in the US (SEC, 1998) and partially in the UK (FRC, 2015b).

Leaders worldwide may underestimate the need for high clarity of the LTS they issue. Nevertheless, In developed countries, the awareness of the effect of longer and less readable financial reports has been elevated by both experts (e.g., Cox, 2007, Radin, 2007), regulators (e.g., SEC, 1998, SEC, 2013), and prominent investors such as Warren Buffett (Blanco and Dhole, 2017) highlighting the impact on investors' understanding. Sometimes, bounded rationality can be analysed as a decision-making method. Bounded rationality affects the decision-making stages of identifying objectives (by overlooking text features such as clarity), finding criteria (such as plain language or similar firms' styles) and identifying the alternatives (no objections or requirements by the audience based on UET(2007)). Accordingly, AME corporate leaders' choices on clear corporate reporting are more likely to neglect reading ease than developed countries' leaders.

In complex, ambiguous situations plagued by multiple and often incompatible goals, managers operate within the bounds of rationality. Within these bounds, their choices can be influenced by their idiosyncratic experiences and values (Hambrick and Mason 1984; Finkelstein and Hambrick 1996; Hambrick 2007). One logic behind the link between the chairman's characteristics and producing more readable corporate narratives can be their bounded rationality when deciding the writing style. This concept means that decision-makers aim to satisfice rather than optimise a decision. Reasons could refer to incomplete information (e.g., uncertainty) to guide a perfect decision. If there is uncertainty about the right choice, leaders are highly likely to rely on their interpretation of the matter, especially when time is limited (Hambrick, 2007).

Another cause of bounded rationality and considerable discretion is uncertainty about the costs or reactions after producing complex reporting. Similarly, some managers lack knowledge about the benefit of making narratives more readable narrative. Managers decide whether this could be a problem or a matter of concern, given that the public will read the letter as long as it is on the website.

The grounds of UET can be restated, applying them to the readability of LTS as follows: Leaders' discretion occurs when constraints or controls are deficient. In this case, given the nature of this narrative, the letter author may have little influence over what to include (presumably, those could be regulated or institutionalized). In contrast, they have great discretion on ‘how’ to disclose the information (e.g., reading ease), especially in developing countries. Second, when there is significant uncertainty between means and goals, even if managers act ethically and seek the high-quality LTS delivered to the audience as their moral goal, they may still use ineffective means to do it. Third, discretion originates from the surrounding settings, the organisation, and the executive. In our case, the context of the AME is relevant to this as countries show the importance of narrative clarity and, at the same time, the high use of multiple languages in corporate reporting. The organisation itself may be different from those in other industries. There are many suggested factors associated with text complexity. From the UET’s perspective, one is the UE’s characteristics; the chairman's traits can influence how chairpersons write LTS. Variations in LTS’ readability can be based on either negligence or intentions to manipulate.

Support for the UET's relevance to readability can be found in analyzing Hambrick (2007) model, which points out that discretion can be originated from weak governance and lack of objection from others (e.g., stakeholders). So, LTS writers’ willingness to be open to risk/criticism may be different and decided upon based on their interpretations. Discretion is an underlying driver. Therefore, based on the above point combined, the ways a chairman writes his letter are considerably influenced by their ‘discretion.’ Recent scholarships have associated financial report quality with managers' characteristics, including management competency (Bamber et al., 2010; Ge et al., 2011; Hasan, 2017).

Accordingly, the Upper Echelons’ perspective suggests that the several chairman's traits could influence how chairpersons write their letters in annual reports. These are observable characteristics such as age, tenure, and education. In essence, the importance of text complexity denotes low-quality CR, which is likely to be associated with business failures. Prior research on worldwide business failures discussed managerial misconduct when elites' characteristics were key in such failures. For example, the narcissism of Enron’s top management is well documented in the literature (Amernic et al., 2007). Therefore, some unobservable characteristics could lead to improper decisions or increase the possibilities of business failures and thus be studied under the UET. Finally, while studies on the effects of poor readability are essential for the attention of regulators, studies based on UET can also help investors and regulators raise awareness about management responsibilities.

3.7.3. Justifying the Study of LTS

Previous researchers have studied the readability of narrative reporting using the entire annual report document or via specific parts such as the chairman’s LTS (e.g., Clatworthy and Jones, 2003). Most countries in the AME now require companies to include LTS. For example, Jordan Securities Commission (JSC) started to mandate the issuance of the chairman’s statement in 2005. When LTS are prepared, they may go through a process as explained in the figure below (Figure 3.1). The final stage involves expectations such as proofreading (Gupta, 2022) and revision (FRC, 2015).

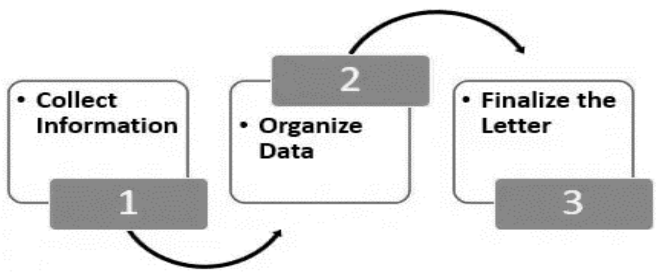

Figure 3.1 How to write a shareholder letter? Source: (Gupta, 2022)

The selected narrative section for this study is the chairman's LTS. He is responsible for the accuracy of the reported information and the clarity of writing. The suggested reasons or justifications for examining disclosure readability through LTS that allow for achieving the designated research objectives are summarised as follows:

First, the LTS is a major part of today’s annual reports. Historically, it is a key indicator of financial performance (Smith and Taffler, 1995). In addition, Sonnier (2008) suggested that letters to shareholders are subject to strong scrutiny by financial analysts, shareholders, regulators and journalists because they deliver a standard overview of the firms’ activities and performance, which assist investors in distinguishing financially healthy companies from others. Moreover, a growing body of literature emerged recently arguing that LTS is a tool for managing readers' impressions.

Second, the top management team is an emerging research field. Researchers broadly define these teams by including the company's CEO, chairman and other upper echelons (Hambrick and Mason, 1984, Ferrier, 2001, Pitcher and Smith, 2001). The current study narrows the focus on the chairman instead of TMT because the chairman influences such a narrative. First, unlike the entire annual report, chairpersons' LTS are written and signed by the issuers themselves (chairs). They normally sign the LTS, similar to what auditors and CEOs do, and bear the responsibility for them. In other words, the chairman is the core source of individual-level influence on the readability level of the LTS issued under their name rather than the entire TMT. Those are less likely to be involved in its construction, especially in AME (high power distance). The chairman is the top essential management of companies (Firth et al., 2006). The chairman represents the board and thus should act accordingly. He promotes corporate governance and shareholder interests. He is well-paid and can influence significant choices.

Third, the chairman's letter is characterised as a storytelling narrative (Beattie, 2000); thus, it has a unique style. Moreover, according to Hambrick (2007), there is no logic in using the entire TMT characteristics if they do not participate in the judgment or decision (i.e., writing LTS). Therefore, the chairman's characteristics make organizational outcomes and actions significantly more predictable, given the above reasons. Relatedly, Courtis (2004b) argued that corporate reports might be complicated if many individuals are responsible for writing various parts within the same report.

Fourth, LTS is the most-read section in the annual report (Courtis, 1998). Recently, shareholders have been interested in gaining an overview of a company and its performance by reading the LTS rather than simply viewing the financial statement, as LTS is positioned before the financial statements (Hyland, 2018). Therefore, it is an important part of narrative reporting.

Fifth, the chairman’s LTS is an important narrative and includes important information. Strategy reporting, a forward-looking critical type of annual reporting, is likely to appear in LTS importance. In addition, it is sometimes a source of CSR information in developing countries (Azim et al., 2009).

Sixth, its length represents an appropriate size to be studied. It contains prose long enough for formula-based readability Courtis (1998). It includes less numerical information than CEO letters. These two points allow it to be easily and reliably measured without distorting the content. Prior studies have methodologically assumed that the calculated reading ease score of a section or part of it is representative in some cases of the entire report (Courtis, 1998). However, the underlying focus of this study is to examine the leaders' level characteristics rather than firm-level characteristics.

Seventh, LTS comes in a standalone text or report and is normally signed; thus, it is highly likely to be read in full. This is different from other sections in an annual report; researchers found that readers read by scanning strategy, especially when the annual report is web-based.

Eight, each type of corporate reporting is likely to be drafted by various individuals with diverse motivations. The firm issues the annual report (including CSR and CG), CEOs and chairpersons issue LTS, and auditors provide audit reports. Those may want to provide several opinions; thus, readability determinants may vary among these. LTS is virtually unregulated; its presentation style and readability "are under the control of management" Gibson and Schroeder (1994). They are unaudited, which makes them more subject to impression management (Hooghiemstra, 2010) or, at least, reflect managerial style (Hambrick, 2007), which can be inappropriate.

A firm's effective communication can be denoted by the clarity and other features of the chairperson's LTS (Courtis, 1987). Accordingly, the chairman's letter reflects individual human tendencies/styles more than other narratives. In summary, given all the preceding discussions, studying the chairman's LTS is believed to be suitable for the current investigation of the UE's impact on disclosure. Following the UET perspective, this research investigates the chairman's influence on readability via LTS, assuming it is the most expected narrative to exhibit individual characteristics or writing styles.

3.7.4. Research Hypotheses

The previous relevant studies examined annual reports' readability and specific narrative reporting types. In doing so, most of these studies relied on agency, signalling and obfuscation perspectives and considered firm-level characteristics (and companies' strategies and incentives) as determinants of the level of text readability. These studies relied on the rationality assumption. The current research is taking a step further and, alternatively, focuses on top managers' characteristics instead of firm-specific ones. The core reason behind this focus is based on the ability of the Upper Echelons Theory to partially explain organisational actions and outcomes (Hambrick and Mason, 1984), including disclosure practices. Specifically, corporate key players' characteristics can be determinants of digital narrative disclosure readability.

There is a growing effort on the part of companies, as well as regulators, to make annual reports more useful or easier to read. For example, Firtel (1998) pointed out that the US Securities and Exchange Commission (SEC) has consistently emphasised the need to make public company disclosure documents more readable. Similar exertions have been made in the UK, such as the clear and concise report, louder than words, and plain English campaign projects. However, developing countries differ from developed[37] countries in tackling such clarity issues. Moreover, there is a lack of compliance with low-enforceable guidelines and CG. Therefore, it is argued that regulations can have a crucial role and can be relied on more than private initiatives in the AME.

The study of emerging economies' settings provides new insights into a context with different CG than Western countries. In specific, many Middle East countries are described as having weak practices of CG, including inadequate transparency. Harabi (2007) has found that OECD corporate governance principles are broadly respected in the Arab world in compliance with

37 Several methods can be used to help know the audience as suggested by Sec 1998. *A plain english handbook: How to create clear sec disclosure documents*, The Office . United States. Securities Exchange Commission. Office of Investor Education: (1) by gauging the sophistication of stockholders; (2) by learning the demographics of investors through polls and other market survey research tools; (3) by depending on investor relations or their underwriters to identify the investors who have purchased or are expected to purchase their securities.

their legal and regulatory frameworks, but the practices are not. This situation increases the level of discretion leaders can exercise on corporate actions (Hambrick, 2007).

Moreover, the seven countries share similar cultural values, including high power distance. Accordingly, there are low cross-countries cultural differences that may impact readability levels. It allows more readability differences to be explained by individual characteristics. Hofstede's ranking results identified that AME countries have similar power distance ranking scores (between 70 and 93) (Hofstede et al., 2005).

The Upper Echelons Theory's (UET) main assumption is that executives make decisions based on their perceptions of reality, even within the influence of the environment. Although leaders normally function under bureaucratic and other constraints, including external requirements and business customs (DiMaggio and Powell, 1983), they can still influence corporate-level decisions and have substantial 'latitude of action' in many spheres[38]. The latitude of action is limited by different grades of such 'constraints' (Crossland and Hambrick, 2007).

The UET is founded on some assumptions, including the bounded rationality of top managers. It means that managers tend to satisfice rather than optimise when they make strategic or complex decisions. The information on hand, the time assigned to make a decision, and the cognition of leaders' minds all limit managers' ability to make optimal decisions (Cyert and March, 1963, Carpenter et al., 2004, Mischel, 2004, Hambrick, 2007). The original scheme of bounded rationality in the UET perspective suggests that executives' characteristics attend to filter information and alter the processing during decision-making. In detail, the experiences, values, and traits all affect the executive's field of vision (the directions they look at and listen to), their

[38] Examples include acquisitions, adding or dropping product lines, restructuring, and resource allocation (Hambrick and Finkelstein, 1987).

selective perception (what they really see and hear), and their interpretation (how they attach meaning to what they see and hear) (Hambrick, 2007).

Therefore, Hambrick (2007) agreed that organisations' nature, conventions, and norms might result in little influence of leaders on some actions. Nevertheless, this depends on and interacts with the latitude of action leaders have. Accordingly, it is expected that managers can influence narrative reporting to a great extent for several reasons. First, some narrative reports, such as LTS, offer an appropriate communication conduit for leaders to tell their stories (Sandell and Svensson, 2016). Second, how UE ‘communicate’ is an area with high managerial discretion as age and experience affect their abilities, including writing skills (Xu et al., 2018). Third, the chairman's LTS is one of the main communication vehicles likely to reflect the chairman's choices and how they perceive its best textual structure, as informed by Smith et al. (2006a).

It can be argued that LTS in the AME are subject to high discretion on how managers write them. First, narrative disclosure is not audited and not even subject to guidance regarding its clarity (i.e., readability), unlike the US, which has issued the *Plain English Rule* that requires firms to follow improved readability measures in the annual report filling. Likewise, in the UK, more guidance is provided on the clarity of narratives, such as the *Clear and Concise* project. Therefore, AME countries may have more discretion over the level of clarity in their disclosures. Second, this study addresses the AME region, where weak CG structures and inadequate responsibilities of corporate boards are evident (EBRD, 2016). In addition, corporate scandals are less likely to be reported publicly in this region (Omet, 2005). These reasons increase UE's ability to reflect their behavioural differences on firms' disclosure strategies. Third, the recommendations in developed markets to consider the audience is difficult to achieve in the AME. It isn't easy to know the audiences and their views or skills on this specific matter (i.e., reading ease). Moreover, in the AME, there is a lack of research projects investigating users' views and needs in contrast to the developed countries. Fourth, a favourable or required level of readability is difficult to determine, especially in the AME context that lacks national guidance or regulation on narrative reporting clarity. Fifth, based on the UET perspective, the chairman's discretion is increased due to lack of objection and high latitude of action upper echelons can exercise (Hambrick, 2007); these two factors can create opportunities for managers to exercise judgement regarding their disclosure styles.

Similarly, opportunistic behaviour cannot be taken for guaranteed in readability manipulation. CEOs and chairpersons are not behaving in their interests in the same way (unlike obvious misuse of resources, for example). Therefore, it is believed that the ability of previous perspectives, including agency and signalling theory, to predict a wide range of determinants of readability is limited.

Accordingly, the UET is suggested to add more explanation to the differences in narrative reporting clarity. The current study employs the UET to argue that the chairman's characteristics can influence narrative reporting quality in the AME as the listed firms' approach is operated with a less prudent financial reporting setting compared with the developing countries context (e.g., USA and UK). Consequently, the study's setting is expected to provide support to UET. The suggested impact of the chairman's characteristics on firms' decisions and actions can be more than we could think. Therefore, the following factors are introduced to formulate research hypotheses after considering the country settings.

Most UET studies have used observable characteristics because the cognitive processes during judgments or decisions making are unobservable (black box). Hambrick (2007) has discussed the black box problem of demographic information that prevents us from understanding the psychological and social factors that drive executive action. Nonetheless, cognition can be predictable via personal characteristics such as age, tenure and education. Several studies relied on observable (i.e., demographic) characteristics (e.g., Kilduff et al., 2000; Higgs, 2006) and unobservable or psychological traits (e.g., Marquez-Illescas et al., 2019).

Accordingly, the research built on this theory has widely studied top managers observable and psychological characteristics that represent their cognitive preconceptions, values, and insights. These, in turn, affect management behaviours and decisions and, eventually, organisational outcomes. For example, the degree to which individuals are open to change and keen to take risks at the firm level is influenced by age, tenure, and educational level (Wiersema and Bantel, 1992).

Merkl-Davies and Brennan (2007) reviewed the literature and concluded that examples of obfuscation strategies used to obscure poor performance include: adjusting rhetorical tone and content reading ease (via lexical complexity), thematic content, and visual effects. In particular, different readability levels can be partially linked to a chairperson's beliefs and expected behaviours. However, when these are difficult to observe, the UET recommends using observable characteristics that can proxy expected behaviours. For example, age is often used as a proxy for internal traits in top management, such as risk-taking behaviour. Additionally, it can be argued that low readability, as a misconduct form of impression management, cannot be detected easily by readers or overseers. Third, the decision to obfuscate by complex language can also be affected by the estimation of detection probability, as discussed by Courtis (2004b)[39].

[39] Courtis (2004b) explained that "Not all advantages lie with report writers. Extreme deliberate obfuscation runs the risk of being detected with adverse publicity that would tarnish managements' image and send a negative signal to the capital markets. This would be especially the case for malicious obfuscation with its sensationalist journalistic appeal, investor litigious potential and regulatory authority censure. Given the unfavourable reputational and capital market effects that could result, it is hard to imagine management undertaking this course of action lightly. Extreme malicious obfuscation is not ruled out, but the possibility of punishment through adverse consequences is likely to limit its incidence, although when it does occur its consequences can be devastating for the investment community." (p.294). However, these are not likely to happen in this way in the AME.

On the other hand, Kabanoff et al. (1995) argued that managing impressions with such documents is unlikely because these papers are extremely visible and, in many situations, thoroughly scrutinised by internal and external stakeholders; great exposure seems to restrict how unreal or deceptive they could be. This is not fairly in line with the assumptions of UET, such as the lack of objections from others in certain contexts (powerful leaders and high power distance) (Hambrick, 2007).

Suggestions of the UET[40] applies when investigating whether UE characteristics can account for part of the corporate reporting complexity. In addition to external environment factors of readability, the discretion over readability levels by the issuer (i.e., company) is expected to be high. To write plainly, the issuer must first consider your audience, which is difficult as investors have different skills and abilities (PLAIN, 2011).

Often, firms' highest-ranking executives are granted discretionary rights that enable them to make choices on matters such as the disclosure of corporate information. In particular, the language and writing style used in narrative reporting is highly likely influenced by the discretion [41] of corporate executives (Loughran and McDonald, 2014, Henry and Leone, 2016). Moreover, Davis and Tama-Sweet (2012) detailed that management chooses the level of information and wording used in these disclosures. Likewise, Sandilands (2020) argued that communication is a general activity that managers have discretion over. Managers' styles influence their writing choices more when the discretion level is higher (Ganguly et al., 2021, Hambrick, 2007). The expected sources of high discretion regarding readability can include the lack of guidance.

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[40] As used to study DCR in the previous part of the dissertation.
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The bounded rationality assumption can be based on the inability to consider the reading ability of all potential LTS users or readers. This creates more discretion for managers over who the audiences are and what their abilities are. Or if we assume unethical behaviour, managers will ignore this feature of transparent disclosure. More negligence is likely when writers assume that the audience may still understand the transcript. The case of AME may not be analogous to developing countries such as US and UK. Specifically, while the AME lacks any guidance, the SEC rule recommends the need to consider reading ability. Moreover, it is important to know that some studies found that the investor spends less than 15 minutes, on average, scanning the report to make decisions (David, 2001).

The results of Eshraghi and Taffler (2012) pointed out that there is truly a substantial level of within-sample variation in readability and tone scores that may be attributable to the idiosyncrasies of specific fund managers. Likewise, the review paper by Plöckinger et al. (2016) reported many studies revealed a strong impact of top management's characteristics on FR issues (e.g., Earning management and FR quality).

A general reason for the suitability of UET to influence readability is informed by Sunstein and Ullmann-Margalit (1999), who demonstrated that overlooking probable adverse effects can create or increase bounded rationality. In order to address the gaps in the research outlined at the end of the literature review section, the following factors are suggested as associated with chairman LTS readability based on the UET.

3.7.4.1. Age

Several financial reporting researchers have studied the impact of age on disclosure practices. Plöckinger et al. (2016) recommended studying top managers' influence on corporate reporting, including age. It was also found that older top managers tend to be more conservative, which means that they use more caution before communicating. For instance, leaders' age is found to be positively associated with companies' financial reporting quality (Huang et al., 2012). Previous researchers relied on the assumption that issuers (managers) are unboundedly rational and may try to obfuscate (e.g., Stone and Parker, 2016). The following are the justifications for the expected impact of age on text complexity from a different perspective, the UET.

First, age can be a major factor in making more rational decisions that affect career and expectations. Younger chairpersons may be more subject to having bounded knowledge about the consequences of text complexity in similar ways of practising earnings management (Guillamon Saorin et al., 2016). According to Peterson et al. (2001), senior executives with more life experience tend to have more morally admirable views. Second, older managers may act more ethically (Xu et al., 2018) and thus exercise more rationality, such as studying audience needs and reviewing the letters before issuance. Moreover, in his paper in the Journal of Corporate Finance, Serfling (2014) argued that younger managers might suffer more severe consequences for bad performance, such as significantly fewer future career options. The higher pressure to obfuscate readers during poor performance periods may impair their decisions on writing styles.

Third, from an ethical point of view, the literature also shows that anti-social behaviour and criminal tendencies diminish with age (Blonigen, 2010). For example, it is argued by Francis et al. (2015) that younger adult men are more impacted by their peers and society at large when choosing whether actions are ethical or not. Given the lack of national readability regulations in the AME, and LTS are more subject to discretion, younger managers may issue more complex LTS than their older counterparts since they may exercise less rationality. Fourth, Xu et al. (2018) empirical results based on UET found that financial reports are more readable when

CEOs are older because they can effectively explain operational complexity. Fifth, it is known that people of different ages respond differently to uncertainty about the consequences of their actions (Gibson and Schroeder, 1994). This uncertainty allows more reliance on bounded rationality. Older managers may avoid uncertainty regarding such consequences and be conservative by issuing more readable reports.

On the other hand, some cognitive abilities seem to diminish with age, including learning ability, reasoning and memory (Burke and MacKay, 1997). Therefore, old managers could be less capable of producing effective communication and take wise decisions. On the other hand, an argument is made that younger managers are linked to more successful businesses (Barba Navaretti et al., 2022). Therefore, those managers may be more motivated to issue more readable reports by devoting more time when making decisions about communication. However, the situation of AME, the first group of reasons, is more relevant to the AME context.

Accordingly, the following hypothesis is formulated:

> ***H5****: There is a positive relationship between the chairman's age and the readability of the chairman's LTS.*

3.7.4.2. Tenure

Tenure is the time spent on the job. A chairman's tenure denotes their service experience on the board. Based on the UET, tenure is expected to influence decision-makers' behaviours and tendencies. It is argued that increased business understanding is acquired through experience and firm-specific knowledge gained through tenure (Xu et al., 2018). Such chairpersons are more knowledgeable of their companies, audience, and users’ needs than short-tenured ones. Therefore, they are expected to be less affected by bounded rationality (Gigerenzer, 2010) when deciding the best writing style suitable for the audience.

Second, a chairperson with a long tenure may have high loyalty to the company, so every decision and action taken will be based on the company's interests and not on personal interests. Moreover, the long-term impact of impression management seems to be negative, so a newly appointed chairman is more subject to using IM tools as they underestimate its disadvantages. From an ethical perspective, a long-tenured chair, in contrast, may be able to learn that IM is not outweighing its costs.

Conversely, a chairman with a long tenure, bearing in mind their selfishness and power (Darouichi et al., 2021), may tend to know how to impress reports audiences. While CEOs and chairpersons are likely to share slimier orientations, the argument may apply to both. Such individuals may overlook the consequences of complex narratives; chairpersons are more likely to manage the main users of the firm's websites through complex language. Consistently, Brennan and Conroy (2013) found evidence that hubris, a cognitive bias in the form of overconfidence, in the CEO's letters to shareholders is more pronounced when the CEO is longer tenured. Tenure signifies a powerful chairperson. This can lead to their decision when writing LTS being impaired, especially in the context of high-power distance such as the AME.

According to the previous discussion, the following hypothesis is suggested:

> ***H6****: There is a significant negative relationship between Chairman tenure and the readability of chairman LTS.*

3.7.4.3. Education

Based on the upper-echelon theory, a complex decision requires more knowledge and effort to achieve the desirable outcome (Hambrick and Mason, 1984). DCR decision is complex and requires knowledge about it and its importance. Based on the bounded rationality assumption, it could be argued that less-educated managers have more bounded rationality when writing and issuing LTS. Educational level is a suggested factor that may proxy the tendencies and behaviours of managers.

Unlike highly educated managers, they tend to underestimate the consequences of issuing complex reports. Consistently, highly educated managers have had better technical skills since they were recently educated (Bolo et al., 2011). However, this is not classically the case since elderly managers can also devotedly extend their studies, become more practised, and obtain different skills. Xiong (2016) revealed that educated chairpersons operate less discretionary accruals and real profits. Moreover, there are mixed results concerning the influence of educational level on earnings management. Education makes leaders more ethically conscious (Tuo et al., 2019), and higher education improves a manager's writing and communication abilities. Higher education is expected to improve writing clarity (i.e., more readable). Education may allow managers to understand the consequences of issuing complex narratives more than less educated counterparts.

Accordingly, given the mixed results, the following hypothesis is provided:

> ***H7****: There is a significant positive relationship between the chairman's education level and the readability of LTS.*

Despite the above suggestion, higher education may create excessive power and high self-esteem, especially in certain contexts. Given the high distance power in the AME context, highly educated managers can neglect the importance of audience needs for readable reporting since they expect no objections to their decisions based on the UET (Hambrick, 2007). Accordingly, the following sub-hypothesis is formulated.

> ***H7a****: There is a significant negative relationship between a chairman with a doctoral degree and the readability of LTS.*

3.7.4.4. Overconfidence

Individuals' beliefs in themselves are at the core of characteristics of upper echelons (Hiller and Hambrick, 2005). The surface-level and deep-level attributes of a company's UE can both help envision its strategic choices (Bell, 2007). Similar to demographic characteristics, self-admiration is a psychological characteristic or deep concept suggested by UET to partially explain differences in organisational decisions and outcomes. Accordingly, overconfidence is a suggested trait that can influence leaders' judgement in general and the readability of LTS in specific, based on the following discussion.

Manager's personality and connection with the business might also affect their ability to envision and produce diverse strategies in different scenarios (Hambrick and Finkelstein, 1987). Overconfidence is part of narcissistic behaviour (Chatterjee and Hambrick, 2007) and is consistently and additively predicted by such narcissism and power (Macenczak et al., 2016). However, self-confident people may tend to care more about others' needs than their own, unlike narcissism, which often entails failing to see beyond oneself. Both influence the firm's strategies and firm-level consequences analogously (Brunzel, 2021). These two traits have been increasingly investigated as influencing organisational behaviour, such as risk-taking (Chatterjee and Hambrick, 2007). Narcissistic leaders may concentrate on their character rather than satisfying stakeholders' interests (via readable disclosures). Accordingly, overconfident UEs are likely to be untrusted people when it comes to shareholders' best interests.

A narcissistic individual has inflated self-esteem and is obsessed with reinforcing that self-esteem (Campbell et al., 2004). Overconfidence is a deep-rooted bias in which one's subjective confidence in their judgments exceeds objective perfection, particularly when trust is strong. Despite that, leaders' narcissism can affect their personalities or behaviour positively or negatively. For example, it could narrate crucial characteristics of a leader, such as a self-assurance, charm, power, and supremacy (Hogan and Kaiser, 2005, Olsen et al., 2014). In contrast, narcissism is linked to negative tendencies, including hubris, self-importance, eroticism, entitlement, unwillingness to learn from errors, and self-admiration (Hogan and Kaiser, 2005, Olsen et al., 2014). Yet, most studies focus on the negative effect of such a trait and argue that the bad consequences cover the best qualities.

Moreover, narcissistic and overconfident managers may affect business performance in both ways; therefore, they might use more sophisticated annual reports to mask their unfavourable activities (Li, 2008). Based on the above, overly confident leaders could think they can write the best LTS without reviewing it before release. Moreover, due to possibly inflated optimism, overconfident leaders may underestimate readers and market reaction or overestimate their reading abilities. Therefore, they may overlook the needs of retail investors for simpler narratives. They may not acknowledge regulators and CG codes for protecting minority shareholders.

Under the bounded rationality of the UET, managers may undervalue the rationale for an effective/honest communication environment (i.e., a more readable and suitable tone) and tend to dilute the probability of failure in gaining competitive advantages. Therefore, managerial dishonesty and negligence, measured by narcissism and overconfidence, can lead to lower readability of chairpersons’ LTS. Zudana et al. (2022) argued that narcissist leaders might construct simple narratives to guard themselves against possible adverse market reactions or enquiries from the government. Moreover, recent empirical results show that management narcissism and CEO overconfidence are positively and significantly associated with audit report clarity/readability (e.g., Salehi et al., 2022). Alqatamin et al. (2017) found empirically CEO overconfidence is positively associated with some wrong decisions, such as earning management in a middle east country context, Jordan.

Based on the above, the following hypothesis is suggested:

H8: *There is a significant negative relationship between chairman overconfidence and the readability of LTS.*

3.7.5. Summary

This chapter provided the literature review and theoretical framework for investigating digital narrative reporting readability. The identified lines of research ranged from descriptive (focusing on readability concepts and importance) to its determinants and consequences. Prior studies have uncovered the high complexity of narrative disclosures and how this is associated with different aspects such as investors' judgment, firms' performance and agency costs. The research gap is discussed. The second part has discussed the various theories used in prior readability studies. The UET is fully discussed and used to derive hypotheses relevant to the online LTS in the AME.

Chapter 4 follows, and it presents the research methodology employed to investigate the relationship between UE characteristics and DCR extent and readability.

CHAPTER 4: RESEARCH METHODOLOGY AND METHODS

4.1. Introduction

This chapter presents the research philosophy, research approach, methodology, and research methods that achieve the formulated research objectives. The structure of this chapter is as follows: the first section reviews the philosophical approach underlying this study. Next, the methodology for the current investigation of the extent and quality of corporate digital reporting is expounded. The relevance of positivism in studying DCR and its readability is discussed. After this, for each part separately (part 1 DCR extent) and (part 2: DCR readability), the following is provided consecutively: Population and sampling procedures, the dependent and independent variables and their measurements are explained, data collection procedures are detailed proposed data analysis techniques are presented next. Within each part, the context of Arab Middle East countries is justified. The last two sections provide a discussion of the research's ethical considerations and an overall summary.

4.2 Research Philosophy and Methodological Approaches

An appropriate methodology is a prerequisite for well-directed and valuable research. Therefore, methodological arrangements are chosen and applied during an early stage of the research process (Burell and Morgan, 1979). The research methodology embarks upon the research questions and accomplishes the research objectives (Kothari, 2004). According to Collis and Hussey (2013), a methodology describes the entire process of implementing the research, founded on theoretical grounds and ending with detailed data gathering and analysis procedures, which are called research methods.

Research methodologies are based on the research philosophy, which deals with the way(s) a researcher considers knowledge can be expanded (Saunders, 2011). Scholarly work depends on the means a researcher uses to establish knowledge assertions and illuminate designated social practices. Therefore, the term 'methodology' acts as the interlink between fundamental problems, evidence grounds, and the existing suppositions about society, history, and knowledge (Skocpol, 1984). Furthermore, the research methodology employs unique procedures to resolve *problems* systematically and scientifically (Bhatta, 2013). The research problems to be addressed here are the different levels of DCR adoption and clarity and whether these are attributable to executives and leaders of different characteristics. This knowledge will help guide the appointment of UE (by proxied characteristics) who are committed to best DCR practices. In other words, shareholders' and stakeholders' interests should be prioritised regarding accessibility and transparency. Research methodologies vary according to different inquiry approaches; however, research paradigms are not methods. Methods are behaviours or tools used to undertake a research approach. Methodologies are chosen early on, whereas the research investigation uses methods afterwards. We use a methodology to explain our actions whenever we seek to generate knowledge about the world.

The methodology is one of four linked assumptions in a research choice. Four metaphysical assumptions limit the research's position in any examination: ontology, epistemology, human nature, and methodology. The questions about these four assumptions are answered in two distinct ways to voice two contradicting philosophical positions: the subjectivist and objectivist orientations to social science (Burrell and Morgan, 1979). Table 4.1 below summarises the nature and extent of the different research paradigms and how they relate to different methodologies.

Table 4.1 Different Research Paradigms

Issue	Positivism	Post positivism	Critical Theory et al.	Constructivism	Participatory
Ontology	Naive realism - "real" reality but apprehendable	critical realism - "real" reality but only imperfectly and probabilistically apprehendable	historical realism - virtual reality shaped by social, political, cultural, economic, ethnic and gender values crystallized over time	relativism - local and specific constructed realities	participative reality - subjective-objective reality, co-created by mind and given cosmos
Epistemology	dualist/objectivist: findings true	modified dualist/objectivist; critical tradition/community; findings probably true	transactional/ subjectivist; value mediated findings	transactional/ subjectivist; created findings	critical subjectivity in participatory transaction with cosmos; extended epistemology of experiential, propositional and practical knowing; cocreated findings
Methodology	experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	modified experimental/ manipulative; critical multiplism; falsification of hypotheses; may include qualitative methods	dialogic/dialectical	hermeneutic/dialectical	political participation in collaborative action inquiry; primacy of the practical; use of language grounded in shared experiential context
Axiology	propositional knowing about the world is an end in itself, is intrinsically valuable	propositional knowing about the world is an end in itself, is intrinsically valuable	propositional, transactional knowing is instrumentally valuable as a means to social emancipation, which is an end in itself, is intrinsically valuable	propositional, transactional knowing is instrumentally valuable as a means to social emancipation, which is an end in itself, is intrinsically valuable	practical knowing how to flourish with a balance of autonomy, co-operation and hierarchy in a culture is an end in itself, is intrinsically valuable

Source: Neuman and Robson (2007) p.

The major ontological questions have been clarified by (Burrell and Morgan, 1979, p.1) as "Whether the 'reality' to be investigated is external to the individual – imposing itself on individual consciousness; whether 'reality' is of an 'objective' nature or the product of individual cognition; whether 'reality' is a given 'out there' in the world". The ontological assumption is determined by either the subjectivist or the objectivist approach. The objectivist approach, known as realism, assumes that reality is external and exists independently of an individual's appreciation. On the other hand, people's perception determines how the researcher, under the subjectivist approach, observes the social world (Diener and Suh, 1997).

There are likewise two different research approaches: positivism and interpretivism. Positivism assumes a problem can be observed from the 'outside'. Thus, scholars can anticipate reliable findings concerning the suggested associations. Positivism can be independent because it requires no interference with the phenomena under examination. This paradigm assumes that reality is steady and observable from an independent position (Kothari, 2004). Research reliability is derived from the research design that ensures the researcher's neutrality towards the studied subject. It is common for social scientists to use the positivist quantitative method (Hunter and Leahey, 2008). In the accounting field, some scholars have debated whether accounting researchers are more inclined to employ a positivistic philosophy because of their prime concern of communicating financial information (Enke, 1972). Positivism considers that a fact statement cannot be meaningful without empirical verification or testing its premises' logical or mathematical derivation (Enke, 1972). It makes use of methodical mathematical analysis. Researchers generally decide on the hypotheses that will direct their investigation of phenomena, which are then tested (Given, 2008).

The current research uses positivist epistemology to examine the adoption and quality of DCR by looking at it from an objective perspective. This approach allows the researcher to explain why some firms adopt DCR more than others by linking adoption to CEO characteristics and to discover why LTS has different readability scores by introducing new variables (chairman characteristics). Both DCR dimensions and UE characteristics are measured in verifiable ways. There are many implications for applying the positivist paradigm. As this research aims to examine the relationship between a group of determinants and the extent of DCR, the quality of DCR is considered in the second part of this study by also analysing its readability quantitatively. After analysing data based on the formulated hypotheses, conclusions can be drawn after testing them accordingly (Rovai et al., 2014).

Different research methodologies can be utilised within the positivist approach, including experimental, quasi-experimental, correlational, causal-comparative, and survey research methodologies. The current research objective indicates that the correlational methodology is the most suitable. Correlational and experimental research differ in terms of methodology. In a correlational study, the researcher seeks to find a statistical pattern connecting two naturally occurring variables (i.e., without any control). In the current research, these variables are UE characteristics and DCR practices. Furthermore, the current research is not using an experimental approach to present a substance and monitor its effects on two variables.

4.3. The Philosophies and Methodologies Used in Prior DCR Studies

Generally, scholars in the business and management field lack agreement on the most suitable research philosophy (Tsoukas and Knudsen, 2005). The earliest research in accounting was initiated with a clear orientation toward the positivism of economics (Roslender and Dillard, 2003). Some scholars have outlined the evolution of accounting research approaches (e.g., Carnegie, 2014). The positivist paradigm and its implicitly mainstream research has already occupied the theory construction and verification styles in most accounting research for several decades. In the early 1990s, (Dillard, 1991) argued that the functionalist worldview dominates accounting and social science research. Moreover, in their interdisciplinary investigations of accounting practices, thoughts, and regulations, accounting researchers have not focused on developing their own accounting theories (Dillard, 1991). Instead, they have used theories from different disciplines. Some theoretical backgrounds have been developed, tested, and verified in exploring printed and digital reporting. The theories mainly involve agency theory, signalling theory, stakeholders' theory, and upper echelons theory. This study examines the DCR practices of Jordanian-listed firms. Most of the relevant DCR literature is empirical research. Based on quantitative methodologies, these adopt a positivistic perspective, and accordingly, those existing theories are tested using a deductive approach. Examples of studies that have addressed DCR adoption determinants quantitatively include Xiao et al. (2004) and Kelton and Yang (2008).

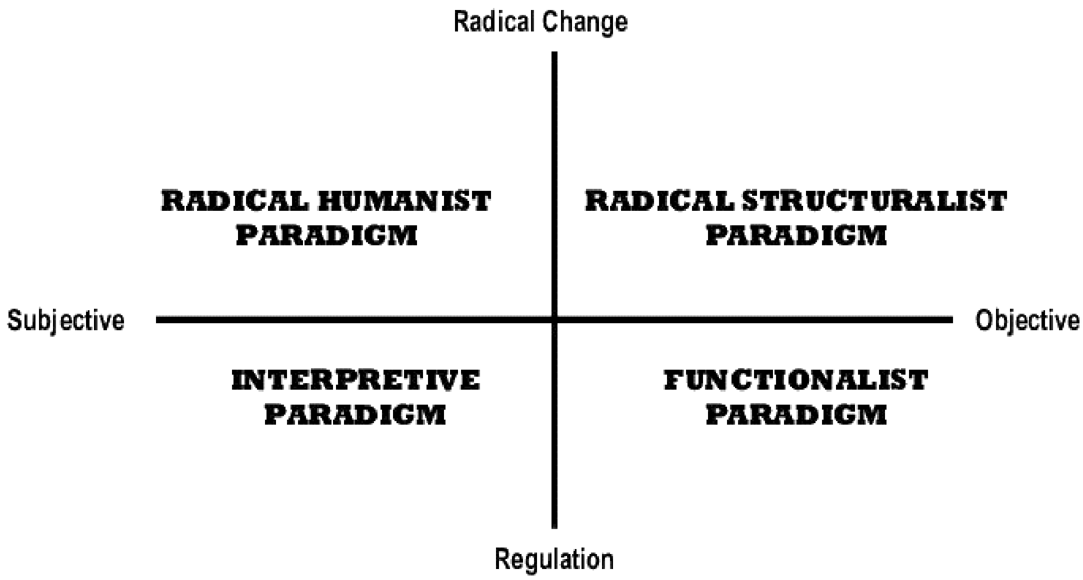
On the other hand, more accounting academics have begun to apply both critical theory and constructivist philosophies in adopting interpretive research paradigms to study accounting. These utilise a naturalistic viewpoint and qualitative research methods supported by subjectivist epistemologies (Bisman, 2010). For example, Management Accounting Research (MAR), as social science, studies the perceptions of individuals and their interaction with each other and the information system intrinsic to MAR. Thus, from an ontological point of view, the interpretivism paradigm is better suited to study different areas of accounting, such as management control systems, in terms of their implementation and performance in organisations. Qualitative research methodologies such as case studies are frequently used in such fields. Similarly, the literature on diffusion of innovation provides several established theories on the adoption of technological innovations, such as Diffusion of Innovation (Rogers, 1995) and Institutional Change Theories (Tina Dacin et al., 2002). In addition, regulators (e.g., FRC) implicitly stress DCR as innovative, and many studies have employed the diffusion of innovation theory in investigating it (e.g., Xiao et al., 2004).

Some DCR studies were based on an interpretive approach and therefore undertook observation-like surveys and interviews to explore the DCR phenomenon, such as users' views regarding DCR. Thus, the qualitative methodologies aimed to achieve different objectives than the current research. Examples include Gowthorpe (2004), who interviewed CEOs in small companies listed in the UK about utilising the Internet in reporting, Smith and Pierce (2005), who used a questionnaire survey to investigate CG procedures applied to safeguard DCR integrity. Another number of studies have endeavoured to examine DCR adoption qualitatively, including Aly (2008) and AbuGhazaleh et al. (2012). This is because, in some research contexts, the topic of DCR is still a relatively new phenomenon (e.g., an innovation that is not well-diffused). These in-depth qualitative investigative procedures are essential for a better understanding of such phenomena. The later phases require quantitative methodologies to foster adoption and improve quality.

4.4. Research Methodology of DCR Extent

According to Burell and Morgan (1979), primary debates in sociology resulted in four paradigms represented by the research paradigms matrix shown in the diagram below. The focus is on the functionalist paradigm and its relevance to accounting research. The appropriate research methodology depends on the assumption about the four paradigms. Figure 4.1 present the different research paradigms matrix.

Figure 4.1 Research Paradigms Matrix   Source: Burell and Morgan (1979)



The functionalist paradigm is characterised as objective and aims to regulate phenomena. This is considered a leading paradigm for organisational-level research. It seeks to provide rational explanations of human affairs. It is ‘realistic’ and deeply rooted in sociological positivism. The measured relationships are tangible and can be identified and measured using objective scientific methods. Financial accounting research heavily relies on this approach. Financial accounting has generally been seen as formed by four principal images, as suggested by Davis et al. (1982). These recognised images are historical records, current economic reality, information systems, and economic commodities. These four are based on a functionalist paradigm (Dillard, 1991).

This research follows the functionalist approach to address the problem of DCR extent and quality by listed firms in AME. The first part aims to explain whether the selected CEO characteristics (gender, age, education and tenure) impact the extent of digital corporate reporting. Consequently, it is essential to explore the influence of CEOs on DCR adoption decisions. The goal is that these explanations of DCR can offer solutions to existing problems in this context (e.g., low DCR adoption and readability). The functionalist model aims to offer rational explanations of social issues and generate regulative sociology (Ardalan, 2003). For DCR as a communication tool, the functionalist paradigm has been used as an appropriate evaluation-type study of communication effectiveness. It makes recommendations for better communication and transparency. Therefore, a functionalist paradigm is the appropriate research nature and philosophy for studying DCR. Smith et al. (2006b) supported the suggestion that improvements in narrative readability are correlated with more regulation and statutory supervision of disclosures.

The current research is informed by the study of Xiao et al. (2005), who suggested that more research should be conducted on DCR adopters' characteristics (i.e., companies). Thus, by applying Hambrick and Mason's (1984) Upper Echelons Theory (UET), the current study aims to expand our knowledge regarding DCR adoption and quality. This theory forms the researcher's theoretical lens to examine DCR. Furthermore, UET emphasises the relationship between top executives and corporate decisions and strategies.

The objectivist approach is associated with positivism. Positivist scholars contend that quantitative research collects objective and generalisable data regarding the origins of social problems. For instance, country-level issues like unemployment and educational underachievement are best studied using such objective data to improve our society since regulators can use such data to endorse large-scale social changes. Concerning our research objective, data on actual reporting practices are objectively collected and analysed to achieve results and offer recommendations for policy change and regulation improvement (i.e., more DCR adoption and more readable narratives since shareholders' and stakeholders' interests should be prioritised).

Considering the points mentioned earlier and applying them to DCR, the critical problems to which the current DCR research attempt to offer solutions include the lack of openness and increased information asymmetry (Xiao et al., 1997). It is understood that a decent financial market requires a minimal level of information asymmetry. In this aspect, many companies worldwide have endeavoured to satisfy stakeholders' needs for information, which has reduced to reduce asymmetry. Among such initiatives is the use of the Internet to publish corporate disclosures, a significant facilitator of transparency, as found by Kelton and Yang (2008) and AbuGhazaleh et al. (2012b), for example. Unfortunately, many companies still fall behind in such advancements and innovations.

Moreover, an existing body of literature confirms that companies vary significantly in utilising computer and internet technologies to serve stakeholders' informational needs, which is a problem with behavioural roots. Therefore, the current study focuses on explaining *behaviour* with DCR as the dependent variable. This is done by predicting the causes of DCR adoption and relationships using a deductive approach, aiming to test the theory-driven hypotheses. Such an approach allows for solving the highlighted problems (e.g., variation in DCR adoption), and appropriate generalisations can be achieved accordingly.

It is suggested that this problem is associated with many factors, including executives' characteristics (as the adopters of innovation) that influence their interpretations of the importance and cost-benefits of corporate websites as innovative disclosure-communication avenues. Therefore, it can be argued that informing DCR policies in terms of better use of internet capabilities can be achieved by investigating the reasons behind DCR adoption variances. Furthermore, revealing adoption variation explanations can lead to valuable recommendations regarding encouraging (the communication phase of innovation diffusion) and regulating internet usage in corporate reporting. The intended research contributions can be accomplished using an objective approach. Accordingly, positivism is suitable for measuring DCR practices and predicting their determinants. Thus, generalisable findings may be attained; the research can improve financial reporting transparency and reduce information asymmetry when replicated in other settings.

4.4.1. Prominence of the Positivist Approach to Studying the Extent of DCR

There are two general reasoning methods in scientific research: inductive and deductive (Trochim, 2006). To know how human beings function, to us as inquirers and later to whoever uses the research, we should use the approach that best relies on scientific and reliable evidence (i.e., statistics). Achieving this *knowledge* can be difficult, but the positivist approach is one of the few to accomplish this. Since this approach allows the researcher to identify causal relationships and empirically test them, low DCR adoption could be improved by refining regulations based on these relationships. Therefore, the positivistic paradigm can be seen as appropriate for studying the DCR phenomenon. This means that objective ontology guides this research. The investigator holds the ontological assumptions (the nature of reality) and the epistemological ones (how to know about it) to underpin a particular methodological approach (Burrell and Morgan, 2017). To apply these structures to the current study, the rest of this section aims to clarify its desirable methodological base.

Additionally, this study does not seek to investigate a new global phenomenon since DCR is not new to all countries. Rather, it is less diffuse in certain environments. Therefore, the positivist approach is pertinent and permits appropriate research design to examine DCR systematically. This is achievable by gathering relevant empirical data (about the actual usage of such innovation) and evaluating whether the analysed data can support the formulated hypotheses.

Based on the preceding discussion, DCR data will be collected, measured and objectively indexed (scored) from companies' websites rather than people's views involved in the subjective content of DCR itself. These methods are determined based on the selected research problem and objectives. Therefore, if future researchers choose to study users' or preparers' viewpoints, for example, they will likely use different research philosophies and approaches, such as interpretivism. The quantitative methods are derived from employing the positivism approach. These methods do not involve investigating market participants' understandings and experiences. Instead, it emphasises and addresses the level of DCR practices and their association with selected managerial characteristics that are deducted from an appropriate theory. The deductive research approach provides certain advantages. First, the opportunity to explain causal relationships between the underlying concepts and variables. Secondly, the ability to measure the study concepts quantitatively. Lastly, the quantitative methodologies allow the generalisation of research findings. Utilising the Upper Echelons Theory (UET) as a framework for the current research, the hypotheses are formulated by objectively quantifying variables such as CEO characteristics and DCR. The relationships revealed by this research aim to inform policymakers (e.g., financial reporting regulators), and the results can be generalisable to similar settings.

4.4.2. Research Timespan

A website can be observed once accessed; past information is likely impossible to access (i.e., unavailable) because of being replaced with the current website content (unless a study is conducted over many years). Thus, the current study does not engage with a panel data approach because the website content (i.e., DCR index items) is only measurable at present, so the study would have only been possible if the data were collected periodically and longitudinally. Such time-series data would be challenging and requires a long project over many years. Longitudinal or trend analysis was not used because it is difficult to track the changes in website content over time, and measurement is available only for the information that appears on the website on the date of data collection. Due to the barriers associated with other research types, cross-sectional research is conducted regarding DCR and analysis of the sample companies' corporate information and other disclosures available on their websites. The cross-sectional approach is a relatively inexpensive method but allows an adequate quantity of quantitative data to be collected. Consistent with the current research objectives, a cross-sectional approach is selected as it is seen as appropriate. Nevertheless, the principal limitation of cross-sectional studies is that the collected data do not indicate events' order because they supply only a 'snapshot', which in turn are less reliable causal inferences compared to longer period studies (Saunders, 2011). Therefore, to alleviate this problem, the current study uses many independent variable data over an extended 3-year time prior to 2019. This help ensures that any lagged effect of such factors on DCR is reflected.

Accordingly, all data were collected during the same period of four months (March - June 2019). However, in the readability part of the dissertation, independent and dependent variables' data for five years are collected for each sample firm. This is because each unit of analysis (i.e., chairperson's letter) of a particular year is assigned to that year.

4.4.3. Research Strategy of DCR Extent

This study uses archival data related to historical information, such as corporate disclosures. This is contrasted to experimental data created by an experimenter, who may use it to test, for example, the presentation or credibility of the reported financial disclosures (Mercer, 2004). Instead, this study is observational, an acknowledged essential instrument in examining social science practices. It is non-experimental in its observation as it does not manipulate any variable.

Accordingly, this study relies on archival data. These data were collected from their sources (annual reports for the CEO characteristics) before the beginning of the research. Data sources for DCR are corporate websites. All these data are used to test the relationships between a group of independent variables and the extent of DCR practices. Lastly, because the key intention of this dissertation is to expand our existing knowledge and improve our understanding of a phenomenon in the financial reporting field, the research type is basic research. This 'knowledge curiosity' is not found in the other extreme of applied research since it focuses on solving an existing problem for specific organisations (Collis and Hussey, 2013).

The following sections clarify the methods of sampling, data collection, and measurement of variables.

4.4.3.1. Population and Sampling

A cross-sectional strategy was selected to study the corporate websites of different companies during a single period (March-June 2019). A cross-sectional approach is a relatively inexpensive method and involves less time than panel data. Consistent with the current research objectives, a cross-sectional approach is selected as it is seen as appropriate since it allows a great quantity of quantitative data to be collected. Nevertheless, the principal limitation of cross-sectional studies is that the collected data do not indicate events' order because they supply only a 'snapshot'. Therefore, researchers cannot generate reliable causal inferences over a longer period (Saunders, 2011).

The population of this study is Jordanian shareholding companies. The sample is the 196 companies listed on the Amman Stock Exchange (ASE) as of 2019.[42] Listed companies have publicly available data; they are often larger, more profitable, and more capable of adopting DCR than unlisted companies. Therefore, the study includes all listed firms that have the required data; no criteria are set regarding firm size and sector. Thus, the sample represents the population from which it was drawn in terms of size, sector type and age.

The sample comprises companies from all sectors and subsectors in the ASE, unlike Momany and Al-Shorman's (2006), example, who excluded banks. Studying more sectors allows improved comparisons to highlight any differences in DCR adoption and any difference in CEOs' impact on such adoption of each industry. Banks are included after controlling for their different features, such as size, that differ from firms in other sector types. Moreover, robustness analysis redoes the regression analysis after excluding banks to see if the results change.

[42] Source: ASE website (http://www.ase.com.jo).

The sample includes no suspended or merged companies. Mergers, delisted companies, and liquidations are also excluded. Jordanian companies produce financial statements at calendar year-end. Following earlier research, companies with accessible (functioning) websites are the major focus of the study (adopters). Table 4.2 explain the sample size.

Table 4.2 Sample of study on the Extent of DCR

Companies	Number
Listed	196
missing data (CEO characteristics, AR…etc.)	20
subtotal	176
no website companies	34
non-working website	20
Net of working websites (adopters)*	122

* Website contains at least one item of the index)

The following checks were conducted on a small-scale sample to improve the quality and effectiveness of the research procedures. A good study design can depend on earlier reviews of planned procedures. Pilot checks aid in achieving research purposes as they help ensure that a researcher can progress with the planned research stages and they can concentrate more accurately on particular research aspects. Such procedures are carried out to save time and resources, among other benefits. Some concluding remarks relevant to sampling and population based on these reviews include that: listed companies on ASE are classified into four main groups (sectors), according to the Securities Depository Centre (SDC). The smallest sector is the banking sector, consisting of 16 entities. A few companies seem to have missing data. These were eliminated from the study. It was ensured that all companies use the calendar year-end to prepare their financial statements, allowing consistency and better comparisons.

4.4.3.2. Variables and Data Collection

The dependent variable is DCR practices. The independent variables are CEOs' characteristics, including age, tenure, gender, and education. All variables in this study are secondary data from sources including corporate websites, annual reports, databases including Bloomberg and Orbis, and the securities depository commission in Jordan. Further information is listed below:

CEOs’ characteristics: many firms provide a CEO profile on a dedicated page on their website or the annual report document. The required CEO characteristics data (age, gender, tenure, and education) was hand-collected from the annual reports. The corporate websites were searched if any data was unavailable in the annual reports. If none of these two sources provided the required information, the data was extracted from the following reliable databases: Orbis, Bloomberg and Marketscreener. Firm-level data are generally available on the websites of ASE and its institutions. In addition to companies’ websites, the SDC website was surveyed to gather firms’ financial and organisational characteristics. Some data issues were present; for example, data on CEOs' gender, according to the Orbis database, were available for only 86 companies. This was due to the different titles given to the person acting in this role in Jordan. To overcome the issue, websites and annual reports were searched to locate CEOs' names and record their gender.

4.4.3.3. Dependent Variable

The current research used a simple form of content analysis as a research tool. Generally used to describe communication content objectively, systematically, and quantitatively (Berelson, 1952). It is a popular research technique in accounting literature, particularly for analysing financial accounting and voluntary disclosure in corporate reports (Unerman, 2000). Content analysis is a precise description of procedures beneficial for the readability part of this dissertation. It helps make inferences by objectively and systematically identifying specified characteristics of messages, the complexity and the tone of chairpersons’ letters (Holsti, 1969).

Likewise, according to Krippendorff (2004), content analysis is a technique for systematically deriving conclusions from published media, employed in empirical social science research, notably in communication studies, for many years. DCR researchers often describe the data collection of the DCR index as content analysis. However, there is no coding for the extracted textual content, unlike this dissertation's readability section.

This study measures representative company DCR practices. Reviewing DCR literature shows that index items' sufficiency in previous studies depends on their scope and aims. For instance, in measuring the DCR timeliness, the index used by Abdelsalam et al. (2007c) included just 11 items since timely information can be depicted easily, while in a broader study on the DCR comprehensiveness index, Abdelsalam et al. (2007b) used an index of 143 items. Both indices achieved what these researchers intended to measure.[43]

Hassan and Marston (2010) described the disclosure as a latent variable, i.e., not amenable to be observed and measured directly. In this respect, measures of corporate disclosure can be reclassified into two approaches: the first approach measures disclosure by reducing it to its observable characteristics, whereas the second approach looks at the quality of the disclosure (Hassan and Marston, 2010). The current study considers information quality and quantity as necessary measures of DCR.

Using the index or checklist is common in DCR research to measure digital disclosure activities. Those indices involve content and format items to build a measurement scheme (e.g., Abdelsalam et al., 2007a, Kelton and Yang, 2008). While studies on paper-based reporting mainly use content-based items, adding the format/presentation dimension in DCR highlights

[43] It is argued that measuring disclosure in varied ways is a plausible reason for the revealed opposing findings of prior empirical research on disclosure determinants (see Ahmed and Courtis, 1999). This might be a continuous though normal challenge because internet capabilities are continuously developing from time to time (items included in measuring current DCR practices could be different (i.e., updated).

the unique characteristics of disclosure that websites allow. Therefore, the literature emphasises that DCR should be categorised in content and presentation (FASB, 2000, Kelton and Yang, 2008, Kelton and Pennington, 2012, Aly et al., 2010).

Both the content and format of DCR are relevant to users and can improve disclosure transparency. Ettredge et al. (2002) argued that voluntary disclosures would be disseminated via DCR. In addition, the Internet has deeply enhanced how financial information is distributed by companies (Economist Intelligence Unit, 2003). Furthermore, web-based tools allow new formats for financial information that may improve transparency (Hodge et al., 2004). In this context, Bushman (2004) affirmed that the transparency of the financial reporting of a company is associated with its information dissemination tools.

Moreover, most prior studies on DCR (Xiao et al., 2004, Ettredge et al., 2002) measured DCR content and format. Accordingly, this study used an index of 54 items to measure a firm's DCR by content (CDCR) and presentation format (FDCR). Moreover, the use of FDCR items in the index acknowledges the unique presentation format feature that the corporate websites use to present the information compared to the hard-copy versions. Those options are not attainable in paper-based forms (Kelton and Yang, 2008). Besides, more transparent disclosure is achievable because of the features of DCR being disclosed in different formats. These features make reporting more readable and accessible and enhance the comprehensibility of financial information (FASB, 2000).

The items included in the index are based mainly on the study of Kelton and Yang (2008). However, because their index was developed to measure DCR in the USA, a few items were deemed inappropriate for the current study context, Jordan, and thus disregarded. Therefore, the pilot checks and reviews helped construct the current DCR index to generate suitable measures for the Jordanian context. For example, the item analyst following is used in the literature but not relevant to Jordan and thus is excluded from the index. Also, assessments included browsing and studying some corporate websites to locate the data and save time and costs, among other procedures.

The measurement index covers most of the information necessary for this kind of reporting. In addition, it recognises the distinctive aspects that companies may have on a website.

4.4.3.4. Dimensions of the DCR Index

The main analysis relies on the overall DCR index to test the formulated hypotheses. In addition, the following dimensions are used for other analysis purposes. The overall DCR index is divided into two main groups: Content DCR and Format DCR. Content DCR is divided into financial information, Corporate Governance, CSR, and general information (such as history, team, and 'about us'). The current research categorises 32 items in the content dimension into groups as follows: financial information, CG and CSR, and timeliness (updated information).

The two dimensions of DCR: The presentation format is how corporate reporting content is delivered on a firm's website (IASC (1999), Debreceny et al. (2002), Marston and Polei (2004), Trabelsi et al. (2004), Xiao et al. (2004), Bonson and Escobar (2006), Spanos (2006), Kelton and Yang (2008), Ali Khan (2010), Aly et al. (2010)). *User support* is general attributes that support the user, including different website languages, graphics, and audio and video content, as defined by Walton et al. (1997). Table 4.3 lists all the items in the measurement index classified into two dimensions. Companies are given scores based on the number of items present on their website. This construction of this index is based on Kelton and Yang (2008) and others as shown in Table A.2 in the appendix, which explains why specific categories and items are included in the DCR index.

Table 4.3 Items Included in the Measurement Index

Format	Content
English version of the website	Recent Annual report 2018
Internal search engine	Comparative annual report (2 years)
Easiness in locating the annual report	Annual report in English
The annual report from the homepage	Quarterly financial information
Site map	Performance overview highlights
Interactive menu website	Historical stock prices
Dynamic graphic images	Dividend history
Links to other websites	Credit ratings
Sending a message to the company directly	Forecasted financial data
Feedback or complaint box	Vision and mission
Audios	Calendar to investors
Videos	Recent quarter
Financial information in processable format	News releases
Annual report in multiple formats	Up-to-date share prices
Copy and search options in PDF	Other financial information
Hyperlinks inside the annual report	Recent month's financial information
Annual report in PDF format	CG report
Mailing list newsletter	Internal CG guidelines
Frequently asked questions	Board committees members
Links to Social Media profiles	Code of ethics (or values)
Investors’ relation webpage	List of board members
	BOD emails
	Board members CVs
	Management team list
	Management bio or CVs
	Invitations to AGM meeting
	Assembly of BOD decisions
	Chairperson or CEO letter
	Independent directors list
	CSR report
	Other reports
	CSR Summary

4.4.3.5. Validity, Reliability and Relevance of the DCR Index

Validity is “the extent to which a test measures what the researcher wants it to measure, and the results reflect the phenomena under study” (Collis and Hussey, 2013, p.53). Quantitative methodology, which derives from this, aims to improve validity through the use of proper instruments, statistical analysis, and sampling techniques (Cohen et al., 2004). Accordingly, the validity of the current method was assured based on the following procedures. To ensure the validity of research data collection procedures, first, a sample of the collected data was double-checked for its accuracy. Second, an independent person recollected the data for a small sample of companies (for both independent and dependent variables). Third, the two sets of data were compared for any differences.

Different internet databases were used to find CEO demographics to double-check their correctness. Moreover, the following points add relevance and comprehensiveness to the DCR measurement scheme. First, the index covers both the disclosure content and presentational format dimensions in which the content items involve mandatory and voluntary disclosures. Second, items included in the index are attributable to either the company's general website or investor relations reporting. Third, as noted in the literature review, the measurement of DCR is much broader than that used in some prior Jordanian studies. For example, Momany and Al-Shorman (2006) used only three items[44] in their DCR index.

Concerning the readability part, the study uses well-known measures of chairmen's characteristics, such as education, age and education, and readability, so data analysis would be concurrently valid.

For a reliable and valid measurement of DCR, Cronbach's coefficient alpha is used to test its internal consistency. According to Bland and Altman (1997), this precisely computes the degree to which association among all items is reduced due to random error. Then, the resulting number is compared to a benchmark, such as similar studies. The internal consistency of the item set must be established to justify the combination of items used to determine a company's total DCR score. Considering that the DCR level is assessed by a group of items, it was vital to evaluate the measurement method's internal consistency. The analysis DCR index of the

[44] These three items were a full comprehensive set of financial statements, partial or summary financial statements and financial highlights.

present investigation indicates that Cronbach's alpha is 0.79. This value may be contrasted to previous research on DCR or corporate transparency in general that used the alpha coefficient of Cronbach. A value of 0.51 was found by Gul and Leung (2004), whereas it was 0.70 by Bin-Ghanem and Ariff (2016b) in the gulf countries. Accordingly, the DCR index's internal consistency is satisfactory.

Moreover, a computerised check ensured that the data entered was accurate. For example, each company was given a score between zero and the maximum number of items found. For instance, if the items in the index are 50, each company score should be within the range between 0 and 53. The data entry sheet was programmed to accept numbers between the Min and the Max of each observed variable’s value. This procedure is followed for most other variables, such as the CEO’s age, years of tenure, etc.

Because all DCR data, extent and readability, data were hand-collected exclusively by the researcher, reliability is improved. Mary Ruffin (2013) claimed that first-hand information gathered from the field is always accurate and reliable. Moreover, the data collected on dependent variables, DCR, can be judged as reliable since the sources are official, including companies’ official websites and those of regulators (ASE and SDC). Many of the dependent variables are derived from reputable research articles and best practices by regulators, such as the DCR lab by FRC (2015) and Best Practice Investor Relations: Guidelines for Australasian Listed Entity (AIRA, 2020). In terms of analysis, the study mainly examined two types of variables: dependent and independent. Those are explained in the following sections.

4.3.6. Procedures of Data Collection and Coding

Data collection of the DCR was based on a fundamental analysis of a company’s website contents to record the DCR items identified and compute a score for each company. This was performed in 2019. Specifically, the data collection steps included the following: first, the SDC website was accessed to locate each company's website[45] link (if no link was provided, Google was used to find out if there was a website).[46] Second, after locating the website, the website was thoroughly examined for the existence of each item of the DCR index. A score of '1' is given for each item, and '0' otherwise (incomplete existence of any item counts as "0"). Third, the total number of items recorded is summed up, and a score is calculated for each company (DCR).

In corporate disclosure studies, there are two scoring methods: weighted and unweighted. The unweighted system records 1 point for each reporting item of disclosure found on the website (Hossain et al., 1995). It implicitly assumes that all DCR items are equally important; thus, they are treated equally. This approach allows objectivity and helps avoid any potential sub-jectivity. Most DCR research has used this approach, such as Bonson and Escobar (2002), Pirchegger and Wagenhofer (1999), Ettredge et al. (2001), Ismail (2002), Kerckhoven (2002), Bin-Ghanem and Ariff (2016b), Abdelsalam et al. (2007a), AbuGhazaleh et al. (2012b), Kelton and Yang (2008), Lymer (1999). However, Abdelsalam (1999) illustrated that the use of un-weighted scoring could be misleading as the perceived importance of each item differs among companies, industries and even from time to time. Employing a weighted approach assumes that some items are more important than others. A limited number of studies, such as Xiao et al. (2004) and Bollen et al. (2006), used both weighted and unweighted systems approaches. However, this approach may require subjectivity in deciding which item is more important. Moreover, it is argued that when many items are included in a measurement index, weighted and unweighted scores can provide the same results Marston and Shrives (1991). This research employs unweighted scoring for overall DCR index items and dimensions (sub-index). Since

45 Note: a "0" is assigned to firms who have no website to indicate that they have not adopted DCR.

46 Linkage to each registered company's website is made available via a webpage on the SDC Website.

they did not target a user group, most DCR researchers (e.g., Bonson and Escobar, 2006) adopted and endorsed the unweighted index.

4.4.3.7. Independent Variables

All data were collected during the same period as the DCR data to provide more reliable results. CEO observable characteristics are straightforward; for example, AGE measures the CEO's age in years. Under UET, executive age can be a suitable proxy for some unobservable traits, such as ability and ethical behaviour (Xu et al., 2018). Age is simple to measure and verify, and it is reasonably available to the public from reliable sources (databases and annual reports). Independent variable data and their respective definitions are provided in Table 4.4 below.

Table 4.4 Independent Variables

CEO characteristics			
Variable acronym	Definition	Measurement	Coded as
AGE	Age of CEO in years (from annual reports)	By comparing the birth date and the date of data collection	CEO age in years (rounded to the nearest whole year)
TENU	Measures CEO tenure in years (from annual reports)	The number of years working as CEO in the firm	The number of full years in the CEO position.
FEM	Dummy variable measures gender (from annual reports)	By analysing the CEO's name to determine gender.	"1" if CEO is female, and "0" otherwise
EDU	Dummy variable	Annual reports, Bloomberg	1 if CEO has a bachelor's degree, 2 for a master's degree, and 3 for the doctorate.

Based on the UET perspective, one of the major factors influencing top management's impact on firms' decisions is their power. The current study used moderating variables that affect the relationship between CEOs' characteristics and DCR. In the Arab and Jordanian contexts, power increases due to some factors. Therefore, in both of the empirical chapters on DCR and LTS readability, top managers' power was used as moderating variable in the analysis.

4.4.3. Control variables

The main objective of the current study is to investigate the impact of CEO characteristics on DCR from the perspective of UET. It controls for the variables confirmed as determinants of DCR in previous studies. The discussion of results will briefly cover these variables to increase our understanding of the overall DCR determinants in emerging countries.

The main variables identified in explaining variations in DCR in prior Jordanian DCR research are firm size, profitability, and sector type (industry).

For example, Momany et al. (2014) and AbuGhazaleh et al. (2012b) have identified firm size, profitability, leverage, and CG factors as determinants. Therefore, it is necessary to include them in the regression model. For instance, signalling theory suggests that larger firms tend to have improved financial reporting because they try to signify ethical management practices, mainly because they might be affected by principal-agent problems more than smaller firms. As used in developed countries' studies (e.g., Ashbaugh et al., 1999, Debreceny et al., 2003, Ettredge et al., 2002), in addition to the emerging economies context literature. Likewise, more profitable firms are subject to higher agency costs. As a result, they are motivated to send signals of good management; thus, they may tend towards improved disclosure (proxies here are reading ease). On the other hand, some variables are found to be less supported in the literature as determinants of the DCR, such as auditor type (Bonson and Escobar, 2006). Moreover, the literature also shows that the industry to which a company belongs has a high impact on the extent of the disclosure (e.g., Qasim and Al Barghouthi, 2017). For example, empirical evidence in a study from Egypt similar to the Jordanian context found that the industrial sector is a significant factor that influences DCR. It is therefore expected that disclosure scores will differ by sector. Table 4.5 clarifies how each variable is measured and coded, based on prior research and the nature of the country. If there is high collinearity between any of these variables in the analysis, one of them is excluded from the regression model.

Table 4.5 Control Variables

Variable	Acronym	How Measured	Coding	Sources
Sector type	INDU	Based on ASE classifications	Dummy	The company's profile page on SDC website SDC website
Company size (Total Assets)	TA	Computation of the natural logarithm of average total assets for the most two recent years	Continuous	
ROA	ROA	Computation of average of Retune on Assets the most two recent years	Continuous	
Debt Ratio	LEV	The average of the two recent years of debt ratio	Continuous	
CEO-duality	DUAL	Dummy variable that measures the power of the CEO (holding the two most important positions)	Dummy	Annual reports
Independent directors %	INEP_D	The percentage of independent directors out of all BOD directors.	The percentage	
Big4 Auditor	BIG4	The big4 audit firms are Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers.	Dummy	
Board Size	BDSZ	The number of board members	The resulted number	SDC website
Institutional ownership	INST_O	The percentage of shares owned by the institution, not individuals	The percentage	
Foreign ownership	FOR_O	The total ownership for all non-Jordanians who own above 5% of the company shares.	The percentage	
Concentred ownership	CON_O	The total ownership for all who own above 5% of each company shares.	The percentage	
M2B ratio	M_B_R	Market to book ratio is a measure of growth opportunities, a company's current market is divided by book value.	Continuous	

4.5. Data Analysis plan

In a quantitative approach, data are converted into meaningful information through statistical analysis (Aliaga and Gunderson, 1999). Selecting a suitable statistical technique is the subsequent stage after collecting the required data (Mehmetoglu and Jakobsen, 2016). Finally, Stata software was used to enter, code, and analyse the data. Researchers use statistical techniques to analyse collected data to test the research hypotheses and support or reject theories. The selected analysis is determined based on the research purposes and data features. The statistical technique used to answer the main current research questions is Multiple Regression Analysis. First, comprehensive descriptive statistics were generated to describe the overall features of the data in the research study. Then, the Ordinary Least Squares (OLS) multiple regressions were used to analyse that data. Regression analyses are valuable for studying determinants of financial disclosure (Cooke, 1998). A robustness test was carried out before running the regression to ensure the study's reliability. The study first regresses CEO characteristics with the overall level of DCR and then with each subgroup of the DCR levels.

According to Trochim and Donnelly (2001), the three main steps in general social research and analyses are done in this sequence. First, data preparation which includes efforts to clean and organise the data before the examination. Second, data description through generating descriptive statistics. Without any attempt to conclude properties about an enormous population, this simple step aims to create summaries and graphs to 'only describe' the matter the researcher has already measured (i.e., no ambiguity). Afterwards, hypotheses testing and models through inferential statistics. The last stage is crucial to examine whether data is generalisable to the wider population while drawing research conclusions. Finally, sensitivity analysis is carried out to validate the results.

To investigate whether CEO characteristics affect DCR, the following data regression equation will be used. The overall DCR and sub-indices of DCR (Content and Format) are regressed against all the independent variables. The entire regression model to test the hypotheses regarding the impact of CEO characteristics on digital corporate reporting is presented below. All other models to investigate content and format will use the same equation.

DCR= *ƒ* (CEO Characteristics, Control Variables)

DCR = $\beta_0 + \beta_1$ AGE+ β_2 EDU+ β_3 FEM+ β_4 EDU+ β_5 INDU+ β_6 + β_7 TA+ β_8 ROA+ β_9 LEV+ β_{10} DUAL+ β_{11} BDSZ+ β_{12} INST_O+ β_{13} FOR_O+ β_{14} IDP_R+ β_{15} M_B_R+ β_{16} BIG4+ β_{17} DISP_O

Where:
β0= the intercept,
β1- β16= the coefficients of the independent variables and
ε= the error term.
AGE: CEO Age,
TENU: CEO Tenure,
FEM: CEO Gender,
EDU: CEO Education.
INDU: Sector Type,
TA: Company Size,
ROA: Return on Assets,
LEV: Debt Ratio,
DUAL: CEO Duality,
BDSZ: Board Size,
INST_O: Institutional Ownership,
FOR_O: Foreign Ownership,
INP_R: Independent directors’ ratio,
M_B_R: Market to Book Ratio,
B4: Big4 auditor,
CONO: Concentred Ownership.

4.5. Research Methodology and Methods of DCR Readability

This section explains the research methods used to study the impact of chairman characteristics on the readability of LTS published on the corporate website in AME-listed firms. First, the various research philosophies reviewed at the beginning of this chapter are revisited to guide the selection of the research strategy for the current investigation. These are followed by clarification of population and sampling, variables measurement, and data collection.

4.5.1. The Relevance of Positivism to Readability Research

Ontology refers to the subfield of philosophy that focuses on explaining the nature and organisation of the universe (Wand and Weber, 1993). It outlines the shape and character of reality and the information that may be gleaned from it. There are two opposing ontological positions: objectivism, which asserts that there is an independent reality, and constructionism, which posits that reality is the product of social interactions (Neuman and Robson, 2007).

There are two basic orientations or philosophies to social science research. First, positivist social scientists study society by utilising empirical techniques like those of the natural sciences. The positivist paradigm is founded on the philosophical notions that observation and reasoning are the most effective tools for comprehending people's behaviour; genuine knowledge relies on sensory experience and may be acquired via observation and experimentation. On the contrary, interpretivist researchers use social critique or symbolism analysis instead of objectively testable hypotheses. Yet qualitative and quantitative methodologies are sometimes combined in modern research work. A research paradigm is "a shared worldview that represents the beliefs and values in a discipline and that guides how problems are solved" (Schwandt, 2001, p.183). At the ontological level, positivists consider reality objectively measurable using elements unrelated to the investigator and instruments. The current study assumes the positivist viewpoint of applying theories on phenomena toward testing and providing evidence for the development of regulations (Bell et al., 2018).

In the majority of readability studies, textual complexity is generally considered to fall within the positivist paradigm. Such classification is because reality is supposed to lie outside the reader, whereas text difficulty can be judged through valid measures and formulas. Extensive studies on language use in accounting narratives have employed the conventional positivist paradigm. This paradigm is considered appropriate for the current study for the following reasons. First, the study of readability generally concerns finding features that can be quantified and objectively measured in reading material. The current research aims to measure textual complexity using valid quantifiable measures (reading ease, word count, and legibility). Second, computerised text analysis tools have helped make readability studies more efficient for studies covering a large number of companies. These allow objective and consistent measurement among all units or observations. Third, the current study of readability generally concerns finding factors that could be easily and objectively measured in reading material (i.e., LTS).

Major concerns have been raised by Riahi-Belkaoui (1995) regarding the low overall readability of accounting communications (i.e., complexity) and the level of comprehensibility of the meaning of accounting messages (that need improvement). The desired improvement can be achieved through regulations based on the outcomes of research based on positivism. In the accounting literature, one of the different narrative analyses of annual reports texts is content analysis (Beattie et al., 2004) to quantify the clarity of communication using readability indices. This may be because the language used is an inherently strategic form of ‘sense-making’ (Weick, 1995). Also, senior corporate leaders and managers ‘work with words’ (Jönsson, 1998, p.11). Especially for LTS, such as CEO and chairman letters, leaders have essential strategic and accountable duties (Amernic et al., 2010). The purposes of content analysis are fully explained by Prasad (2008), and it is especially valuable in measuring readability studies since they aid in making inferences by addressing questions regarding readability effects. As such, the positivist paradigm is the most appropriate approach to studying determinants of reading ease.

4.5.2. Research Strategy in Investigating LTS Readability

As explained in the previous section, the aims and objectives of the current study are achieved by means of a positivist approach. Therefore, the research strategy implies the use of quantitative, observational research. This aims to quantify a problem by measuring a specific aspect of behaviour that can be numerically identified by a scale or score (Leedy and Ormrod, 2019). Technological developments provide accounting researchers with powerful tools that facilitate understanding corporate disclosure behaviour (Core, 2001), especially for research purposes. In particular, the generated scores covering readability and word count are valid and already used in accounting and finance research.

The quantitative methodology relies on panel data which is information involving longitudinal measurements of the same variables obtained from the same set of units across time. Descriptive research methods are often used whenever a controlled experiment is impractical or difficult to conduct. It was highlighted by Beattie (2014) that accounting research around corporate narrative reporting had observed a swing from positivism toward interpretivism; however, he argued for the importance of both methodologies of research.

Some readability studies used experimental research designs following different research objectives. For instance, Besuglov and Crasselt (2021) aimed to study the impact of report readability and selecting reporting language (executives' mother tongue or a foreign language) on risk-taking in a management accounting context. Participants were given material in two languages (English and German) with two readability levels (high and low). Then they acted as firm managers to choose from two purchase offers, and then risk attitudes were captured for comparison and analysis (Besuglov and Crasselt, 2021). Such methods are suitable for these particular objectives. Moreover, the main constraint in achieving the commonality of language goal (to enhance the conveying of the meaning) is evident in the lack of feedback from users and stakeholders (Cronje and Gouws, 2011). There are different ways to improve the understandability of text, as researchers argue. The reading process is beyond the current research's purview. In a paper reviewing research paradigms in readability studies, Janan and Wray (2013) clarified the human mind works during the reading process. Studying users' views can be an effective but difficult method, especially in emerging capital markets. But importantly, it is not relevant to the current study objectives. The current research is not seeking to find reliable technical ways to improve readability (i.e., focusing on the text itself). Alternatively, it investigates the adverse and positive impacts that corporate key players can have on text readability based on the UET perspective.

Adopting a positivist research approach permits the collection of valuable data to study LTS and UE (e.g., readability patterns and observable characteristics of UE) that proxy some unobservable tendencies). Such data will allow policymakers to work on improved regulations that improve readability. Moreover, study outcomes hope to offer insights on best practices by leaders of particular traits, thus offering guidance to regulators on upper echelons selection or appointment. Accordingly, the employment of the positivist paradigm in the current research is beneficial and still crucial, especially for developing countries that need regulations (for insight into this, see: Leuz, 2010)

In summary, the growth of non-financial material in corporate disclosure practices and the application of contemporary content-analysis methods (Beattie, 2014) support the selection and relevance of the current research objectives to advance our knowledge about narrative reporting quality.

4.5.3. Population and Sampling

This part of the current study aims to test the ability of UET to partially explain the differences in reading ease of digital narrative disclosures. The study population includes the listed companies in seven Arab Middle East (AME) countries (Jordan, KSA, UAE, Oman, Qatar, Bahrain, and Kuwait). Data from the AME companies are expected to provide stronger support for the theory. Several other reasons for this selection are discussed in the following section. The sample selection criteria are informed by previous relevant scholarly work documenting that company leaders influence the length and content of LTS (Kaplan, 2011) Gamache et al. (2015). In other words, for listed firms to be included in the study, they should have issued an English version of LTS and all independent variables data. Second, they must have had the same chairman from the years 2014 – 2018. Consequently, complete data were available for 101 firms which is an adequate number. However, the total number of collected LTR is 379, covering the years (2014-2018), which means that we have unbalanced data. Since we have more units ‘N’ than time ‘T’, we have Cross-Sectional Time-Series (CSTS).

4.5.4. How the Context of the AME is Unique

This section explains the main factors that motivate and justify the present study to examine the emerging economies in the Arab Middle East (Jordan, KSA, UAE, Qatar, Kuwait, Oman and Bahrain)[47]. The justification for selecting this context is discussed in the following points:

First, there is a shortage of studies on the association between UE and narrative reporting quality in the AME region. The core disclosure requirements and narrative reporting guidance in the AME context are very limited and do not address the issue of readability. Second, all the sample countries are part of the Middle East, as classified by the OECD. These countries share similar characteristics. They speak the same language (Arabic) and have similar cultural values and traditions (Barakat, 1993). They also have similarities in their financial markets and adopt IFRS, a similar corporate reporting environment; thus, they have homogeneous features. This allows better analysis depicting the impact of corporate leaders on the study's phenomenon. Third, the selected countries are stable (for example, not affected by the Arab spring). The such selection allows for less heterogeneity. Fourth, the selection of countries other than the USA is consistent with the upper echelons viewpoint, as explained by Carpenter et al. (2004), which suggests that variances in managerial traits may adequately represent disparities in cognitive abilities, mindsets, and perspectives by referring to early research in demography.

It has been argued that accounting systems in these states have been shaped and influenced by the attendance of lengthy western colonial powers (e.g., the UK and France) (Kamla, 2007). Influenced by massive income growths from oil and natural gas, the Gulf countries have developed from small, disorganised markets into modern federations of financial institutions over the last half-century (Seznec and Mosis, 2018), Especially UAE, Qatar, Kuwait, Bahrain, and

Oman[48]. Despite the similarities among the Gulf countries, there are differences in their CG performance. The five countries ranked from best to worst in this area are Oman, Kuwait, UAE, Bahrain and Qatar. Moreover, these countries have adopted IFRS in different years. The IFRS adoption date for the sample countries is presented in Table 4.6 below.

Table 4.6 Sample Description

Country	Companies	Cum companies	LTS
Jordan	25	25	105
KSA	18	43	74
Qatar	15	58	60
UAE	12	70	43
Kuwait	12	82	45
Oman	10	92	26
Bahrain	9	101	26

It is noted that LTS is presented on Jordanian companies' websites more than in other AME countries. Table 4.7 above shows the number of LTS from each sector. The largest number is from financial companies since they have more websites than other sectors.

Table 4.7 Number of LTS by Sector

	Freq.	Per cent	Cum.
Manufacturing	73	19.26	19.26
Financial	208	54.88	74.14
Service	98	25.86	100.00
Total	379	100	

Methodologically, the study included numerous control variables to decrease any heterogeneity among countries in addition to firms. Examples include IFRS adoption in addition to controlling for the fixed effects of industry and country across all regression models. However, it is important to underline that most studies have studied the entire annual report or parts other than the chairman's letter; thus, not all control variables in the literature are included in the current

48 argues that the gulf markets "have been controlled by various state institutions for socio-political reasons. In particular, the Saudi state has used its sophisticated regulatory regime to push for industrialization and diversification, which culminated in the Vision 2030 plan.

study. Similarly, Klein et al. (1994) proposed mixed-determinant models since a condition of interest is associated with predictors at various levels (firms and UE). An organisation's performance may be affected by the leadership behaviour of the UE (e.g., CEO). It is also informed by the work of Waldman and Yammarino (1999), who argue that leader impact rather than a team is given certain conditions, speech, and other communication content analysis may help evaluate distant leader charisma. All countries have similar legal systems, that is, civil law. Table 4.8 below lists IFRS adoption and income group for each country.

Table 4.8 IFRS Adoption Year and income group

Country	IFRS Adopted in	Income Group
Jordan	1997	Upper middle income
Kuwait	1990	High income
Oman	1998	
Qatar	2002	
KSA	2017	
UAE	2015	
Bahrain	2001	

Oman is one of the early adopters, the third since it implemented IASs/IFRS as national accounting standards in 1998. The sole source of accounting regulation in Oman is the commercial code. However, financial institutions are also bound by the accounting and auditing regulations issued by the Central Bank of Qatar. Firms are required to produce audited financial accounts, including cash flows, on an annual basis according to Companies Law No. (5) (2002).

4.5.5. Variables Measurement and Data Collection

This section explains the data collection procedures. After variables measurement is provided, procedures followed to collect independent and dependent variable data are clarified. Following academic works (e.g., Li, 2008) and regulators such as the U.S. Securities and Exchange Commission (SEC) (Cox, 2007), the current research judges companies with less readable and overly lengthy annual reports to be opaque (i.e., not transparent). Thus, corporate reporting is of inferior quality.

4.5.5.1. Variables Measurement

The data has been collected for companies from all sectors for over five years. Therefore, descriptive statistics of the panel data help clarify various textual features of representative industries' narrative reporting in the AME. Panel data allows us to understand the phenomena over a lengthier time (compared to single-year data); thus, analyses, including hypothesis testing, are more reliable. Panel data contains more information, is more inconstant, and has higher efficiency. It can capture human behaviour's nuance more than a cross-sectional study or a time series (Hsiao, 2007). In particular, the differences in chairman and firm characteristics are expected to predict the differences in narratives' readability. This means the dependent variables are regressed against the independent variables (chairman characteristics).

4.5.5.2. Dependent Variable Data Collection

The content analysis approach to textual analysis includes two identifiable major divergent methods: thematic and syntactic. The improper syntax may hinder the right meaning from being transmitted, and a degree of syntactic complexity has long been connected with appropriate readability (Giles and Still, 2005). Therefore, the syntax feature would match stylistic considerations (Giles and Still, 2005). In contrast, thematic analysis is a technique for systematically dissecting and organising qualitative data by labelling individual observations and phrases with relevant codes to aid the finding of central tenets (Conaway and Wardrope, 2010, Braun and Clarke, 2019).

The following steps were followed to collect the necessary data on the dependent variables. The first step of data collection was to locate the company's website using each country's stock exchange website or search engines such as Google. Second, a company's website was searched to locate the LTS. It is found on the website as either a stand-alone document (HTML or PDF) or within the annual report document. These can usually be found under the investors' relation section or webpage. Third, LTS text is extracted and copied into Microsoft Word and filtered/cleaned by removing any line breaks and fixing issues such as missed words (uncopied). The aim here is to ensure that we assess the exact text as it appears to the human reader. The structure of LTS (i.e., words and paragraphs length, punctuation marks) must remain unchanged. If these conditions are not met, the scores may differ from what they should be. Fourth, the text is copied into the content analysis tool (readable.io), which is available online. Fifth, to avoid the text being calculated more than once and following Merkl-Davies et al. (2011), any tables, graphs or figures are excluded from the analysis. Finally, the tool starts processing the text and generates scores for reading ease and other features. These are recorded for each firm-year observation LTS in Microsoft Excel. Additional checks during data collection revealed that the English-language version of the chairman letters is similar to the available Arabic version in terms of paragraph lengths, word count and other features. Notably, some firms do not have Arabic financial statements on their websites. Studying these facts is beyond the current study objectives.

Readability may also improve content because online reading habits are so different from traditional reading habits. It has been argued that website users scan content for the information they need, especially if they arrive at the page from a search engine results page. At the same time, technology allows companies to present information in a more reader-friendly way and eases users' ability to choose the elements that they would like to read. However, it can be argued that chairperson letters in PDF format can be more subject to complex writing styles than HTML. A certain feature of websites' disclosure is that the content can be removed or changed, which is not possible in the case of a PDF after being saved on readers' devices.

Unless users download the information on their computers, they can’t see differences or detect any manipulation (i.e., change).

4.5.5.3. Independent Variable Data Collection

Data collection for independent variables was done after the LTSs were collected. The numerical data were collected from annual reports and databases, as shown in Table 4.9. Data on some variables were difficult to obtain, sometimes in certain countries, such as chairman age. Other variables required other procedures. For instance, the chairman’s signature size was collected by first obtaining individual annual reports for each firm, searching for the shareholder letter and observing the chairman’s signature size to assign a score based on the criteria used in previous studies.

This study used the UET perspective and suggests that independent variables of chairman characteristics (age, education, tenure and narcissism) are associated with readability. Informed by Courtis (2004b) that the section's readability depends on who writes it, the study controls for some variables based on relevant literature, especially those suitable to the AME and LTS. These include firm size (e.g., Guay et al., 2016, Hassan et al., 2018), leverage ratio (Hassan et al., 2018) and Fisher et al. (2019), ROA (Return on Assets) as used by Fisher et al. (2019) and Habib and Hasan (2020), firm age (Bakarich et al., 2019). Moreover, some regulatory variables (IFRS) may affect the quality of CR (e.g., readability). Therefore, a dummy variable is included in the regression models to control for this effect. Moreover, this study differs from previous studies that did not control for CG and ownership structure effects (e.g., Xu et al., 2018). Methodologically, including these control variables aims to decrease the heterogeneity across firms, industries and countries covered in the study. The educational level variable is relevant since the readability formula relies on general reading ease rather than specialised terminology. It can proxy qualities such as communication ability and ethical behaviour. Future research may examine education specialisation and other readability formulas since business studies can familiarise managers with accounting and business terms. These variables are defined, and their measurements/coding procedures and data sources are clarified in Table 4.9.

Table 4.9 Independent Variables Measurements

Panel A: Interest variables			
Variable	Meaning	Measurement/Code	Data Source
AGE	Chairman age in years; denotes ability or experience	Continuous variable; the age of the chairman at the end of each financial year	Annual reports, firms' websites, and databases (Bloomberg and Market-screener).
TENU	The length of time the chairman has spent in the position in the firm	Continuous variable in years	
EDU	Education level	3 dummy variables 1: Bachelor's or less, 2: Masters, 3: Doctorate	
FEM	Gender of chairman	1: If the chairperson [49] is female 0: Otherwise	
SIGSZ	Indicator of overconfidence. To measure how large the chairman's signature in the LTS is.	2: the signature is bigger than three lines. 1: the signature is two lines or less (normal). 0: no signature.	Chairman LTS
Panel b: Control variables			
DUAL	The condition is that the chairman also serves as the CEO.	1: role duality exists 0: otherwise	Annual reports
ROA	To measure profitability	Return on assets= net income divided by total assets (in US dollars).	
TA_L	Total Assets	The number of total assets (in US dollars)	
INDUS	Industry type under which the company is classified	Dummy variable for each industry	Stock Exchanges websites
LEV	Measures leverage ratio	The debt ratio (total debt / total assets).	Annual reports, company website
FAGE	Company age (Xu et al., 2018)	The number of years passed since the firm has started its operations.	

49 The noun chairman can refer to the person chairing the board, whether male or female, though rarely a woman is called a chairwoman

INDE	The chairman is classified as independent of the firm.	Independent =1, otherwise 0	
NON_E	Non-executive chairman (Multi-collinearity so removed)	Dummy variable 1 if the chairman is classified as a non-executive	
IFRS	Dummy variable	if the LTS year is after adopting IFR, 0: otherwise	IFRS website
CNTRY dummy	To classify the company by the country to which it belongs.	Dummy variables	Annual report
CMOW	Chairman ownership	The percentage of shares owned by the chairman to the total number of shares	Annual reports and Orbis
GOVOW	Governmental ownership	The percentage of shares owned by the government to the total number of shares	
CONCE	Concentrated ownership	The total percentage of shares owned by investors who own over 5% of shares	

To ensure validity, the current research used many measures of some independent variables. For example, the chairman's signature size is a proxy for overconfidence/narcissism. Since previous literature shows the possibility of some proxies being highly correlated, one is dropped if any two of these variables are highly correlated. Overconfidence can be measured by different methods, such as stock options, which are common in developed countries. Alternatively, proxies such as big signature size (e.g., Ham et al., 2018) and photo size (Chatterjee and Hambrick, 2007, Arena et al., 2018) have been used by some researchers to proxy overconfidence.

4.5.5.2. Dependent Variable: Readability of LTS

The dependent variable is the readability score of corporate narratives. Such textual features will quantitatively estimate a text's ability to be easily understood. These features are word length, sentence length, number of syllables per word (Clatworthy and Jones, 2003), and word count. Shorter words, sentences, and letters are easier to read. Since reading difficulty is associated with lower comprehensibility, it can indicate low-quality narrative reporting. Accounting standard-setters and some listing authorities have addressed readability issues using formulas such as SEC (Cox, 2007). Accordingly, readability can be a useful measure of the quality of understandability, which is part of the IASB framework. Flesch Reading Ease (FRE) measures readability by giving a score. The average adult can read a text with an FRE score of 70-80. Teachers used a conversion table to interpret the FRE score as a US education grade. A modified version of FRE was established in the 1970s called 'Flesch-Kincaid Grade Level' to assess a text's approximate reading grade level. Both formulas share the same measurements (word length and sentence length), but the weighting is different. Another known readability formula is the Fog index, developed by Robert Gunning in 1952 (Li, 2008). Moreover, other readability measures, such as the 10-k file size used in the USA, are claimed to be more powerful than traditional measures (Loughran and McDonald, 2014). The following table 4.10 illustrates the meaning, measurement, and coding procedure of the dependent variable (main and alternative proxies).

Table 4.10 Measurement of the dependent variables

Dependent Variable	Meaning	Measurement/Code	
RE (Flesch's Reading Ease score)	A score between 1 and 100.	The number resulted from textual analysis by measurement of each LTS.	A higher score denotes more readable text.
FOG (Gunning Fog formula)	The formula generates a grade level, typically between 0 and 20. The procedure estimates the years of formal education the reader requires to understand the text on the first reading.	The formula 0.4 [(words/sentences) + 100 (complex words/words)], where difficult words are defined as those containing three or more syllables. This number is taken as a code for each particular letter.	"In general, a value of the Fog Index above or equal to 18 indicates that the text is unreadable; 14–18 difficult to comprehend; 12–14 ideal; 10–12 acceptable; and 8–10 childish. "
LEG	Indicator of how LTS can be read or deciphered with characters' features, background colours, font types and size, and space	Four criteria-each is 1 point: adequate font size, non-vague font, natural spacing, and appropriate background colour [50]. 4: highly legible 3: acceptable legibility (three conditions met) 1.5: partially legible (two conditions met) 0: illegible (no condition met)	Evaluation of the letters' typeface in the PDF file of the annual report or the website if HTML.

The FRE score measures readability in the main analysis. It is argued by Courtis and Hassan (2002) that accounting researchers mostly adopt the FRE formula. It is used in cross-sectional and longitudinal studies such as Jones (1988) and Moreno and Casasola (2016). Therefore, it is used in the current study. FRE measures how complex a text is. The score typically ranges between 0 and 100 to designate how difficult the writing is to read. The lower the score, the more difficult the text is to read. The FRE uses the average length of sentences (measured by the number of words) and the average number of syllables per word in an equation to calculate the reading ease. FRE score is calculated as follows:

FRE=206.835- 1.015 × (total words ÷ total sentences) - 84.6 × (total syllables ÷ total words)

50 Different guidelines state that there is a need for "enough colour contrast between the type and its background"

The resulting readability scores can be interpreted as illustrated in Table 4.11.

Table 4.11 Meaning of FRE Readability Scores

FRE Score	Grade	Summary
90 - 100	5th-grade level	Very easy to read
80 - 90	6th-grade level	Easy to read
70 - 80	7th-grade level	Fairly easy to read
60 - 70	8th and 9th-grade level	Plain English
50 - 60	10th to 12th-grade level	Fairly difficult to read.
30 - 50	College level	Difficult to read.
10-30	College Graduate	Very difficult to read
0 - 10	Professional readers only	Extremely difficult to read

Each scoring category denotes an estimated grade level that helps us know the prose literacy of the audience. Generally, a person's literacy can help them achieve goals and develop knowledge and potential by using printed and written information. Unfortunately, this literacy has become low worldwide. For instance, it was found that 54% of adults in the USA have prose literacy below the 6th-grade level meaning that the average adult reads at the 6th-grade level as of 2020 (Nietzel, 2020) compared to the 7th grade in 1996.[51] Despite regulators' recommendations for issuers to consider their audience, investors' actual literacy cannot be easily identified. Therefore, it is emphasised that narrative text should be kept as clear as possible. As a rule of thumb, for a business script, a good readability score is around 65 (grade level 8-9).

Several alternatives to Flesch are available, including Gunning fog index, SMOG index, Fry readability formulas (Courtis and Hassan, 2002), and they explain, "All of these formula approaches have been calculated and validated on prose sections written in English." (Courtis and Hassan, 2002, p.399).

51 Literacy is "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential." Source: National Center for Education Statistics (2022) Avaiable at: https://nces.ed.gov/naal/fr_definition.asp

4.5.6. Validity and Reliability

Several general and specific research procedures were followed to ensure validity and reliability. The general procedures are as follows. First, there is consistency in the covered period to analyse narrative reporting readability among all firms. The same five years (2014 through 2018) are selected. Second, the empirical investigation is not influenced by the corpus/text selected since all empirical work is carried out using the same narrative section, the LTS. Finally, all data are hand-collected from reliable and official sources.

Moreover, specific procedures were carried out to check the validity of the dependent variable measurement. First, the study used a well-known readability tool (readable.com)[52] which produced the measures/scores. The researcher subscribed to the PRO service of this tool to generate a wider range of textual features. Second, one of the challenges in readability measurement is ensuring the assessment of the text in its original design (e.g., words and paragraph numbers, punctuation, starts and ends). Third, another tool was used to check that the selected content analysis tool provided a reliable readability measurement; the 'Text Readability Consensus Calculator (online)' was used for a sample of 40 LTS. When the results were compared, no differences were detected. Fourth, the readability measures were based on relatively objective rules performed within these formulas. Five LTS are randomly selected to calculate word count and FRE by hand to ensure that the tool produces the same results as the original equations. The scores were found to be the same. Finally, 'Test-Retest Reliability' is done on 20 LTS to test the tool's reliability over time. The obtained scores are consistent (unchanged) across time.

52 This online tool is reliable and used by researchers in many fields (e.g., Doruk et al., 2020; Hughes et al., 2022).

4.5.7. Data Analysis Plan

After collecting textual data, the relevant narrative text was coded using computerised software (readable.com). Excel was used to enter the variables' scores and to check for any wrong entries or missing values. The data was then entered into Stata software to ensure they were ready to use with appropriate coding. Stata software was first used to generate descriptive statistics to depict the patterns of readability. Then regression analysis was done to test the research hypotheses. The regression analysis follows Bamber et al. (2010) methods that allow for studying the presence and extent of incremental effects of individual executives on their firms' DCR. These seek to isolate manager-specific fixed effects on firms' disclosure characteristics after controlling for some economic factors affecting disclosure styles, firm fixed-effects, and time-period fixed effects (Bamber et al., 2010). Finally, robustness checks follow these.

The regression model below predicts the readability of LTS. The readability score is regressed against these independent variables. The entire regression model to test the hypotheses regarding the impact of Chairman characteristics on digital LTS readability is presented below.

$FRE_{it} = f$ (Chairman Characteristics, Control Variables)

$$FRE_{it} = \beta_0 + \beta_1 \, AGE_{it} + \beta_2 \, EDU_{it} + \beta_3 \, FEM_{it} + \beta_4 \, TENU_{it} + \beta_5 \, INDU_{it} + \beta_6 \, SIGSZ_{it} + \beta_7 \, TA\_L_{it} + \beta_8 \, ROA_{it} + \beta_9 \, LEV_{it} + \beta_{10} \, CMOW_{it} + \beta_{11} \, GOVOW_{it} + \beta_{12} \, DUAL_{it} + \beta_{13} \, CONC_{it} + \beta_{14} \, INDE_{it} + \beta_{15} \, LEV_{it} + \beta_{16} \, BIG4_{it} + \epsilon_{it}$$

Where:

RE: Readability Score,

$\beta 0$= the intercept,

$\beta 1$- $\beta 16$= the coefficients of the independent variables and

ϵ= the error term.

AGE: Chairman Age,

TENU: Chairman Tenure,

FEM: Chairman Gender,

EDU: Chairman Education,

SIGSZ: Chairman Signature Size,

INDU: Sector Type,

TA: Company Size,

ROA: Return on Assets,

FGAE: Firm Age,

LEV: Debt Ratio,

DUAL: CEO Duality,

CONO: Concentred Ownership,

CMOW: Chairman Ownership,

GOVOW: Government Ownership,

IND: Independent Chairman,

B4: Big4 auditor

4.6. Research Ethical Considerations

Data analyzed in the quantitative studies are in the form of numbers. In such research approaches, the examined behaviours are counted and scored (DCR levels), CEO characteristics are quantified, and other measures are recorded in quantity. Although the current study is non-experimental, some ethical issues may be present. Not imposing or manipulating conditions gives the research less complexity than other research types (i.e., empirical). The ethical issues that this research might cause are minimal. This is based on the following facts. First, the required data are available for public use. Before browsing the sampled websites or searching databases, no permission is required to collect DCR data or CEO and chairman data. Therefore, consent for further use and analysis of these accessible data is implicit. Second, though not of sensitive nature, all gathered data (including CEO and chairman demographics) are analysed and used fairly and lawfully for research purposes only. Third, no names of any sampled companies or individuals are mentioned directly or indirectly in this research. Fourth, there are no expected physical or other risks (e.g., civil actions) or psychological harm to any person. Fifth, selecting the variables in the research model, considering control and moderating variables, enhances the good neutral stance in the study procedures. Sixth, neutral analysis and results are carried out. Seventh, there was a continued assurance of integrity in implementing this research and generating its results. Accordingly, the research benefits from the study are far outweighing any potential risks.

4.7. Summary

The current study employs a positivistic approach to investigate the relationship between upper echelons characteristics on the extent and readability of digital corporate reporting. This approach aims to inform policymakers and enhance the relevant regulations on best practices of DCR (more adoption and improved reading ease). Hence, the research design uses a quantitative methodology by which hypotheses are deducted from a pertinent theory (UET) to address the research gaps in developing countries, specifically the AME. The methods consist of collecting the necessary data (UE characteristics) from reliable sources (official corporate websites and databases). Part 1 relied on a content analysis strategy to record the DCR index items presented on the websites of publicly traded firms based in an AME nation (Jordan). These are investigated for a group of independent variables (CEO characteristics) collected from specific databases. The research is extended (part 2) by selecting a second sample of companies from a cross-border setting to analyse the correlation between the quality (readability) of a specific component published online (chairman letter to shareholders) via the corporate website and the quality of the underlying data. The dependent variable data were hand-collected in the same short period (i.e., cross-sectional). Lastly, the collected data were analysed using advanced statistical tools for descriptive statistics and multiple regression to test the proposed relationships.

Chapter 4 provided the methodology employed to investigate the relationship between UE characteristics and DCR extent and readability. Chapters 5 and 6 provide the DCR extent results, while chapter 7 provides the readability results.

CHAPTER 5: DESCRIPTIVE STATISTICAL ANALYSIS: PATTERNS OF DCR DIFFUSION IN THE CONTEXT OF AN EMERGING MARKET

5.1. Introduction

This data analysis chapter addresses the research objective of examining the adoption of DCR and patterns among Jordanian firms. This helps to strengthen the UET viewpoint (i.e. by demonstrating how innovation is diffused in the Jordanian setting). A well-constructed research instrument (disclosure index) is applied to measure and analyse DCR data in Jordan using descriptive statistics (Chapter 5), and its regression is conducted to investigate DCR determinants (Chapter 6). The index ascertains technological components that improve the efficacy of disclosures for various users (shareholders, creditors, workers, consumers, and NGOs). The rest of the chapter is organised as follows: first, descriptive statistics are provided of the independent, control, and dependent variables. Then, the overall DCR scores are analysed first, followed by content and presentation format dimensions. The results are discussed to illustrate how well this innovation is diffused in Jordan, with trends of adoption highlighted based on previous DCR literature concerning Jordan. Lastly, a summary is provided.

5.2. Descriptive Analysis

Descriptive statistics permit the explanation and comparison of the study variables numerically (Saunders, 2011). In this section, using a comprehensive and validated DCR index, the categories and items of this index, along with the CEO characteristics, are analysed to determine the current level and patterns of utilisation of Internet technologies as a communication tool by Jordanian listed companies. A sample description is presented first, followed by the independent variable statistics. Then, the focus turns to the dependent variable frequency measures (count, per cent, and frequency), central tendency measures (mean, median, and mode), and dispersion measures (e.g., range, variance, and standard deviation) for the overall DCR score and its categories.

5.2.1. Sample Description

The context for this research is Jordan's developing market. The population consists primarily of Jordanian holding corporations. The sample comprises all firms that were listed on the Amman Stock Exchange (ASE) in April 2019. On the ASE's first and second markets, listed firms are traded. Listed companies were selected since it was envisaged that sufficient data would be obtainable for the research, unlike for unlisted companies. Listed firms have more data accessible, are larger, have a broader shareholder base, are subject to stricter disclosure standards, face more sophisticated regulations, and have a greater demand for their information. Therefore, they are more capable of carrying out DCR than unlisted firms. According to the Jordanian Securities Depository Centre (SDC), listed companies are divided into four major sectors: banking, insurance, services, and industrial. Data was collected to gather the required data for this cross-sectional study. To that end, the corporations' websites were inspected to record the items of the DCR index. In detail, the procedures consisted of browsing the SDC website (www.sdc.gov.jo) to seek out links to the sample companies' websites. If no link was given to a company website on the SDC directory webpage, search engines were then used to locate a website. The search engines included www.google.com.jo and www.zoominfo.com, a specialised database for business executives. The collected data were adequate to evaluate DCR practices' patterns (Chapter 5) and examine the proposed DCR determinants (Chapter 6).

The Amman Stock Exchange (ASE) database contained 196 listed companies in 2019 (two are currently suspended from trading). Sixty were listed in the first market, while 136 companies were listed in the second. Despite this large number of firms in the second market, around 70%

of their total shares accounted for only 39% of the total shares traded through the ASE since these companies were smaller and had comparatively low trading activity.

Of the 196 listed companies in 2019, 20 were excluded because of a lack of data. This left 176 companies described as website adopters, constituting the study sample. As can be seen, 122 companies had functioning (i.e., accessible) websites. These 122 companies were studied in the primary analyses and described as DCR adopters. Descriptive statistics were generated to describe the focal characteristics of the sample.

5.2.2. Descriptive Analysis of CEO Characteristics and Control Variables

The main independent variables in this study are CEO characteristics. This section describes CEO characteristics as independent variables (in addition to control variables, which are divided into three categories: firm's characteristics, corporate governance, and ownership structure) for the companies that are website adopters (122 firms). Table 5.1 reports the descriptive statistics for the sample of 122 firms with a DCR score above 0.

Table 5.1 Descriptive Statistics of the Independent Variables

Panel A: Continuous variables					
Variable	Measurement	Mean	Std. Dev.	Min.	Max.
CEO Age	Years	55.708	10.47	32	84
CEO Tenure	Years	10.801	8.27	2.00	43
Education *	BMD	2.050	0.36	1.00	3.0
Panel B: Binary variables					
		Frequency	Percentage	Cum. Perc.	
Female	Dummy	5	0.041	0.041	
Male	Dummy	117	0.959	100	
*BSc	Dummy	75	62.50	62.50	
*MSc	Dummy	34	28.33	90.83	
*Doctorate	Dummy	11	9.17	100.00	
		122		100.00	

The mean CEO age was around 56 years, with a minimum observation of 32 years old and maximum age was 84, respectively, and many CEOs aged above 70. The average length of a CEO tenure was 12 years. This was expected since Jordanian laws do not yet provide strong guidance concerning tenure. The shortest-tenured CEO had spent only two years in the role, while the longest had spent 43 years. Among the 122 CEOs, 11 held a doctorate, 34 had a master's degree, and 77 CEOs had a BSc degree. The sample reflected the low importance of a person's educational level when hiring a CEO in Jordan and the high admiration for academic degrees in Middle Eastern culture. The results showed only five female Chief Executive Officers in the sample. This highlights the underrepresentation of women in corporate leadership positions. None of the five female CEOs was a board member, though two had a role tenure of over ten years. Later, in Chapter 6, gender and the level of DCR will be tested to investigate whether the two are associated. The next section deals with control variables. Table 5.2 provide the descriptive analysis results for them.

Table 5.2 Descriptive Statistics of the Control Variables

Panel A: Continuous Variables					
Variable	Measure ment	Mean	Std. Dev.	Min.	Max.
Company size	(JOD 000)	598,000	2,450,000	1375	24,700,000
Debt ratio	Ratio	0.671	2.06	0.00	22.7
Foreign ownership	Ratio	18.520	26.08	0.00	94.3
ROA	Ratio	0.446	6.22	-25.26	25.4
Market-to-book ratio	Ratio	1.076	1.12	0.00	8.1
Independent directors	Ratio	0.135	0.19	0.00	0.8
Institutional ownership	Ratio	42.929	30.99	0.00	100
Concentrated ownership	Ratio	62.732	22.98	0	100
Panel B: Binary					
			Frequency	Percent	Cum. Perc.
Duality	Dummy		8	6.5%	6.5%
Big4 Auditor	Dummy		61	50%	50%

N =122

The studied companies included 122 companies from all sectors. Eight cases of CEO role duality were found, representing only 6.5% of the sample. This low number of CEO duality cases was expected since Jordan's corporate governance (CG) codes recommend role separation. It is expected that DCR is lower for a firm with role duality since, based on the agency theory, CEO duality likely causes dominant behaviours, low transparency, poor accountability, and, eventually, negative corporate performance and growth (Tian and Lau, 2001). Sixty-one of the firms were audited by big4 auditors. There was highly concentrated ownership with a mean value of approximately 63%.

It was found that around half of the 122 firms were at least 25 years old, with the oldest firm 88 years old. Moreover, it was found that 50% of the 122 companies were free of foreign ownership. It was also found that around half of the firms had an institutional ownership percentage of over 40%. The following section focuses on the dependent variable, DCR.

5.2.3 Patterns of Current DCR Practices

The first observed information when data is collected is the existence of a functioning website. Corporate websites were first trawled for the data required to generate detailed descriptive statistics and, later, examine DCR disclosure determinants (chapter 6). Only 69% of the listed companies had active (accessible) websites. This was a high percentage compared to previous Jordanian studies, which could signify increasing awareness of websites' importance. Moreover, approximately 88% of these companies offered an English-language version of their website. Remarkably, 29 companies operated their websites exclusively in English. Further research may be conducted to test whether this is associated with a higher percentage of foreign investors, for example.

Table 5.3 below presents the descriptive statistics for the dependent variable, the overall DCR score, and the major DCR factors considered by the index.

Table 5.3 Descriptive Statistics for the Dependent Variable (Overall, Dimensions, and Groups)

	Panel A: DCR scores					
Variable	No.	Mean	Percent	Std. Dev.	Min.	Max.
Overall DCR	53	15.208	29%	8.495	1	32
Content	32	7.557	24%	5.894	1	24
Financial info.	11	3.098	28%	2.386	1	10
Corp. governance	13	2.787	21%	2.578	0	10
CSR	3	0.762	25%	1.121	0	3
Timeliness	5	0.91	18%	0.853	0	4
Format	21	8.451	40%	3.764	0	19
User support	10	5.73	57%	2.231	0	10
Technology	11	2.721	25%	2.07	1	12
	Panel A: Selected items of the DCR index					
Variable	score	Mean	Percent	Std. Dev.	Min.	Max.
IR webpage, dummy	1	0.367	37%	0.484	0	1
Social media links*	1	1.832	37%	2.027	0	5
Number of Years A/R*	1	3.617	18%	4.637	0	20
Annual report 2018	1	0.375	38%	0.486	0	1
AR in English	1	0.292	29%	0.456	0	1

N=122 * If two or more are available, 1 point is recorded in the DCR index

The DCR mean value was 15.2, meaning that, on average, the companies report 15 items of the DCR index on their websites. The highest firm scored 32 items. Only 45 firms presented the full annual report on their websites. Some firms presented an archive of annual reports; the maximum number was 20 years.

The discussion below is based on descriptive statistics that explore the current patterns of DCR practices in Jordan, thus considering the independent variables in more detail. The DCR is also explained in terms of each category of items to offer insight into the overall magnitude of DCR in the Jordanian context. It was found that, on average, the overall content score for DCR was

23% of the items. However, the firms' general awareness of publishing online was worse, with only 17% of them presenting some DCR items. It can be understood from the results that listed Jordanian companies demonstrate moderate overall DCR practices. This might be since DCR on corporate websites is still largely voluntary in Jordan. Since the index used to determine the DCR adoption includes financial and non-financial items, there was an opportunity to conduct an in-depth analysis.

It is ordinary to offer an English-language version of the company website in Jordan (similar to the likelihood of having an Arabic version). This denotes the increased use of English as a language of business. The statistics from Jordan show that non-Arab investors' ownership constituted 12.2% of the total market value in Jordan in April 2019. They purchased shares of listed firms valued at JOD50 million (35m USD), representing 50.5% of the total shares purchased during January–April 2018. This may be associated with the current results that why 29% of the 122 studied Jordanian firms presented their annual report in English.

The following section classifies DCR content items into financial, corporate governance, and CSR and sustainability information, determining which is most visible online. Then, further groupings are used to observe the quality of DCR practice.

5.3.2.1. Financial Information

Remarkably, 45% of the firms presented the past year's annual report, which signifies a decent level of DCR adoption since many companies in the sample were listed in the second market. The annual report was the main item in the sample, consistent with most previous studies. Fifteen companies provided annual reports for at least the previous ten years. This contrasted with the results for 48 firms that did not yet provide an annual report on their website.

5.3.2.2. Corporate Governance

The CG disclosure items found on the companies' websites show that only 23% of companies made disclosures for all CG items. The BOD members (71%) and the management team (63) were the most frequently disclosed items. Therefore, it can be concluded that the reporting entity (i.e., company) might be concerned about making this information available to the public, in addition to in the hard copy report. Yet, this information was rarely found listed under the investor relations sections of the website, making it difficult for a user to locate it. This might indicate that listed companies are not attentive to the user experience, which would be improved by creating a distinct section about corporate governance on the website. Invitations to AGMs were least likely to appear on firms' websites, potentially as they might be sent through other channels. The Financial Reporting Council (FCR, 2014) highlighted that providing information about annual general meetings, registrars, and so on is essential for investors. Describing the opposite from the findings in this study, it noted that "some companies have kept such information to a minimum in the annual report and used the investor section of the website to provide more detailed and up-to-date information" (FRC, 2015, p.10).

As demonstrated previously, for the DCR index, the quantity or volume of information is not necessarily the accurate measure of best practices of website reporting. Still, the adoption and ease of access to such disclosure tools are significant. Therefore, many of the items can signify the DCR quality. For example, classifying information under the investor relations (IR) heading can increase the relevance of the information for users.

5.3.2.3. Sustainability and CSR Disclosures

The results showed that only 39% of the firms provided CSR information in HTML format as standalone documents on their websites. However, the analysis included only the information on the website beyond the annual report in Portable Document Format (PDF), which could include some information. The results indicated an unsatisfactory disclosure of such valuable non-financial information on the companies websites. It was noted that many of the sample companies mixed CSR and sustainability. CSR is a more comprehensive field than sustainability. According to Epstein et al. (2010), recognising the differences between the two is essential since sustainability can be aligned with a business more than its CSR. CSR is more about compliance, while sustainability is about business. The previous sections have discussed the results of the basic content available on firms' websites. The remaining sections will now present the results for other features that supposedly enhance the DCR quality, which is analysed in terms of presentation, user support, and timeliness.

5.3.2.4. Investor Relations Information

It is argued that companies must provide IR information to attract or retain their investors (Morkes and Nielsen, 2009) since investor relations strategies may lessen information asymmetry and benefit firms (Agarwal et al., 2016). IR information can be presented in the annual report and company website. In general, companies operate their website in first place for purposes other than satisfying investors' informational needs; the primary concerns are marketing, sales, and reputation. Yet, beyond these, it can be considered a platform for investors' interaction (Ettredge et al., 2002). The empirical results revealed that 44 companies (37%) had a separate section on their websites for disclosing information relevant to investors, such as financial information disclosures, denoting awareness about better practices of utilising the Internet. For their investors' benefit, well-organised headings and webpages were presented, and approximately half of the firms provided a financial newsletter on their websites. Along these lines, Morkes and Nielsen (2009) reasoned that providing a user-friendly interface and an understandable narrative about the organisation is preferable, rather than overloading users with extraneous information (investor relation strategies may lessen information asymmetry).

Therefore, managers may believe such a format has desirable outcomes concerning the stock markets and users.

5.3.2.5. DCR Timeliness

Certain time-sensitive disclosures must be quickly delivered to users if they are to analyse them in time (Abdelsalam et al., 2007a). For that reason, many regulators worldwide require listed companies to update their websites in real-time such as the US firms where the SEC requires that a large some of CG information is updated with such speed. Jordan, on the other hand, requires this only for a few items for some firms (banks). For this Jordanian sample, just one-quarter of the companies were found to publish quarterly financial reports on their websites. Managers must intervene in the years to come to improve the timeliness of the information shared online so that the website matches traditional channels in this way. Such results are not in line with DCR best practices recommending that companies publish on their websites as soon as the hard copies are published (e.g., FRC, 2015).

5.3.2.6. DCR Presentation Format

One of the main features distinguishing web-based from traditional reporting channels (i.e. hard copies) is the presentation format. The results below denote firms' awareness of this factor. While studies on paper-based reporting use only content-based measurement items, the inclusion of the format/presentation dimension in this study recognises the unique features/advantages of the online channel. Since most digital annual reports are in PDF, compared to few in HTML, inadequate utilisation of the available technologies is highlighted here, limiting users from having wider viewing options (e.g., some may not have a PDF viewer).

Dynamic graphic images scored as the most common item (64%). This might be the case since marketing or branding is significant in operating corporate websites (e.g., to make an impression). PDF is the dominant format, which is highly accepted by users worldwide (see FRC research projects). A processable format of the annual report is less common, though the ASE website offers such a feature, usually Excel. Few Excel files were uploaded to firms' websites, if any. Overall, these shortages may lead to poor usability of corporate websites.

5.3.2.7. User Support (Website Usability)

This section evaluates Jordanian companies' websites as useful sources of information in addition to traditional hardcopy reporting. It will highlight certain issues and weaknesses and discuss them from an investor's (i.e. website user's) point of view. Many guidelines for DCR best practices are available online.[53] Those guidelines might appear subjective, but that is not unusual in the field (for instance, corporate reporting quality was described by Young et al. (2019) as a vague term that is difficult to quantify objectively despite the variety of instructions and norms) and they are rather helpful. Users have different computer and Internet skills—some are professionals, while others are beginners. Those with less expertise may lack the confidence to navigate corporate websites. Accordingly, companies must offer tools to facilitate the usage of DCR with the minimum skills required, such as by adding search engines and navigation features. This is changing as computer literacy is increasing and users need low literacy in reality. The formulated DCR index items to measure user support focus mainly on search and navigation tools. These include, for example, a site map, website search engine, and financial information in one click. When studying such items, the results revealed that around 50% of the 122 firms had less than four items (out of 15) for user support on their websites.

A further consideration is the importance of hyperlinking, as Kelton (2006) suggested. The Jordanian results suggested a lack of mindfulness about the importance of hyperlinks within the annual report. Annual reports without this feature can make it difficult to locate the

[53] For instance, the IR society, available at http://irsociety.org.uk/.

information a user may seek. Moreover, site maps are helpful, like hyperlinks, for locating the available website content. Yet, when assessing the websites of the sampled firms, the sections and pages were named and organised in ways that users could not easily understand since most firms imitated their internal company language. During the DCR data collection, apparent inconsistencies were noted in the design of investor relations webpages across the surveyed companies. For example, annual reports were displayed under different headings, such as 'Investors' Relations', 'Financials', 'Shareholders', and 'Investors' Corner'. This may signify managers' lack of awareness or agreement regarding this matter. Moreover, for many websites offered in two languages, the Arabic translation of the ‘governance’ term was inconsistent between firms.

Overall, website usability varied among firms. Only a few companies offered navigation bars (better than the 'Table of Contents in the hard copy version). In addition, a few firms presented their annual reports on their homepage. However, most websites (around 70%) offered internal search engines, which could assist in finding specific data. An internal search engine is a helpful tool that can transform a website into a reliable source of information.

5.3.2.8. Social Media

Another item studied in the literature is the use of social media (e.g., Khlifi, 2021), which can promote social engagement with a firm's stakeholders. The current results show that 52% of the firms provided links to users to follow on social media (SM) platforms such as Facebook, Twitter, YouTube, and Google+. The links to the company's social media pages were commonly displayed on the homepage or the IR section footer of the website. Of the companies with an IR webpage, half of them (22) provided no links to any SM platform, while the other half provided a link to one or more platforms. Meanwhile, 40 companies provided a link to at least one SM channel even though they did not have an IR webpage. There was no attempt to examine how much financial information is available on such mediums.

5.2.4. DCR Trends and Comparison to the AME

This section provides the trends and comparisons with other Middle Eastern countries to learn how DCR innovation is diffused in Jordan. When comparing the current results to prior Jordanian DCR studies, slow progress in DCR adoption is notable. Table 5.4 below summarises the trends regarding DCR practices. However, it is not easy to make accurate comparisons because of differences in measurements among these studies.

Table 5.4 Growth of DCR Practices in Jordan

Author (year)	Firms with websites	Firms engaging in DCR
Momany and Al-Shorman (2006)	45% of listed Jordanian firms	31.5% of them reported a comprehensive set of financial statements
Obeidat (2010)	58% of listed Jordanian firms	39.7 % of them reported financial statements
Momany et al. (2014)	69% of listed Jordanian firms	73% of them published all financial statements

The adoption level found by the current research was around 50%. Previously, Momany and Al-Shorman (2006) reported that 45% of Jordanian companies had websites, and only 70% used them for financial reporting purposes. Abu Ghazaleh et al. (2012) found that 76% of companies listed on the Amman Stock Exchange disclosed at least one piece of financial information.

Jordanian results can also be compared to those from the AME region. In Kuwait, Al-Shammari (2007) reported that 70% of companies listed on the Kuwait stock exchange were active in IFR. Similar results were reported by Hossain et al. (2012) when examining companies operating in Qatar. Meanwhile, Mohamed and Basuony (2014) studied DCR practices in Qatar, Bahrain, and Oman and found that 63% of these listed companies were engaged in DCR. In the UAE context, (Momany and Pillai, 2013) reported that 60% of companies listed on the ADX[54] used their websites for financial reporting purposes. Recently, Oyelere and Kuruppu (2016) indicated an increase in DCR practices in the UAE to 67%. These results can be contrasted to the difference between AME in terms of competition, technological and regulatory differences.

Lastly, further findings show that the sample companies rarely offered user support features nor the convenient formats of annual reports (e.g. PDF). Particular weaknesses (such as the lack of an internal search engine) might indicate a possibility that fewer resources are available to foster DCR adoption among Jordanian firms than those in other emerging economies, a suggested avenue for future research.

5.3. Summary and Concluding Remarks

This chapter has shown how managers are committed to maintaining enhanced online reporting via their corporate website. A well-constructed measurement index was created to identify corporate website content and format, demonstrating the appropriate use of modern internet technology. This chapter answered the first research question: (RQ1) What is the scope and pattern of DCR in Jordanian publicly traded companies? The findings may be summarised as follows. Out of 176 companies, only 122 were engaged in DCR practices. The overall usage of DCR capabilities was below average, but the format eminence dimension was at a fair stage. The findings revealed significant discrepancies in the extent of DCR adoption among Jordanian-listed companies but did not indicate satisfactory adoption compared to other AME economies (especially Gulf countries). Furthermore, no significant improvements were identified compared to previous Jordanian studies.

[54] Abu Dhabi Securities Exchange

There was a satisfactory level of presenting essential content items covering CG and financial figures (statements). However, the results revealed that investor relations aspects were less reflected in the Jordanian disclosure strategies. Likewise, timeliness was the unfortunate item employed by the Jordanian companies. This is similar to the Egyptian case (Arafa, 2012). In both these countries, the use of websites is not yet adequate, systematic, or institutional. On the other hand, after observing the reported information categories, it was also noted that most of the corporate communication was directed toward shareholders; little information concentrated on other types of users (e.g., CSR).

Chapter 6 follows and provides regression results for the relationship between CEO characteristics and the extent of DCR.

CHAPTER 6: RESULTS AND DISCUSSION OF MULTIVARIATE ANALYSIS OF THE RELATIONSHIP BETWEEN CEO CHARACTERISTICS AND THE EXTENT OF DIGITAL CORPORATE REPORTING

6.1. Introduction

Chapter 5 presents descriptive statistical results revealing the extent and patterns of Digital Corporate Reporting (DCR). Significant differences in DCR adoption were revealed, necessitating a profound investigation examining the possible causes of these variations (e.g., corporate information disclosed via corporate websites). This chapter provides a multivariate analysis and discussion to investigate the following research questions. RQ2: What is the relationship between CEO characteristics (age, tenure, education, gender) and the extent of DCR? RQ3: Does the relationship between CEO characteristics (age, tenure, education, gender) and the extent of DCR differ between the dimensions of DCR? The remainder of the chapter is structured as follows. To begin, a recap of DCR and how its diffusion differs. Then multiple regression assumptions are checked. Regression results are then provided, including hypothesis testing and discussions. Afterwards, the additional analysis aims to examine the moderation effect of corporate governance mechanisms on DCR determinants and the various dimensions of DCR. Sensitivity analysis follows, and then results are discussed based on the theoretical background and the relevant literature. Finally, a summary is presented.

Recap of DCR

The study sought to show how the top echelon's demographic traits – which proxy their preferences and styles – are associated with DCR practices. Accordingly, this study examined four demographic factors of CEOs (gender, age, educational level, and tenure) for their association with DCR. The significance of the regression coefficients indicates that two of these indicators (education and tenure) are associated with the level of DCR.

A debate in the literature concerns which samples researchers should use to appropriately examine the determinants of technology acceptance (i.e., innovation). For instance, Gounaris and Koritos (2012) highlighted that previous studies showed ‘conflicting’ results because they partially relied on samples of adopters and non-adopters. The authors further explain that non-adopters rely on ‘more abstract perceptions’ of the ‘innovation attributes’ (citing Schroeder and Suedfeld, 1971) to evaluate the innovation. Therefore, the principal results and discussion of the current study are based on samples that include only *adopters* (firms that have websites), while *laggards* are excluded. Adopters can form perceptions after having some experience with website capacity. Results may vary if the sample includes non-website firms. The sampling and the items included in the DCR indices could be the principal reasons for the differences in the results of previous studies (Khan and Ismail, 2010). However, this possibility has been checked, and current study results for various sub-indices confirm CEO influence.

Moreover, the level or stage of innovation diffusion may affect results. Innovations diffuse differently in countries because people communicate their usefulness differently due to their nature and users (Yalcinkaya, 2008). Similarly, DCR and popularity vary among countries and economies. The discussion of the DCR nature in later sections, based on the diffusion of the innovation model, highlighted the lack of a suitable *communication* mechanism to facilitate DCR adoption, particularly in many developing countries. That is, firms without a website are ‘not-yet-adopters’ or ‘laggards’ and do not have shared experience on website communication with stakeholders to encourage adoption. Therefore, the comparability of the DCR determinants results with developing countries is not always accurate. There is a lack of guidance on DCR adoption in Jordan, except for banks’ corporate governance codes recommending (in a few words, that banks use the internet for corporate reporting. There are no details or suggestions. These are not comparable to the continued guidance in the US (SEC, 2008) and UK (FRC, 2015b), for example. This ambiguity creates a wide scope of managerial discretion, as explained by UET. As a result, potential prestige power can be more profound, leading to underestimating website capabilities to the firm transparency.

Websites are already popular and used in the banking industry, initially for e-banking. CG codes in Jordan state companies need to use the internet to enhance transparency. In particular, there are no details and guidance such as that of the US Security and Exchange Commission's (SEC) Guidance to Open Up the Use of Corporate Web Sites for Disclosures to Investors (SEC, 2008) and the UK's Financial Reporting Council (FRC) Guidance (FRC, 2015a), for instance.

The increased potential discretion refers to the human decision-making processes that involve bounded rationality, which refers to managers' tendency to satisfy rather than optimise decisions (Gigerenzer, 2010). The core of UET is based on the bounded rationality of managers as they evaluate strategic decisions, such as innovations, due to certain factors, including complexity (Gounaris and Koritos, 2012). Accordingly, the CEO characteristics are expected to provide additional explanations for DCR variation and known firm-level and governance factors.

6.2. Ordinary Least Squares Regression Assumptions

Multiple regression analysis is based upon several vital assumptions. Therefore, meticulous inspections of the gathered data's accuracy can ensure reliable regression findings (Osborne and Waters, 2002b). Furthermore, these assumptions facilitate correct predictions to test how best a formulated model fits.[55] In multiple regression, assumptions that must be checked include normality, linearity, independence, homoscedasticity, and non-multicollinearity (Allison, 1999, Osborne and Waters, 2002b). The following paragraphs discuss the results of the assumption tests. First, *normality*. The residuals [56] must be normally distributed (Osborne and Waters, 2002a), meaning that the dependent variable, DCR, must be normally scattered. Therefore, the histogram has a normality curve that designates the data as approximately normally distributed. As a result, data points are almost aligned on the diagonal line. The data normality can also be confirmed by inspecting the probability plots (P-P). Second, *independence*. The residuals should not correlate with one another (Hintze, 1998). This assumption can be violated in model misspecification or time-sequenced data. Durbin-Watson statistic has been carried out, and the result is between 1.5 to 2.5, which denotes no correlation among the residuals. The third, is linearity. In linearity, each independent variable and the overall independent variables are linearly associated with the dependent variable (Hintze, 1998). Linearity has been verified and is shown in Figure 6.1. The results validate the linear relationship.

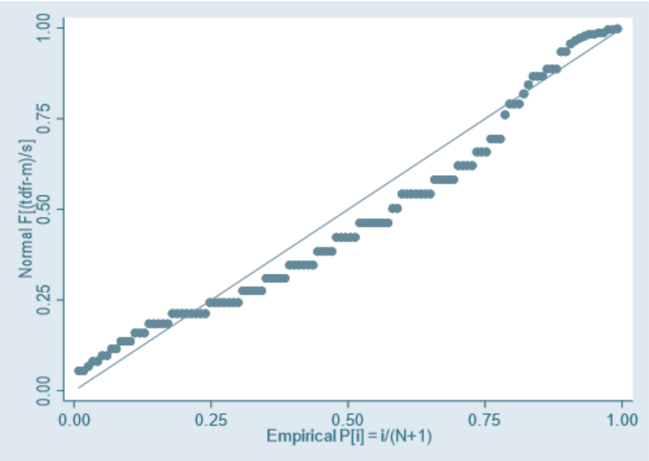


Figure 6.1 Linearity Test

[55] That is, how much of the variance in the dependent variables can be accounted for by the response variable.
[56] Residuals are the differences between observed and predicted values of data. Each residual is the vertical distance between a data point and the regression line (Allison, 1999).

Fourth is homoscedasticity. The homoscedasticity assumption means that when all values of the predictor variable (X) are considered, the variance around the regression line is the same (Lane, 2003). Heteroscedasticity occurs when the error term size varies across independent variable values. A test is conducted to verify whether heteroscedasticity is minimal. The plot constructed to verify linearity is also used to check homoscedasticity. Additionally, homoscedasticity may be seen in the scatterplot.

Fifth, is multicollinearity. When a multiple regression model's two or more explanatory variables are significantly correlated, multicollinearity occurs. Multiple regressions assume that the independent variables are not highly associated. This can obscure which variables have contributed to the variance explained and may even be a problem in analysis (Midi et al., 2010). Most studies (e.g., Midi et al., 2010) maintain that a correlation value of at least 0.8 indicates multicollinearity. In contrast, some researchers argue that a multicollinearity value of less than 0.7 is not a problem (Farley et al., 1998).

Table 6.1 shows pairwise correlations between variables. Collinearity below 0.60 in the independent variables is not a concern. Non-normally distributed data include total assets and tenure, which were log-transformed. Log transformation was employed in previous disclosure studies (De Vaus, 2002). Tolerances and the variance inflation factor (VIF) validate this outcome. Multicollinearity occurs when VIF is 10. After assessing the data set, none of these points offers a problem; hence, the regression model results can be analysed. VIF will be checked in all regression models.

Table 6.1 Pairwise Matrix of Correlation Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) IND_P	1.000											
(2) N_DUA	0.092	1.000										
(3) INDU	-0.064	0.061	1.000									
(4) TA_L	-0.062	-0.051	-0.580	1.000								
(5) ROI	0.095	-0.016	-0.084	0.146	1.000							
(6) M_B_R	-0.126	-0.149	0.012	0.089	0.290	1.000						
(7) LEV	0.017	-0.002	-0.443	0.401	-0.360	0.108	1.000					
(8) BDSZ	-0.047	-0.074	-0.424	0.535	0.068	0.006	0.257	1.000				
(9) DIS_O	0.127	0.172	0.068	-0.016	-0.015	-0.142	-0.135	0.238	1.000			
(10) FOR_O	-0.054	-0.131	-0.278	0.363	0.033	0.156	0.176	0.216	-0.293	1.000		
(11) BIG4	-0.020	0.066	-0.398	0.523	0.078	0.090	0.200	0.235	-0.265	0.347	1.000	
(12) INST_O	-0.074	-0.030	-0.143	0.290	-0.003	0.084	0.120	0.097	-0.578	0.437	0.387	1.000

Note: DUAL duality role (CEO holds the chairman role), L_TA logarithm of total assets, ROI return on investment, M_B_R market-to-book value ratio, LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, INDU Sector type dummy variable (according to the ASE classifications).

6.3. Multiple Regression Results

Regression aims to statistically examine a possible relationship between two variables (single regression) or a dependent variable and a set of independent variables (multiple regression) (Shevlin and Miles, 2000). The current study examines multiple independent variables. As illustrated in the literature, there is no requirement for a significant correlation before running a regression (Shevlin and Miles, 2000). All regression analyses are done with robust standard errors. The analyses examine a model's R-squared value to conclude how the model fits the data (i.e., how much of the total variability is explained). Moreover, in each regression model in this research, VIF tests are conducted to investigate whether multicollinearity is present.

This section analyses the CEO link to DCR. After collecting and cleaning all data, numerous regression analyses are done to examine the DCR's association with the CEO's gender, age, education, tenure and control factors. DCR is a voluntary disclosure yet an *innovative* way to provide information and boost a company's online visibility (FRC, 2015a). Thus, the regression also examines firm characteristics (size, profitability, leverage, industry type and market-to-book ratio) and corporate governance (CG) factors (CEO duality, board size, independent directors' percentage, foreign ownership percentage, institutional ownership percentage and auditor type) as control variables.

The analyses in this section are arranged in the following sequence. First, to assess the determinants of website adoption versus no adoption, a sample of 176 firms is used. The dependent variable is website existence (dummy variable, which means a score of 1 is assigned to each company with a website, and a score of 0 otherwise). Second, the principal analysis aims to measure the level of DCR usage only among firms that have 'observed' website benefits. Therefore, only the firms that have websites are included in the analysis. Most researchers have used this approach apart from a few papers that have included no website companies (e.g., Debreceny et al., 2003). The results of both methods are compared.

The conceptual definition of DCR and the focus of this study is on using corporate websites to publish corporate information (financial and non-financial) effectively by the features that support the website user and increase transparency and information usefulness. Therefore, knowing the factors associated with a functioning website's existence is crucial. Therefore, the logistics regression examines the relationship between CEO characteristics and maintaining a functioning website after controlling for firm characteristics and CG. Logistic regression describes the data by explaining their relationship with a dependent dummy variable and independent variable(s). It is a powerful tool that allows multiple independent variables to be analysed simultaneously and, in the meantime, reduces the effect of confounding factors. Table 6.2 presents the logistic regression results for the corporate website existence.

Table 6.2 Logistic Regression Results on Maintaining Functioning Corporate Website (Web Presence)

	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
FEM	-1.45	2.529	-0.57	.566	-6.407	3.507	
AGE	-.034	.02	-1.67	.095	-.074	.006	*
EDU	-.261	.344	-0.76	.448	-.937	.414	
TEN_L	-.201	.254	-0.79	.428	-.699	.296	
DUAL	-.222	.645	-0.34	.731	-1.485	1.042	
SERV	-2.398	.565	-4.24	0.000	-3.505	-1.29	***
TA_L	1.552	.492	3.15	.002	.587	2.517	***
ROI	.005	.023	0.21	.834	-.041	.05	
M-B-R	-.05	.119	-0.42	.674	-.283	.183	
LEV	-.118	.614	-0.19	.847	-1.322	1.086	
BDSZ	.217	.117	1.85	.064	-.013	.446	*
IND_P	.417	1.014	0.41	.681	-1.57	2.405	
BIG4	-.612	.532	-1.15	.25	-1.655	.43	
DIS_O	-.009	.012	-0.75	.454	-.031	.014	
FOR_O	-.003	.01	-0.36	.722	-.023	.016	
INST_O	-.009	.01	-0.94	.346	-.028	.01	
Intercept	-6.791	3.319	-2.05	.041	-13.296	-.287	**
Mean dependent var	0.609		SD dependent var			0.490	
Pseudo r-squared	0.254		Number of Obs			176	
Chi-square	37.460		Prob > chi2			0.002	

FEM Female, AGE: age, EDU CEO education: it takes one point for each CEO's certificate; Bachelor, Masters and Doctorate. TEN_L logarithm of CEO tenure, DUAL duality role (CEO holds the chairman role), INSU insurance sectors (other sectors omitted). TA_L logarithm of total assets, ROI return on investment, M_B_R market-to-book value ratio, LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership,
Note: *** p<.01, ** p<.05, * p<.1

The results show a negative association between a website's existence and the CEO's age (at the p<10% confidence interval), indicating that age decreases the probability of the website's existence for the company. Put differently, companies led by younger CEOs are more likely to operate a website compared to others with older CEOs. Furthermore, the coefficient linking education and tenure with the website's existence is negative, indicating a negative association. However, the results show no significant association signalling as there is not enough evidence to have the association. The same pattern is found in duality with an insignificant negative association with the website's existence.

Moreover, the results also show a significant positive relationship between website existence and a company classified in non-service sectors. The *t*-stat value of −4.24 at a confidence level of 99% indicates strong evidence of this. It is noteworthy that only half of the service companies have websites. This result is expected and supports the literature in developing countries.

It is shown that there is a significant negative relationship at $p < 10\%$ between a website's existence and the CEO's age (coefficient is 0.034), which means that a firm is 3.4% less likely to have a working website when its CEO is one year older. Moreover, although results show tenure and educational level are negatively associated with website existence, these factors are not statistically significant (confidence level is around 60% for both). The age results mean that a firm managed by a younger CEO is more likely to have a website. These results are as expected and consistent with the literature on younger managers' acceptance of innovation and openness to technology.

Moreover, results indicate a significant positive relationship between firm size, the board size, and website. Specifically, the larger the firm or its board of directors, the more likely it is to operate a website. This is expected since larger firms have more financial resources to operate and maintain a modern website. However, results are inconsistent with some results from developing countries. Such a result is unexpected, though in line with evidence from Egypt, another middle Eastern country, that documented board independence negatively correlated with the DCR (Samaha et al., 2012).

A working website is the starting point of knowing its capabilities. Observing such capabilities allows managers to decide if they want to benefit from them. For instance, the literature explained that Jordanian companies' leaders' desire to improve an organisation's image and reputation frequently motivated the decision to establish an online presence, and rebranding was often cited as a contributing factor (AbuGhazaleh et al., 2012a). As such, this can be considered a strategic web presence, according to the classification suggested by Sadowski et al. (2002).

Furthermore, most large businesses in developing countries use their corporate websites for online transactions (e.g., selling and marketing) (Haugh and Robson, 2005). However, small businesses may use them primarily to get information for internal purposes and as a communication tool (Sadowski et al., 2002).

Moreover, costs associated with maintaining a website are changing.[58] Therefore, these results could reveal that companies in developing countries might under-evaluate the importance of investing money in having a website. Another primary reason is that larger firms use their websites to disclose financial information to reduce agency costs. However, this may not be a priority; the unnecessary and additional costs associated with DCR burden companies in developing countries (Al-Moghaiwli, 2009). Such an argument is doubtful since technology-related costs are decreasing, as shown in the following graph.[59] A Deloitte study shows that a gigabyte of data storage costs $0.03 per gigabyte, down from $569 per gigabyte in 1992 (Hagel III et al., 2013). Figure 6.2 below shows the decrease in the cost of data storage.

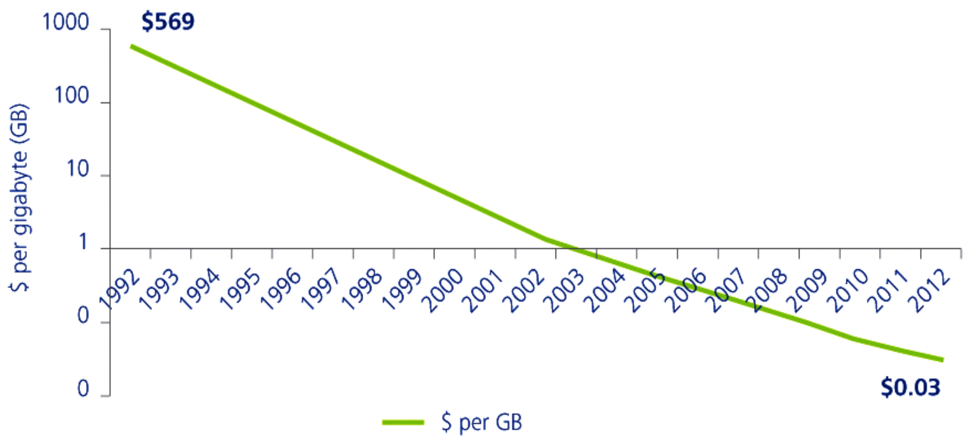


Figure 6.2 Cost of Storage per Gigabyte. Source: Hagel III et al. (2013)

[58] It is worth mentioning that the cost of websites varies among countries due to factors such as privacy and other legal arrangements (Zabolotna, 2022).

[59] It is argued that "If we look at the price of communications, we have similar decrease in price/cost (making a 3′ intercontinental call in the 1930 would have cost more than a month pay of a blue-collar worker, today you make it for free with Skype…) and likewise if we look at the price of processing." (Saracco, 2017, para. 4)

Finally, to test whether a functioning website in the English language is associated with the same factors, logistic regression analysis was conducted on the 107 firms with English websites. Results showed that the existence of a website in English is significantly positively associated with dispersed ownership and a Big-4 auditing firm and negatively with the CEO's age. Notably, the website's existence is not significantly associated with foreign ownership or firm size. This result is unexpected as more foreign ownership may require higher demand for web-based information.

As a functioning website's existence is a prerequisite for depicting the level of DCR adoption, the ultimate analysis will aim to test the factors associated with such adoption. The main results are presented in Table 6.3 below, with six ordinary least squares (OLS) regression models to examine the determinants of DCR adoption. Discussion of the results of these models follows by referring to the theoretical arguments and literature with comparisons to the earlier section on website existence.

Table 6.3 Robust OLS Regression of CEO Characteristics on the Extent of Digital Corporate Reporting

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
FEM		1.848				2.009
		(0.792)				(0.685)
AGE			-0.095			-0.069
			(-1.615)			(-1.189)
EDU				-2.119**		-1.946**
				(-2.546)		(-2.211)
TEN_L					-1.755***	-1.435**
					(-2.660)	(-2.010)
N_DUAL	-2.376	-2.243	-1.887	-2.323	-1.507	1.117
	(-0.752)	(-0.704)	(-0.610)	(-0.695)	(-0.439)	(0.312)
TA_L	5.034***	5.108***	5.045***	5.087***	5.172***	5.284***
	(3.508)	(3.536)	(3.506)	(3.819)	(3.788)	(4.103)
ROI	0.006	0.003	0.015	0.008	0.007	0.012
	(0.046)	(0.026)	(0.119)	(0.060)	(0.058)	(0.098)
M_B_R	0.436	0.462	0.500	0.426	0.501	0.555
	(0.687)	(0.725)	(0.829)	(0.691)	(0.869)	(1.017)
LEV	-0.539	-0.552	-0.280	-0.959	-0.889	-1.039
	(-0.317)	(-0.321)	(-0.169)	(-0.568)	(-0.534)	(-0.643)
BDSZ	-0.220	-0.220	-0.124	-0.157	-0.142	-0.029
	(-0.648)	(-0.646)	(-0.362)	(-0.491)	(-0.430)	(-0.092)
IND_P	-3.532	-3.724	-3.140	-3.236	-3.145	-2.870
	(-1.298)	(-1.337)	(-1.126)	(-1.256)	(-1.222)	(-1.143)
BIG4	0.617	0.595	0.767	0.543	0.255	0.337
	(0.478)	(0.460)	(0.592)	(0.424)	(0.195)	(0.254)
DIS_O	0.002	0.004	0.004	0.007	-0.001	0.007
	(0.070)	(0.115)	(0.121)	(0.227)	(-0.027)	(0.226)
FOR_O	0.019	0.016	0.017	0.012	0.018	0.006
	(0.638)	(0.511)	(0.579)	(0.388)	(0.611)	(0.201)
INST_O	-0.007	-0.006	-0.007	-0.003	-0.005	-0.001
	(-0.292)	(-0.254)	(-0.300)	(-0.123)	(-0.211)	(-0.033)
INDU	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	-15.412	-16.304	-11.512	-12.763	-13.435	-9.509
	(-1.208)	(-1.263)	(-0.913)	(-1.072)	(-1.106)	(-0.817)
Obs.	122	122	122	122	122	122
R^2	0.556	0.557	0.568	0.580	0.587	0.614
F stat	9.36	9.22	11.12	10.72	11.80	10.98
VIF	2.64	2.64	2.56	2.56	2.55	2.37
Adjusted R^2	0.498	0.495	0.507	0.520	0.529	0.546

FEM Female, AGE: age, EDU CEO education: it takes one point for each CEO's certificate; Bachelor, Masters and Doctorate. TEN_L logarithm of CEO tenure, DUAL duality role (CEO holds the chairman role), TA_L logarithm of total assets, ROI return on investment, M_B_R market-to-book value ratio. LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, INDU Sector type dummy variable (according to the ASE classifications). VIF variation inflation factor.Robust *t*-statistics in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Model 1 includes only the study's control variables (corporate governance and firm-level factors). Models 2 to 5 aim to test each interest variable alone to examine the effect of the CEO on DCR (in addition to all control variables). Model 6 includes all the CEO's characteristics and the control variables listed in Model 1. This is to suggest a model with a good prediction of DCR variances. The model is evaluated accordingly.

The results demonstrate that firm size and industry type have a significant relationship with the level of DCR. Concerning the size of the company, the results show a statistically significant positive relationship, indicating that larger firms engage more in DCR than smaller firms. Moreover, it was also found that banks and insurance firms use websites more than other sectors, while service companies are less engaged in DCR. Across all the models, size influence on DCR is clear and significant. However, it could be argued that size may not be a key determining factor linked to all intended uses of websites. Based on prior research results (e.g., Khan and Ismail, 2010, Mokhtar, 2017), it can be argued that firm size may not be associated with firms with different focuses on the dimensions of DCR (content and format). This is tested in the additional analysis section.

Model 2 shows that CEO gender has a positive but insignificant relationship with the overall level of DCR. Gender is not significant at all levels of confidence in model 6. Such results are not expected but can be caused by the small number of females in the sample. Part of the further analysis aims to test if CEO gender is associated with specific dimensions of DCR.

In Model 2, CEO age has an insignificant relationship with the overall level of adopting DCR. One of the main arguments of the contingency perspective on IT use determinants is that the impact of a variable can depend on other factors. Therefore, more examination of the role of age is presented in the additional analysis, where the focus is more on groups or dimensions of DCR. Moreover, age findings differ from the preceding results on website presence. These combined results revealed a significant impact of age on having a website but not on the level of using it for corporate communication. A possible explanation may suggest that managers' age affects the decision on basic innovation stages due to the lack of observability or 'experience' according to the diffusion of innovations stages (LaMorte, 2016).

On the other hand, 'usage' decisions may be more rational when the website is available after observing how it could be beneficial as an effective communication tool. In the later stages, after continuous or effective use of the website, adopting it could be influenced by factors relevant to CEO power. For example, executive teams could be involved in addition to CEO guidance and support for the innovation (Arafa, 2012).

Models 4 and 6 show that CEO educational level has a significant negative relationship at a 95% confidence level with DCR among the entire sample. Results indicate that when a CEO is highly educated, the company is more likely to show additional 2.2 index items on its website than firms with lower CEO education.

In models 5 and 6, the results show that CEO tenure has a significant negative relationship with DCR at a 95% confidence level. In other words, the shorter the CEO's tenure, the more likely a firm can effectively use its website to communicate with its external users. Likewise, more educated CEOs the less likely to use their firms' websites to communicate financial and non-financial information. The result on education is consistent with one assumption in the theoretical framework that linked tenure to CEO power rather than experience. The tenure results are as expected. Specifically, the historical evidence that long-term CEOs are more resistant to any external pressures because of the power they gain over time (Meyer, 1975) is still evident based on the current study's results. Such findings support the general arguments of the Upper Echelons Theory (UET) that the CEO can impact an organisation's decisions (Hambrick, 2007).

The final model (model 6) includes all the independent and control variables. The model has a significant F-value, thus judged as valid. It has an adjusted R-squared value of approximately 0.55, which indicates it explained over half of the variance in DCR adoption. Such value is higher than previous studies' values, such as Yassin (2017), which models have explanatory power between 0.177 and 0.299. In the social sciences, R-squared is acceptable if above 0.35. However, a model can have moderate predictability when the R-squared value is between 0.33 and 0.67 (Chin, 1998). In summary, incorporating more variables based on the UET offered a higher prediction. Such an approach to evaluating the results is used by (Bamber et al., 2010).

6.3.1 Hypotheses Testing and Discussion

The testing of the hypotheses is based on the statistical significance of the relevant variables included in the regression model. All confidence levels, including 95% and 90%, are accepted in accounting research (Frezatti, 2007). This section provides hypothesis-testing results and discusses the findings, including the. Accordingly, the final model provides a moderate prediction of the changes in the mean of the dependent variable when independent variables change. This result can be justified because human behaviour is considered challenging to predict accurately.

6.3.1.1. Age

It was suggested that older and younger managers might hold different attitudes affecting strategic or complex decisions (Lin et al., 2014). Younger CEOs are more open to innovation and less resistant to change. The formulated hypothesis states a negative association between CEO age and DCR. The analysis did not find a significant association between age and DCR. Therefore, the hypothesis (H1) was not supported. This means that the change in DCR is not associated with statistical confidence in changes in age. Such a finings result is not as expected. This means that the used sample failed to provide sufficient evidence to support the suggested relationship concerning this demographic trait. Nonetheless, the inability of this statistical test to identify an effect of CEO age does not demonstrate that the effect does not exist. It simply indicates that the sample does not have enough evidence to demonstrate that the relationship exists. If the sample is changed, the results could be different. Nonetheless, the subordinate role of age in gaining CEO power could be described as low in Jordan, especially when we consider the prior research results of the negative association between CEO age and compensation (Al-Al-Msiedeen and Al Sawalqa, 2021).

In the earliest logistics regression analysis in table 6.2, it was found that age was significantly associated with the existence of the website. Therefore, this unexpected result led to further analysis by sub-samples. Furthermore, it is also possible that other variables moderated the relationship. The additional analysis tested the effect of the interaction between corporate-governance mechanisms and age.

6.3.1.2. Education

It is suggested that a higher level of DCR is associated with well-educated chief executive officers. The premise that highly educated executives are more receptive to innovation seems plausible. Such executives may seek to build a reputation through better practices in corporate reporting. However, the nature of innovation, managers' attitudes toward it, the context, and education and power affect how managers translate all of these into action. Given all these, it was hypothesised that CEO education is associated with DCR. The results show a significant negative relationship at the confidence level of 95% between the educational level and the overall level of DCR. Based on the t-test result, which was -2.546, hypothesis H2 was supported. The following paragraphs discuss this finding by explaining its meaning, comparing it with previous studies and describing its importance in the context of innovation, disclosure and developing countries.

First, the results show that Jordanian CEOs, when judging the utility and usability of new technology (i.e., DCR in this case), are affected by their educational level, as suggested by some scholars (e.g., Merkl-Davies and Brennan, 2011). However, the results did not support the expectation that the impact would be positive due to the high discretion surrounding DCR. A corporate website is a communication tool (Capriotti and Moreno, 2007), and the strategic style, not only the education of its senior management, may play a crucial role in determining its effectiveness. It is argued that technological transformation is a matter of strategy, not of the technology itself (Kane et al., 2015). Moreover, managers vary in their disclosure styles (Bamber et al., 2010).

Second, the DOI model highlights that in the knowledge stage of diffusion innovation, an organisation becomes informed about the presence of innovation and looks for information about it. This may suggest that the 'team' can decide on its adoption. However, the level of involvement in decisions often depends on the nature of the decision and the power distance in that firm. Given that Jordanian society allows power distance, CEO education is expected to increase their influence on decisions. This is supported by the results from Jordan showing that top management starts DCR adoption by recommending the launching of a website (AbuGhazaleh et al., 2012a).

Third, higher education increases managers' power, including 'prestige power', as suggested in the literature. Prestige power is possibly the vaguest form of power and the most difficult to comprehend and quantify (Asimakopoulos and Yan, 2019). An example of this informal power is when business leaders who hold degrees from famous universities or serve on corporate boards use these high degrees to add to their prestige (Daily and Johnson, 1997, Custódio et al., 2013).

Fourth, the results in this study support the literature on the UET theory, which states that decision centralisation is more pronounced in developing countries (Belal et al., 2013). Therefore, even if managers are highly educated, the centralisation of decision-making may lead to slow innovation adoption decisions. This is also in line with previous studies in Jordan, particularly in DCR (Al-Htaybat et al., 2017).

Based on the UET, a major source of discretion is created by power, which may impair the decision-making process itself. For example, if different departments, such as IR and public relations, provide innovative suggestions, especially in developing countries with strict power structures, such suggestions may not be well considered. It is documented that when managers work within minimal social hierarchies in companies located in low cultural power gap countries, they offer valuable advantages in corporate entrepreneurship and innovation (Boone et al., 2019). Accordingly, and based on the assessment of Jordan as a high-power distance country, there is a high likelihood of leaders misusing their power by not taking advantage of websites' capacity to enhance transparency (as explained by Kelton and Yang, 2008).

Fifth, since the paper version is the essential vehicle for corporate reporting in many countries in the Middle East, especially Jordan, issues of verifiability have been raised (Al-Htaybat, 2011, Ahmed et al., 2018). Given the weak demand for DCR in Jordan, based on users' perception results, some studies state that many stakeholders still prefer the annual hard copy (Al-Htaybat et al., 2011). In addition, highly educated Jordanian CEOs are afforded a greater degree of discretion due to the power advantage their higher education and tenure confer (Quigley and Hambrick, 2015). They are seemingly not inclined to adopt an adequate level of DCR.

Fourth, the tendency in Jordanian firms to hire CEOs with higher educational degrees does not correlate with increased transparency. Hiring CEOs with higher educational backgrounds may add value and enhance performance. However, the results indicate the opposite concerning transparency, which is a vital objective in CG codes. These results are consistent with prior studies in Jordan (e.g., Kanakriyah, 2021) and other countries documenting the insignificance of education to performance. The Jordanian setting lacks institutional guidance on DCR, and a major driver is management support (AbuGhazaleh et al., 2012a). Thus, highly educated CEOs may resist adopting or using such an innovative communication channel since they may undervalue its importance (boundedly rational). The results imply that higher levels of CEO education do not appear to be good predictors of CEOs who support DCR adoption regarding DCR. These findings point to the perplexing conclusion that although education seems essential throughout the hiring of CEOs, it has little impact on a company's innovative communication practices. Accordingly, CG codes need careful reviews in Jordan, such as focusing on the best leadership.

Finally, based on the agency theory and UET, different variables can explain the adoption of DCR. However, the influence of such variables may depend on the amount of managerial discretion that is available or their perspective on the disclosure. CG mechanism could offset or influence CEO power or discretion. For example, according to Mallin (2011), the lack of role separation shows the CEO as a dominant figure with major influence on board operations and decisions. However, the results of this study did not support this. Therefore, control variables were included in the regression analysis. Total assets are only one significant factor when overall DCR is tested.

The upper-echelon perspective suggests that CEOs' knowledge base influences their understanding and analytical capacity (Hambrick and Mason, 1984). However, the complexity of DCR (Arafa, 2012), such as what users or ‘information consumers’ want, cannot be easily known and trusted (FRC, 2015b). These data add to the prominent managerial discretion regarding DCR, allowing managers to act upon their interpretations of website presence and communication. This again highlights the need for the board's responsibility in diminishing the CEO's power so that their education could increase. These results are consistent with those of Al-Htaybat et al. (2011), who revealed that managers' perceptions are a major determinant of technology adoption (e.g., DCR). Such perceptions can influence the choices or discretions of managers on adoption (Hambrick and Mason, 1984, Galavan, 2005). The literature provides evidence that technology adoption is dependent on the organisational and perceived usefulness of technology, which is difficult to measure (Adams et al., 1992). However, with demographic characteristics, we can estimate how managers may act after considering the moderating role of CG (Hambrick, 2007). Moreover, in addition to the high discretion in DCR itself, the other factor that increases the discretion of Jordanian CEOs is the power distance, a factor suggested by UET (Hambrick, 2007). According to Hofstede's cultural dimensions, Jordan scores high in power distance (70 per cent) (AlHawamdeh and AlQatamin, 2021). The UET explains that in cultures with greater power disparity, stakeholders are more inclined to approve far-reaching executive acts and they are more likely to accept, and less likely to challenge policymakers or action bases (Hambrick, 2007).

According to the main results, both CEO tenure and education have a significant negative relationship with DCR adaptation. This method does not consider the differences between firms whose DCR adoption is classified as either high or low. Therefore, the further analysis section includes an analysis of such individual samples. The theorised impact of CEOs' educational level on firms' level of DCR is well supported. However, this effect may not be equal in all DCR dimensions, which will be tested in the further analysis section.

The results contradict the previous studies reporting that the educational level of decision-makers is positively associated with their openness to new ideas (Kimberly and Evanisko, 1981, Dwivedi and Lal, 2007). This is mainly because not all innovations are equivalent. DCR is not focused on internal technical work. It is more closely related to communication styles and the ability not only to increase openness but also to enhance transparency, as CG codes worldwide suggest. Therefore, CEOs' roles, including the coordination and implementation of technical innovation in firms (Pinheiro, 2010), seem not to be pertinent to DCR in the same way as any other innovation. The level of education may not be relevant to such an advanced communication style since its adoption is a complex decision (Kelton, 2006) in addition to the complexity of a decision on disclosure itself (Bamber et al., 2010).

The results support the UET expositions regarding the role of the CEO in corporate-level decisions. The role of higher education here is not supportive of growth as an organisational objective. The results can also offer more explanations of the DOI model's usefulness and simultaneously highlight its limited role, at least in integrating the UET concept of discretion and explaining the dissemination of DCR under different contexts. In particular, the results highlight different managerial responses to CG calls to intensify transparency based on CEO characteristics and their role in DCR adoption. For example, high education and longer tenure can lead to different perceptions and responses to DCR’s importance among CEOs, who can resist the adoption of DCR in some settings and be mainstream adopters in others.

In conclusion, for countries to enhance the DCR, it may be useful to consider the possible interaction between the weak cultural system, such as that of Jordan, and the power gained from executives’ educational level (prestige power) and high tenure. The high discretion could be more pervasive when such powers are present in a country that has weak communication channels (Rogers et al., 2014), through which innovations could be diffused, especially when CG mechanisms are ineffective.

6.3.1.3. Tenure

CEO tenure is one of the factors affecting companies, as suggested by UET (Finkelstein and Hambrick, 1990), and it may affect innovation adoption. Therefore, the formulated hypothesis proposed that higher DCR adoption would be associated with shorter CEO tenure. The main regression results showed a significant negative relationship between tenure and DCR. This means that longer CEO tenure is associated with lower DCR adoption in firms. Given that the t-test value was -2.660 at the confidence level of 95%, the hypothesis was supported. The discussion below aims to interpret these results based on DCR nature in Jordan, managers' behaviour under different levels of tenure, CEO power in the Jordanian setting (Hofstede et al., 2005) and the interactions between all of these factors.

First, the results could support the argument that the use of corporate websites for communication may help promote new or short-term CEOs, which may not be of interest to older CEOs. This negative relationship means that new CEOs are more inclined to adopt DCR because they see DCRs as a priority in their strategic plans. Therefore, new managers believe that disclosure may reduce uncertainty and boost their careers (Bochkay et al., 2019). Moreover, these results are also consistent with some research on the adoption of technology and innovation, such as a study by Sewpersadh (2019), who found that companies' innovativeness is negatively influenced by powerful CEOs with long tenures. Second, in addition to the high level of discretion surrounding DCR adoption, executive job demand was introduced by the UET as a major factor in the upper echelons' model (Hambrick, 2007). Long tenure may denote a weak CEO market or a lack of succession plans in Jordan. When managers do not expect to be replaced, their level of power increases, and thus can take inaccurate decisions. The arrangement of CEO appointments is uncertain in Jordan, where political connections play a major role (Saleh et al., 2020). Such an environment offers more latitude to CEOs to undervalue DCR and its adoption. This increased power could lead to more tendency by managers to satisfice rather than optimise communication strategy decisions.

Third, based on the UET theoretical perspective with a practical analysis of DCR. The sources of managerial discretion in the UET model include prominence or long tenure and national setting. In countries with wider power gaps, stakeholders are more inclined to permit far-reaching executive measures, more likely to approve executive actions and less likely to challenge decision-makers or the grounds upon which actions are made (Hambrick, 2007). The results demonstrate that long-serving Jordanian CEOs' power may be the cause of poor DCR adoption. Furthermore, this negative use of power increases discretion since management teams accept CEO actions on the DCR level (satisficing rather than optimising). The empirical results of Al-Htaybat et al. (2011) confirm the centralisation of DCR decisions in Jordan. Overall, the results are acceptable by referring to the UET updated model (Hambrick, 2007).

The fourth possible explanation is based on the argument that chief executives with a long tenure may receive higher compensation because they may be better able to influence the board of directors (Chung & Pruitt, 1996). Evidence from Jordan supports this suggestion since, in Jordan, CEOs with long tenures tend to receive greater compensation (Abed et al., 2014). The board of directors considers the CEO's presence when deciding on a CEO's compensation. Increasing disclosure and openness (via DCR) do not appear to motivate CEOs to increase their compensation. Fifth, new Jordanian managers may be inspired to employ modern communication styles with stakeholders, which may encourage them to start or support improvement programmes. Given their discretion and authority on DCR, long-tenured CEOs are less likely to adapt and innovate (undervalue DCR adoption).

Sixth, although it is difficult to determine executives' motivations', described as a 'black box' (Hambrick, 2007, e.g., Watson et al., 2021) of behaviour and decisions, a possible explanation for inherent reasons behind longevity in position and management generally stifle innovation could be explained by reference to resistance to change. For example, managers' attention to information linked to their other job duties may skew their willingness to disrupt the traditional disclosure status quo (Huber et al., 1993). This interpretation of the results is based on previous studies reporting that the educational level of decision-makers is positively associated with their openness to new ideas (Dwivedi and Lal, 2007). The CEO is also in charge of coordinating and implementing technical innovation in firms (Pinheiro, 2010). Therefore, it is evident that the CEO relies on their interpretation of DCR adoption and exercises high levels of discretion (see: Al-Htaybat et al., 2011, AbuGhazaleh et al., 2012b), especially in the context of Jordan, a developing country with power distance.

Moreover, this is supported by the evidence that SMEs in developing countries are slower to embrace technology than those in industrialised countries (Khan et al., 2010, Junaidah, 2007). Thus, more research is required. The current results may add insights to the DOI model to fully explain the differences in DCR diffusion among different contexts. In particular, results highlighted the influence of CG arrangements on characterises of adopters. For instance, highly educated CEOs can respond to this innovation in certain settings with resistance rather than being pioneering adopters.

6.3.1.4. Gender

Based on the UET, it was hypothesised that high DCR adoption is associated with firms managed by female CEOs. However, the results found this to be only partially true, suggesting that females tend to be less supportive of the high use of digital communication via the website than males. The hypothesis (H4) is not supported because the association was not statistically significant at any confidence level. The results were expected in the Jordanian context, given the cultural values in which the gender digital divide in society is accepted (Abu-Shanab and Al-

Jamal, 2015). On the other hand, the results are inconsistent with Ding et al. (2006)'s findings, which indicate a significant association between innovation enactment and gender. Although the percentage of Jordanian women in the IT workforce surpasses the percentages of U.S. and Canadian women (Khreisat, 2009), their participation in managerial jobs is inadequate. This may limit their role in IT-related decision-making. Generally, females are more likely to negotiate and confer with others, prioritise family duties, and make conservative decisions. The findings may also be contrasted with the positive and insignificant correlation between CEO gender, financial-reporting quality in general, and female attitudes to innovation and technology.

Moreover, context and culture are also relevant to the weak role of women in DCR adoption. Although the DCR has more discretion, environment and culture may limit women's capacity to make a difference. In particular, Jordanian society is conservative regarding women, such as rigid beliefs about gender roles (Qasem and Abdullatif, 2014). As in UAE (Al Marzouqi and Forster, 2011), Jordanian women are underrepresented in IT. It is documented in the literature that the greater the liberation of women, the greater the accomplishments they can achieve (Han et al., 2019). Therefore, the limited role of women in DCR adoption could be due to inadequate empowerment and inclusion. Furthermore, the powers of boards and other managers may limit the acceptable alternatives (pillar of discretion) women offer to the firm based on the UET (Hambrick, 2007). Therefore, female CEOs in developing countries are expected to be less able to influence DCR adoption.

The previous section examined the relationship between different CEO characteristics and overall DCR adoption. The results suggest that some observable characteristics can alter managers' cognitive abilities and preferences regarding DCR; however, they may be influenced by their boards of directors and other CG tools. Therefore, the following section develops the research to investigate the ability of UET to explore DCR in more detail. In particular, the moderation effect of CG on DCR's determinants is addressed, and DCR's dimensions are also investigated.

6.3.2. Additional Analysis

It is important to progress toward specific or broader meanings in research from data analyses and findings (Williams, 2015). This can be undertaken through further analyses, which help to position research within wider frameworks (e.g., by developing notions through careful generalisation and theorisation) (Philipsen, 2018). This section extends the main analyses to examine the possible impact of suggested moderators on the relationship between CEO characteristics and DCR. These moderators are duality, the percentage of independent directors and institutional ownership percentage.

In fact, the role of moderating factors has been incorporated into analyses in empirical studies on DCR determinants (e.g., Mokhtar, 2017) and innovation adoption in general (e.g., Javeed et al., 2021). Moreover, the empirical results considering moderating factors support the updated models of UET (e.g., Finkelstein et al., 2009), which recognise the contribution of the external environment and modify the relationship between top management and organisational outcomes. To recapitulate the argument that emerged from these Jordanian data, CEOs with different educational levels and tenures may perceive the importance of technology and innovation differently, but, at the same time, they can act based on the power these characteristics can give them.

6.3.2.1. The Moderation Effect of CEO Non-Duality on the Relationship between CEO Education, Tenure and DCR

The UET states that powerful actors can influence corporate decisions (Hambrick and Mason, 1984). The current study provided evidence that CEOs' education and tenure are associated negatively with the important activity of modern corporate communication (the dissemination of financial and non-financial information via corporate websites). The negative role of these two traits can be potentially influenced by more executives' power. Following the suggestions of UET that moderators can help better understand senior managers' influence on firm-level decisions, the interaction effects of CEO-duality on DCR are studied in this section. Corporate governance mechanisms (CGMs) may play a role in controlling executives' power. In particular, since this study's part of the DCR index consists of some information analogous to that in other disclosure channels, boards expect opportunistic managerial behaviour (such as withholding information). Corporate-governance mechanisms are expected to prevent or reduce CEOs' negative behaviour regarding DCR. This section presents the results of testing the impact of interaction-term variables (i.e., CGM) on the association of CEO characterises and DCR. These CGMs include role separation (non-duality) and the percentage of independent directors. Essentially, combining the roles of CEO and chairman could result in inadequate oversight (Zouari et al., 2012). Therefore, it is suggested that non-duality may limit CEO power and decrease the adverse impact of the CEO's tenure and education on the adoption of DCR. The regression results are provided in table 6.4 below.

Table 6.4 Robust OLS Regression – The Moderating Effect of CEO Non-Duality on the Relationship between CEO Characteristics (Education and Tenure) and DCR

Variables	Model 1	Model 2	Model 3
FEM	2.009	2.021	1.810
	(0.685)	(0.666)	(0.610)
AGE	-0.069	-0.090	-0.061
	(-1.189)	(-1.545)	(-1.080)
EDU	-1.946**	2.786	-1.908**
	(-2.211)	(1.285)	(-2.116)
TEN_L	-1.435**	-1.300*	2.366
	(-2.010)	(-1.776)	(1.151)
N_DUAL	1.117	8.104	11.884**
	(0.312)	(1.313)	(2.210)
N_DUAL x EDU	-	-5.156**	
	-	(-2.199)	
N_DUAL x TEN_L	-		-4.199*
	-		(-1.974)
TA_L	5.284***	5.292***	5.311***
	(4.103)	(4.110)	(4.087)
ROI	0.012	-0.001	0.032
	(0.098)	(-0.008)	(0.254)
M_B_R	0.555	0.688	0.253
	(1.017)	(1.246)	(0.389)
LEV	-1.039	-1.231	-1.071
	(-0.643)	(-0.751)	(-0.652)
BDSZ	-0.029	-0.061	0.004
	(-0.092)	(-0.201)	(0.013)
IND_P	-2.870	-2.541	-2.755
	(-1.143)	(-1.012)	(-1.105)
DISP_O	0.007	0.012	0.009
	(0.226)	(0.367)	(0.286)
FOR_O	0.006	0.004	0.007
	(0.201)	(0.134)	(0.247)
BIG4	0.337	0.452	0.480
	(0.254)	(0.339)	(0.362)
INST_O	-0.001	0.001	-0.005
	(-0.033)	(0.026)	(-0.217)
INDU	Yes	Yes	Yes
Constant	-9.509	-16.029	-21.048*
	(-0.817)	(-1.319)	(-1.671)
Observations	122	122	122
VIF	0.614	2.78	3.16
F stat	10.98	14.58	12.71
Prob > F	2.37	0.000	0.000
R-squared	0.546	0.624	0.627
Adjusted R-squared	0.546	0.554	0.557

FEM female, AGE age, EDU continuous variable of CEO education (one point awarded for each CEO certificate, including Bachelor, Masters and Doctorate), TEN_L logarithm of CEO tenure, N_DUAL non-duality role (CEO is not the chairman), L_TA logarithm of total assets, ROI return on investment, M_B_R market-to-book-value ratio, LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big-four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, INDU sector-type dummy variable (according to the ASE classifications), VIF variation inflation factor. Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The main regression analysis results in the earlier sections revealed that highly educated and long-tenured CEOs are negatively associated with DCR. However, it is suggested that CEOs' behaviour toward DCR may be influenced by having a stronger role in the company duality or a less powerful position in the case of non-duality. This suggestion is informed by the agency theory; role separation is expected to weaken the negative effects of higher education and tenure on DCR adoption. In addition, CG mechanisms are expected to play a role in DCR adoption through the weakening of CEO behaviour, such as the possible negligence of DCR importance (i.e., lower adoption) (Ho and Wong, 2001).

Mode 1 provides regression results without the interaction term. In model 2, a new variable (the interaction term of nonduality and education) is incorporated into the regression. The results show that nonduality has a very low impact on the relationship between education and DCR. This means that the relationship between CEO education and DCR is weakened but to a very low degree. The coefficient value increased, but the significance decreased from 2.9% to 3%. With the existence of non-duality, education has a significant negative effect on DCR (significant at a 10% level), which explains 1.7% of the decrease in DCR. Moreover, the presence of education and the CEO’s non-duality reduce the effect of education on DCR by only 2%. This means that the culture of the CEO has a mitigating effect on role separation in DCR.

These results were not expected. However, they are in line with the findings of Felo (2010), who asserts that separating the roles of CEO and chairman does not necessarily lead to greater transparency. Moreover, the results reported from developing countries, such as those reported by Alanezi (2009), are in line with these fresh Jordanian results. Conversely, the results are not in line with studies that found a negative effect of duality on DCR (e..g., Zadeh et al., 2018).

With regards to tenure, and in light of previous results, it is also likely that duality has a weak influence on the relationship between tenure and DCR adoption. Therefore, the interaction-term variable is included in model 3 in Table 6.5. The results reveal the small negative impact of CEO nonduality on the relationship between tenure and DCR, as the significance level decreased from the 95% range to the 90% range. However, the main effect of the nonduality variable itself is positive when the model includes the moderation term. These results mean that nonduality is positively associated with DCR, but only when tenure has average values. Prior research in Jordan stated that CEO duality has a significant positive impact on performance (by ROA) but is insignificant when Tobin's Q is used (Kanakriyah, 2021). The results in this section provide little support to some scholars who suggest that duality may mediate the relationship between managers and financial reporting decisions and innovation (Li and Yang, 2019).

Both the models discussed above confirm the previous regression model's results, which suggest that CEOs with higher levels of education display greater engagement in DCR. However, it is suggested that CEOs' behaviour may be influenced when they perform other roles in their companies, e.g., as board chair. Therefore, it was suggested that CEO duality affects the relationship between CEOs' education and their firms' DCR practices. A new variable (the interaction term between these two) was created to test this impact on the model.

The results showed that the interaction term is positively significant. This means that firms with highly educated CEOs who are also chairmen showed slightly higher DCR adoption. These results may also suggest that the board chair does not necessarily fulfil their fiduciary duty of responsibility for the benefit of shareholders, especially small investors who do not have private access to information.

6.3.2.2. Moderating Effect of Independent Directors' Percentage on the Relationship Between CEO Education and Tenure and DCR

Relevant literature recommended that future studies should examine economic and regulatory development's moderating impact on company attributes and DCR (e.g., Waromi et al., 2019). While few studies reported that outside directors have a negative impact on disclosure (e.g., Gul and Leung, 2004), many still confirm CGM as useful in enhancing transparency. Accordingly, this section aims to further investigate whether board independence has any impact on the relationship between CEO characteristics (education and tenure) and DCR in the AME.

Some literature has shown that companies with a higher percentage of Independent Directors (IDs) disclose their financial information more frequently, and the disclosed information is of higher quality (e.g., Ajinkya et al., 2005). Therefore, more IDs among the board members were expected to be associated with higher DCR adoption. The main results (Table 6.3 above) do not show a statistically significant influence of this variable. To test whether corporate governance features influence (moderate) the relationship between CEO education and tenure and DCR, an interaction term is used in the regression model. Empirically, the proportion of IDs to the total board size is used as a moderating variable in the regression analysis. Model 1 in table 6.5 tests the moderating effect on education, and Model 2 tests the moderating effect on tenure.

The results reveal that the negative relationships between DCR and CEO tenure and CEO education are weakened when the interaction term of the percentage of IDs is included in each regression model. Higher board independence influenced the negative association between education and DCR adoption and the negative association between CEO tenure and DCR. These results are consistent with prior research that documented CGM diminishing the power of the CEO (e.g., Kelton and Yang, 2008), indicating that involving oversight could lead to lowering any CEO resistance to change. However, the results do not accord with Al-Moataz and

Hussainey (2013), who found that board independence is negatively associated with CG disclosure in Saudi Arabia in the AME.

The main effect of education on DCR is negative (t-test is -2.442), which means that education's influence on DCR is negative only when IDs are at an average value. There are two possible explanations for these results. The results suggest that such an average percentage of IDs is inadequate to keep CEOs committed to more rational decisions regarding DCR adoption. They may be supportive of DCR but could not inefficiently control the CEO power gained because of their tenure and educational degrees. Such results may highlight the need for regulators in Jordan to review CGMs—for instance, hiring criteria and internet usage support.

The results on duality and independent directors above may signify that such CGMs have a weak ability to counter the power of the CEO, leaving them with more discretion on DCR adoption. Per Jordan's CG code, firms are advised (in very abstract wording) to use their websites to increase transparency and post their CG charter on that website. However, the code does not provide guidance or recommendation on having a website in the first place. Banks are an exception, and the national CG code recommends that banks publish information on their websites.

Table 6.5 Robust OLS Regression: Moderating Effect of Board Independence on the Relationship Between DCR and CEO Characteristics (Education and Tenure)

Variables	Model l	Model 2
FEM	1.681	1.891
	(0.584)	(0.626)
AGE	-0.063	-0.070
	(-1.050)	(-1.182)
EDU	-2.442**	-1.972**
	(-2.139)	(-2.221)
IND_P	-7.437	-0.363
	(-1.073)	(-0.068)
TEN_L	-1.447**	-1.220
	(-2.011)	(-1.543)
EDU x IND_P	3.415	
	(0.686)	
TEN_L x IND_P		-1.217
		(-0.514)
DUAL	-1.163	-1.234
	(-0.321)	(-0.345)
TA_L	5.222***	5.295***
	(4.082)	(4.114)
ROI	0.013	0.015
	(0.105)	(0.120)
M_B_R	0.518	0.534
	(0.953)	(0.932)
LEV	-0.979	-1.097
	(-0.605)	(-0.685)
BDSZ	-0.024	-0.022
	(-0.079)	(-0.069)
BIG4	0.217	0.301
	(0.162)	(0.226)
DISP_O	0.006	0.009
	(0.182)	(0.283)
FOR	0.010	0.006
	(0.336)	(0.211)
INST_O	-0.001	-0.000
	(-0.061)	(-0.010)
Constant	-8.539	-10.042
	(-0.729)	(-0.867)
INDU	Yes	Yes
Observations	122	122
R-squared	0.616	0.615
Adjusted R-squared	0.544	0.543

FEM Female, AGE: age, EDU continuous variable of CEO education: it takes one point for each CEO's certificate; Bachelor, Masters and Doctorate. TEN_L logarithm of CEO tenure, N_DUAL non-duality role (CEO is not the chairman), L_TA logarithm of total assets, ROI return on investment, M_B_R market to book value ratio. LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, INDU Sector type dummy variable (according to the ASE classifications). VIF variation inflation factor. Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.

The results on CEO-duality further suggest that separating the roles of chairman and CEO in an emerging economy such as Jordan is not an effective mechanism for increasing transparency of information disclosed on a website. Board independence and separation of roles promote support for more DCR. However, the influence of both is low and below expectations. The weak moderating role of CEO duality requires more attention in future research that considers matters such as board composition and board disposition towards technology.

Long CEO tenure can be favourable in some settings (e.g., some US firms). However, the current results provide evidence of the negative influence of CEO tenure on corporate transparency. It should be evaluated in general terms, not only in terms of DCR. The role of CG has a theoretically crucial influence on DCR. However, in the Jordanian context, the findings show that weak CG (weak boards) increases CEO impact and another form of discretion, according to UET (Hambrick, 2007). Policymakers in developing countries should review their priorities if DCR is not part of the culture. Further, the current results give more understanding of the effects of the CEO in Jordan and support prior research that found CEO presence on the board of directors influences CEO compensation (Abed et al., 2014).

In summary, the results concerning the CG interaction with tenure and education confirm the strong impact of CEO power on DCR adoption. Therefore, resistance to change, as suggested by the innovation diffusion model, maybe a suitable explanation. Resistance to technology acceptance has been highlighted in prior research on developing countries (e.g., AbuGhazaleh et al., 2012b). Such resistance to change is connected to CEO power and can be classified into various categories. One relevant type is 'Prestige Power', which is where CEOs who hold degrees from famous academic institutions and serve on corporate boards leverage their elite education to add to their prestige (Daily and Johnson, 1997). One interpretation of the results, therefore, may be that highly educated CEOs or long-tenured CEOs have some resistance to innovation and influence their decisions on DCR adoption that arises from having excessive power. Hambrick (2007) contended that it is difficult to know how managers make decisions because incentives behind their decisions are like ‘black boxes’; nevertheless, observable characteristics can be good proxies for their behaviour.

6.3.2.3. Moderating Effect of Institutional Ownership on the Relationship Between CEO Education and Tenure and DCR

Additional regression analyses were conducted to examine the possible influence of ownership structure on DCR. Specifically, the moderating effect of institutional ownership percentage on the relationship between CEO characteristics and DCR was investigated by adding an interaction term between these variables to the model.

The results indicate that the main effect of education is significant in both models. However, the interaction terms were not significant. Despite the main model findings of no significance of this variable on its own, when interacting with institutional ownership percentage, the negative impact of education on DCR was strengthened. The finding is consistent with that of Kelton and Yang (2008), that institutional ownership is negatively related to DCR.

Yet, this finding does not accord with that of Aghion et al. (2013), who found evidence that institutional ownership in shareholding firms is associated with more innovation because, whereas managers prefer a quiet life, institutional investors push for innovation (Aghion et al., 2013). This does not, however, seem to be the case with CEOs in Jordan, and as such, CEO power has translated into low adoption of DCR. One plausible explanation for the negative relationship between institutional investors and DCR is their special access to information; such access may be influenced by country differences in terms of its development. Our results concerning Jordan are not in line with those of Chang et al. (2008), who found that extensive web-based investor relations programs are associated with higher institutional holdings in Australia.

When all the moderation results are taken together, we see that institutional ownership negatively affects DCR adoption by altering the relationship between DCR and education and tenure. By contrast, board independence has a weak role in controlling the power of highly educated and long-tenured CEOs. Analysts and institutional shareholders have greater access to corporate communication (through, for example, conference calls) than individual investors; therefore, digital communication can empower individual shareholders (Brennan and Merkl-Davies, 2018).

Based on the findings on the impact of board independence, non-duality and institutional ownership on the CEO role in DCR can also be compared with recent empirical studies highlighting the lack of institutional encouragement for innovation and the weak institutional environment in Jordan (i.e., the high level of institutional uncertainty (Sandri and Alshyab, 2020). In particular, the assessment of DCR in Jordan can signify a weak institutional environment in Jordan that affects technology acceptance and use, consistent with Al-Hiyari et al. (2019). In other words, a lack of coercive pressures (such as DCR regulations and constitutions) and professional pressures (such as standards or guidelines on website usage) (Arafa, 2012). Therefore, the gravity of the DCR situation (and its impact on transparency) in Jordan may increase, especially if no corrective actions are taken to improve on such weak institutional DCR adoption. Flanagin (2000) suggests that social pressures are important in DCR innovation adoption, especially during the initial stages of diffusion. Additional concerns arise in conjunction with the absence of adequate data protection and privacy laws (Aljaber, 2012, Altemh, 2021). Together, these may justify the high management support required to enhance DCR adoption, as revealed in previous studies in Jordan (Al-Htaybat et al., 2011, Al-Hajaya and Sawan, 2018), as well as the prominent role of top managers' style (i.e. web savvy or not) when a new CEO is appointed (managerial change influences DCR; (AbuGhazaleh et al., 2012a).

6.3.2.4. Other Findings

Further analyses were conducted to yield more detailed findings (un-tabulated) and elaborate on DCR adoption in the developing country context.

First, all firms (website adopters and nonadopters) are included in a regression model to examine the moderating effect of IDs; the results are compared using a larger sample. The results show that the moderating variable term (INP_P × EDU) is significantly negatively correlated with DCR, meaning that IDs do not prevent the power of the CEO; the power of the CEO remains prevalent (negatively associated with DCR adoption). This finding confirms the earlier results on the moderation effect of board independence. A board may take notice of an inadequate website and demand some corrective actions. However, the nonexistence of a website in the first place is not associated with the ID ratio. Including the 54 firms that do not have websites in the analysis leads to IDs having a modest moderating effect on the negative impact of CEO education.

Second, we test which factors are associated with DCR when measured as a dummy (high/low level of DCR) variable, and each firm is given one if its DCR is above the mean and 0 if below the mean. Then, logistic regression is conducted. The results show that CEO education has a significant negative association with DCR. By contrast, firm size has a positive association, and board size is negatively associated with DCR. The results thus indicate that larger firms, firms with smaller boards, and firms with less-educated CEO are more likely to be high adopters of DCR (i.e., above the mean value).

Third, the main regression models show no significant relationship between CEO age and female CEO on the one hand and the level of DCR on the other. Female influence on DCR adoption may be dependent on age. Therefore, a new variable representing the interaction between gender and age is included in the regression analysis; the results show a positive impact of age on the relationship between female CEOs and DCR; moreover, age does not have a positive impact unless the CEO is female. The current study results suggest that older female CEOs are more open to innovation and new ideas in the business world than older male CEOs. This is consistent with Han et al. (2019), who found that female CEOs are significantly more likely to promote incremental and innovative behaviour when compared with male CEOs.
The results also highlight stronger effects of age in a certain context within the UET perspective. For example, Hambrick and Mason (1984, p.198) stated that “older executives have a greater psychological commitment to the organisational status quo”. This seems contradicted by the current results concerning female CEO.

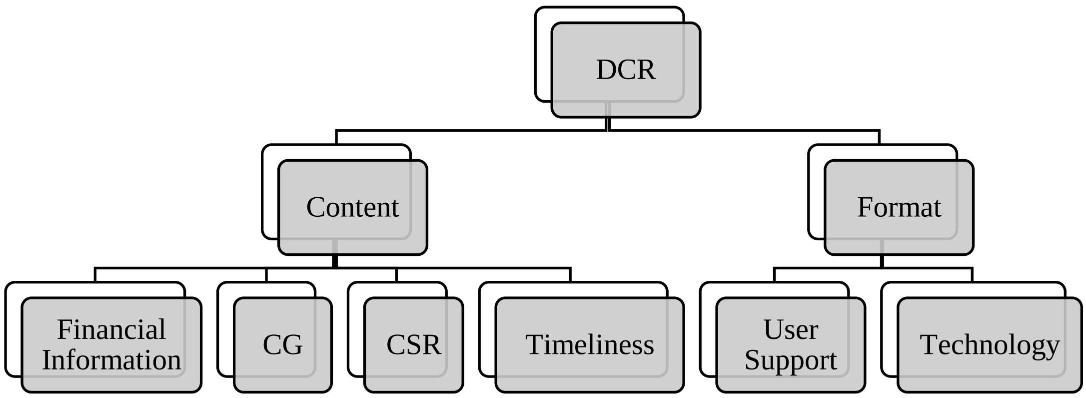
6.3.3. Regression Analysis of DCR Dimensions

SINCE DCR is not just publishing financial reports on a firm website but also involves taking advantage of website features (e.g., presentation formats and user support). Additional analyses on DCR are conducted in which the variables that make up the DCR index are organised into dimensions. This section aims to answer the third research question (RQ3), which is, *Does the relationship between CEO characteristics (age, tenure, education, gender) and the extent of DCR (digital corporate reporting) differ between the dimensions of DCR?*

Financial information, corporate governance, social responsibility disclosures, and timeliness are the four main categories of content dimension elements. The format items are classified according to the level of user-friendliness and reliance on technological innovations (two groups: user support and technology use). Table 6.6 provides descriptive statistics.

Table 6.6 Descriptive Statistics of DCR Dimensions and Subgroups

Dimension	No of items	Mean	Std. Dev.	Min	Max
Content:	32	7.557	5.894	0	24
Financial Info.	11	3.098	2.386	0	10
Corp. Governance	13	2.787	2.578	0	10
CSR	3	0.762	1.121	0	3
Timeliness	5	0.91	.853	0	4
Format:	21	8.451	3.764	0	19
User Support	10	5.73	2.231	0	10
Technology	11	2.721	2.07	0	12



The results indicate that websites still have considerable untapped potential. For instance, companies could use less textual content (e.g., HTML) on their websites and instead apply creative content such as visuals (e.g., videos, pictures, audio) to make the presentation of corporate reporting more attractive.

Table 6.7 presents the regression analysis results of whether CEO characteristics can explain variations in the content format, timeliness, and user support dimensions of DCR. The role of firm characteristics in variations in DCR dimensions instead of overall DCR is discussed in this section; the results are presented and discussed in the following.

In general, firms' websites contain more format items than content items. Of the content items, financial information is more prevalent than other types, especially CG information. In addition, user support (i.e., ease of use) is more prevalent than technology feature items in the format dimension.

Table 6.7 presents the OLS regression results of testing the determinants of variance in DCR by dimension. Content dimension is analysed in Models 1 to 5. The format dimension results are displayed in Models 6 to 8.

The results for the content dimension are presented in Model 1, which shows that CEO education has a significant negative relationship with the content dimension of DCR. These results are consistent with the results for the overall DCR index. Yet, the regression results show that CEO age and tenure have nonsignificant negative associations with DCR content in general. Model 4 shows that CEO age negatively affects publishing CSR information on firms' websites. Environmental, social, and sustainability reports are other types of 'content' found on corporate websites (e.g., Adams and Frost, 2004).

CG disclosures are not significantly associated with any of the CEO characteristics. These are associated with leverage and firm size. This is expected as the guidelines for large firms require placing such information on their websites (EBRD, 2016). In general, the current finding is consistent with some empirical results (e.g., Jiang et al., 2009), who found that most companies do not effectively use their websites to communicate CG information. In addition, they found that the types of content presented by companies across sectors differ significantly, even though companies have harmonised *how* their content is presented.

Table 6.7 Robust OLS Regression of CEO Characteristics on Content and Format Dimensions (and Their Groups) of DCR

Variables	Model 1 CONT	Model 2 FI	Model 3 CG	Model 4 CSR	Model 5 TML	Model 6 FRMT	Model 7 US	Model 8 TECH
FEM	1.797	0.955	0.796	-0.292	0.337	0.149	0.032	0.117
	(0.987)	(1.300)	(0.771)	(-0.906)	(0.743)	(0.107)	(0.052)	(0.111)
AGE	-0.034	-0.006	-0.003	-0.018**	-0.007	-0.038	-0.019	-0.019
	(-0.891)	(-0.347)	(-0.156)	(-2.618)	(-1.096)	(-1.274)	(-1.041)	(-1.182)
EDU	-1.209**	-0.668***	-0.397	-0.063	-0.080	-0.842*	-0.265	-0.576**
	(-2.414)	(-2.976)	(-1.639)	(-0.486)	(-0.879)	(-1.740)	(-0.973)	(-2.122)
TEN_L	-0.540	-0.264	-0.177	0.015	-0.114	-0.932**	-0.723***	-0.209
	(-1.248)	(-1.327)	(-0.908)	(0.154)	(-1.646)	(-2.476)	(-3.260)	(-0.951)
DUAL	-0.999	-1.409*	-0.244	0.454	0.199	-0.105	0.398	-0.503
	(-0.442)	(-1.873)	(-0.244)	(0.736)	(0.727)	(-0.067)	(0.417)	(-0.719)
TA_L	3.400***	0.806**	1.671***	0.630***	0.293*	1.866**	1.095***	0.771
	(4.353)	(2.152)	(4.630)	(2.836)	(1.864)	(2.339)	(3.083)	(1.144)
ROI	-0.003	0.025	-0.049*	0.012	0.009	0.028	0.044	-0.016
	(-0.046)	(0.762)	(-1.705)	(0.813)	(0.859)	(0.337)	(1.454)	(-0.233)
M_B_R	0.382	-0.050	0.178	0.189***	0.065	0.127	-0.154	0.281
	(1.510)	(-0.328)	(1.266)	(2.835)	(1.480)	(0.308)	(-1.090)	(0.797)
LEV	-1.178	-0.296	-1.116**	0.301	-0.068	0.333	0.385	-0.053
	(-1.109)	(-0.489)	(-2.269)	(1.564)	(-0.441)	(0.344)	(0.735)	(-0.072)
BDSZ	0.038	-0.009	0.008	0.035	0.004	-0.094	-0.065	-0.028
	(0.177)	(-0.103)	(0.080)	(0.962)	(0.091)	(-0.612)	(-0.677)	(-0.369)
IND_P	-2.097	-0.975	-0.252	-0.581*	-0.289	-1.090	0.200	-1.291
	(-1.380)	(-1.203)	(-0.328)	(-1.813)	(-0.919)	(-0.784)	(0.269)	(-1.423)
BIG4	0.330	0.800*	-0.629	0.256	-0.098	0.412	0.369	0.043
	(0.402)	(1.975)	(-1.571)	(1.602)	(-0.623)	(0.527)	(0.807)	(0.105)
DIS_O	-0.008	-0.004	-0.006	-0.004	0.006	0.021	0.015	0.006
	(-0.354)	(-0.397)	(-0.504)	(-0.899)	(1.544)	(1.254)	(1.520)	(0.575)
INST_O	-0.010	-0.011	-0.007	0.003	0.004*	0.008	0.006	0.004
	(-0.666)	(-1.583)	(-0.820)	(0.831)	(1.760)	(0.537)	(0.935)	(0.423)
FOR_O	0.001	0.005	0.000	-0.007**	0.003	0.011	0.007	0.002
	(0.062)	(0.661)	(0.016)	(-2.186)	(0.965)	(0.688)	(0.779)	(0.166)
Intercept	-7.338	1.641	-5.323	-3.278	-0.377	-1.055	-0.543	-0.512
	(-1.024)	(0.513)	(-1.544)	(-1.627)	(-0.283)	(-0.155)	(-0.189)	(-0.088)
INDU	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obser.	122	122	122	122	122	122	122	122
R-squared	0.679	0.568	0.558	0.603	0.472	0.389	0.426	0.258
Adj. R-sq.	0.623	0.492	0.481	0.533	0.380	0.282	0.326	0.129
VIF	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37

FEM Female, AGE: age, EDU continuous variable of CEO education: it takes one point for each CEO's certificate; Bachelor, Masters and Doctorate. TEN_L CEO tenure, N_DUAL non-duality role (CEO is not the chairman), L_TA logarithm of total assets, ROI return on investment, M_B_R market to book value ratio[60]. LEV leverage is measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, and INDU dummy. VIF variation inflation factor. CONT content dimension score, FI financial information group, CG corporate governance group, CSR corporate social responsibility group, TML timeliness group. CONT content dimension of DCR, FRMT format dimension of DCR, US user support of DCR, TECH technology dimension content of DCR, Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The results on the above two dimensions suggest that managers are more concerned about the *coverage* of DCR rather than the *quality* or the incremental benefits of DCR when compared to hard copy reports. Technology can significantly alter a company's communication with investors and other stakeholders, such as by increasing the usefulness of disclosures (FCR, 2017). Timeliness can be improved through modern innovations such as the Internet (corporate websites); management can connect with all investors and share important information with them daily (Healy and Palepu, 2001). Han and Wild (1997) reinforced this explanation of the importance of the timeliness of published material by using the term '*information transfers structure*' to examine the impact of timely information on business operations. They found that information transfers, both in magnitude and sign, vary according to the timeliness with which earnings are reported. In general, DCR can deliver information in a timelier manner than other channels (FASB, 2000, Abdelsalam and El-Masry, 2008, FRC, 2015a). Therefore, studying possible determinants of DCR timeliness is essential. Thus, herein, a selected group of DCR items was used to measure DCR timeliness; the regression results revealed no statistically significant relationship between CEO characteristics and the timeliness dimension of DCR. The results table indicates that the only factors significantly associated with DCR timeliness items are firm size (positive) and debt ratio (negative). Therefore, although DCR can foster timeliness, we infer that Jordanian firms place less emphasis on timely disclosure. These results differ from those of Abdelsalam Abdelsalam, and El-Masry (2008), who found that (1) annual reports of large companies are published faster on their websites and (2) board independence and ownership structure were determinants of DCR.

The results also imply that companies are neglectful of the value of websites as a communication tool. A website and information provided thereupon are less useful when the information is not frequently updated, according to the timeliness definition in IASB qualitative characteristics framework. CEOs could generally perceive some benefits of DCR differently, such as its role in the timeliness of disclosures. A possible reason for this can be related to users' reliance on financial market institutions' websites, as suggested in the prior results of AbuGhazaleh et al. (2012a). Some research investigating CG in Jordan has demonstrated that websites are not updated as often as they should be, leaving the timeliness dimension delivered by regulators' websites.

Regarding the user support group in the model, only CEO tenure exhibits a significant negative relationship with the user support component of DCR. This implicates neglect of the importance of having an easy-to-navigate website. Firm size is positively associated with most components except the financial information group and timeliness in the content dimension of DCR. This suggests that smaller companies may have awareness equivalent to that of large firms regarding the role of DCR in providing more useful information in a timely manner. Such findings support the idea that the Internet allows for an enhancement of 'content' that is not achievable for printed documents.

The results show that education is significantly (positively) associated with the content dimension and the financial information group and significantly (negatively) with the TECH group. These findings may support the idea that a higher level of CEO education is not reflected in more 'effective' adoption of a website (i.e., 'effective' adoption is that which results from stronger awareness of the website's capabilities). The stronger negative effects of this power may result in less improvement in DCR adoption. Such findings support the argument that more power (e.g., higher-level CEO education) leads to less effective use of technology and may also imply that more powerful CEOs are not satisfying the common needs of information users (consumers, as described by FRC FRC (2017). CEO tenure is negatively associated with the format dimension and the user support group. This finding is comparable to the education results, and both education and tenure may result in different types of power.

The findings of the previous in-depth analyses relate to the core supposition that CEO power and discretion influence how firms use their corporate website for disclosure. The findings can be generalised to settings similar to the AME. To expand on this, if we claim that the negative influence of power is more attributable to the TMT rather than the CEO, then cultural norms in such high power-distance environments, the CEOs set the tone at the top. In addition to the CEO being in charge of coordinating and implementing technical innovations in firms (Pinheiro, 2010), the current findings of leadership tone carry ethical weight (Schwartz et al., 2005).

In summary, this section has discussed the evidence that CEO characteristics are associated with DCR, revealing the effect of CEO power.

6.3.4. Control Variables Results

This section presents the control variables' results and discusses them by comparing them with the interest variables' results. In the main regression model (Table 6.3 above), firm age and industry are significantly associated with DCR. Importantly, there is no significant relationship between big-4 auditors and DCR (except for a small relationship with the DCR financial information dimension). This denotes that big audit firms did not act as adoption agents, as Xiao et al. (2004) revealed based on the DOI model. Such results support the UET argument. Firm size is positively significant, indicating that the larger the firm is, the more likely it will have higher DCR adoption. Such a finding is consistent with the logistic regression results on website presence. Such results are as expected and in line with most previous DCR studies in developing and developed countries; small firms may have little awareness of the benefits of some IT tools and infrastructure (Esteves, 2009). Likewise, industry type is a determinant of having a functioning website and using it to communicate corporate information. Specifically, service firms are more likely to have a functioning website and also lower DCR adoption compared to other sectors. Board size is not associated with DCR, despite being associated with firms that have websites. The remaining control variables are found to be not significantly associated with the overall DCR score.

6.4. Sensitivity and Robustness Analysis

Robustness tests are methods for evaluating regression models. When one or more of the input variables or assumptions are severely changed, the model's output and forecast should remain accurate. Robustness testing examines model uncertainty and whether estimated effects of interest may be altered without negative repercussions (i.e., results validity) (Hadi and Chatterjee, 2009). One primary type of robustness testing is the *Model Variation Test* which substitutes an alternative assumption for one or more of the initial assumptions in the baseline model specification (Ramsey, 1969). Examples of checks include the change in the set of regressors, change in the operationalisation and change in the sample (adding or subtracting cases). Accordingly, the following sensitivity test of the main regression results ensures their validity.

First, to eliminate the possibility of results bias because the entire sample includes banks, A sample of 106 firms after excluding banks is used to rerun the regression. Results have not materially changed from those of the primary model (apart from some coefficient values). Therefore, the results are valid. Second, a different measure is used for the educational level to assess the robustness of the main model results on CEO education. Three dummy variables are used instead of one categorical variable (each for bachelor's, master's, and doctorate). Results indicated that CEOs who hold a Doctorate are less engaged in DCR. This finding is consistent with the main model results that education is significantly positively associated with DCR.

Third, tenure is measured differently to verify reliability results. CEOs are divided into two tenure groups by mean value since a one-year increase in tenure may not affect DCR adoption (long tenure: over ten years and short tenure for less than ten years). The regression findings confirmed the idea. In detail, CEOs with over ten years of experience publish three additional elements on the website. Fourth, a few researchers argue that even firms that do not have a website may still recognise its benefits. To check if the results under this approach are valid, the entire 176 firms (that have and don't have a website) are used in the analysis, and a score is given reflecting the actual DCR score, following Ashbaugh et al. (1999) and. The regression was redone, and the results are the same. This approach supports the UET as non-website firms have more complexity in deciding the appropriate adoption level. Fifth, it was explained earlier that any multicellularity over 0.60 would be treated by removing one of the correlated variables. However, to test if a stricter approach will provide similar results, any two correlated items over 60% are dropped. One variable with a value of around 53% was excluded, and the results stayed the same. Lastly, the main results have included all the control variables showing that only two are significant. However, some researchers argue that removing control variables that are not significant could enhance the regression model. To assess this assumption, insignificant variables were removed, tests were run, and the results were the same. Importantly, these control variables have significant coefficients in the models focusing on groups of DCR.

Fifth, some studies on Jordan (e.g., AbuGhazaleh et al., 2012a) report that management change can impact the website (incremental impact). Keeping a functioning website is highly affected by the decision of the CEO. In order to alleviate any potential serial correlation (e.g., DCR might be related to the previous year where CEO is a different person), another sample was used, including only firms that only have a minimum of two years of the CEO's tenure. In 119 firms, the CEO was the same as the previous year. The regression results indicate no material differences. Finally, to ensure uniformity with educational dummy variables in Chapter 7 for the Chairman, regression analysis with two dummy variables for doctoral and master's degrees has been conducted, and the findings show that CEO holding a master’s degree or doctoral degree has both negative association with DCR (compared to a bachelor). Such results support the main results from the baseline analysis.

Based on the above procedures, it can be concluded that there was a considerable degree of validity and reliability of the results across different model specifications and measurements. Therefore, the results are robust and not due to model specifications.

6.5. General Discussion

This section expands the initial discussion of the findings based on UET and the relationships drawn from it. First, the UET highlights that companies are affected by their powerful actors (Adams et al., 2005). One of the activities CEOs may have centralised power over is the use of the website for corporate communication, particularly in developing countries in the middle east. For example, Arafa (2012) explained that corporate websites in Egypt are not influenced by external professional parties or investors, whether individual or institutional. Therefore, the current results suggest that DCR diffuses in developing countries differently than the developed countries. The results also imply that DCR has strong decision centralisation, congruent with AME cultural norms (i.e., high power distance) (Hofstede et al., 2010).

Second, the results support that management has high discretion since DCR has not yet been regulated (Momany et al., 2014); this leaves high discretion on what, when and how to disclose on the website. Empirical evidence provided by research (e.g., AbuGhazaleh et al., 2012b) pointed out that the release of information on the investors' relation webpage needs the approval of the CEO. Third, the current results support the argument of UET that discretion can originate from organizational factors such as an ineffective board (Hambrick, 2007). In other words, the common effect of CGM on the negative tenure and education on DCR suggests the lack of board support for DCR, especially for dimensions where firm size was a less relevant determinant of DCR.

Fourth, the results align with literature findings that managers with higher tenure (position tenure) are associated with higher risk aversion and fewer organisational changes (e.g., Hambrick et al., 1993, Datta et al., 2003). Moreover, the results support scholars' argument that UET plays a role in understanding disclosure (Bamber et al., 2010). Moreover, based on a theoretical standpoint, the weaker role of CEO characteristics in the DCR content dimension could be attributed to the alignment between managers' roles and the external environment (i.e., the demand for that content in traditional channels). Fifth, in light of DCR's adoption results about firm characteristics, the current study's results confirm the significant positive impact of firm size on both having a website and the level of using it for DCR. This means that larger firms are more likely to have websites than smaller firms and use them for communication. Such a finding is consistent with most DCR literature but with some exceptions. For instance, one study found that size is a determinant of having a website but is unrelated to the extent of using it for disclosure in Japan (Marston, 2003). Accordingly, size influence on DCR level may depend on how firms are using the website (content vs format). In addition to the decrease in costs of running a website, developing countries may evaluate that differently (as discussed in the additional analysis).

Sixth, the increased level of discretion is also supported by the lack of regulations and encouragement (compared to USA guidance and UK FRC guidance, for instance). Encouragement is a major stage in the DOI model.

Seventh, the results on tenure and education interaction with CG signify a high CEO power impact on technology use among firms. Therefore, resistance to change suggested by the innovation diffusion model may be a useful explanation for the lower diffusion of DCR as highlighted, e.g., AbuGhazaleh et al. (2012b). Eighth, the emphasis on the DCR format dimension is important because it is a distinguishable feature not available in other corporate reporting mediums. Therefore, results about the format dimension may be less interpretable from the institutional theory perspective. Reasons for this argument are: first, there are no pressures from regulators or policymakers given the alternatives, and second, other providers' content section is easier to perceive than format and technological features. Ninth, The results are consistent with signs of the weak institutional adoption of DCR in Jordan, as highlighted by AbuGhazaleh et al. (2012a), who found that 'management change' causes corporate websites to be hardly used. Since the revealed high degree of discretion and weak board (Hambrick, 2007) in promoting transparency, highly educated and long-tenured CEOs can be prepared to manage firms with limited adoption of this innovation.

Tenth, the negative CEO impacts (e.g., educational level and tenure impact) may also signify weak institutional settings that encourage DCR adoption (Arafa, 2012) and provides the necessary guidance. One possible explanation for this negative role is the complexity of this innovation (Bamber et al., 2010). In particular, the difficulty of the DCR adoption decision may be due to many reasons. First, the internet is risky as it allows an unlimited audience, including competitors (Evans III and Sridhar, 2002). Second, there are no easy calculable benefits to equate with such innovation risks. Third, users need to understand their general preferences, including the 'which' format and 'what' information. These are crucial points to making the website a valuable source of information (FRC, 2017). Finally, there may be no improvements in DCR when users are disconnected from the information issuers. Eleventh, the ultimate users of the website are information consumers (FRC, 2017). Those usually can know what they want from a website. Therefore, the 'format' dimension in DCR may not be crucial for unprofessional users, which allows more discretion for the management to decide, especially in developing countries. Twelfth, in addition to CEO's power, the impact of culture could add more elaboration to the issues of CEO power and education. The literature has shown that certain types of innovations are influenced by top management but differently among four Western cultures studied by Hoffman and Hegarty (1993). The high-power distance and centralisations are additional factors supporting the assumptions about DCR status in emerging economies, as informed by the UET.

Thirteenth, the general results align with the point of view by Rogers (2003) that considers knowledge about any innovation as a preliminary step in deciding to adopt or reject that innovation. However, based on the UET, managers may evaluate this 'knowledge' differently based on intrinsic values and preferences such as risk-taking behaviour (i.e., acceptance or rejection is not solely based on the technology itself (Kane et al., 2015). This is evident from the current results that CEO age impact website existence. Consistent with prior Jordanian studies that suggest top management starts the adoption by recommending launching a website or a dedicated IR webpage (AbuGhazaleh et al., 2012a). Lastly, the current study's results revealed that separating the roles of CEO and chairman has shown a minor role in enhancing DCR as an innovative modern tool for communication. This supports the issue that a CEO-chaired may reduce monitoring. Therefore, policymakers in need to pay more attention to other issues that weaken boards (such as political connections). The BOD oversees managers to safeguard shareholders' wealth and interests. Despite that, CEO duality is discouraged in many nations, including Jordan (Halme and Huse, 1997).

6.6. Summary

The chapter answered the second and third questions on the impact of CEO characteristics and DCR in Jordan. After the robustness checks were carried out and the conditions of multiple regression were met, independent and control variables were used to conduct multiple regression analysis to test the four hypotheses. The developed regression model highly predicts DCR variations regarding the overall DCR score and the different dimensions.

Testing the hypothesis was based on t-statistics and revealed that two CEO characteristics (tenure and education) have a significant negative relationship with the DCR. Specifically, a greater extent of DCR is associated with short-tenured and less-educated CEOs. Moreover, the moderation effect of governance mechanisms has a limited effect in decreasing the association between education, tenure and DCR. Finally, although CEO's characteristics impact the DCR adoption level, the data for the entire sample did not statistically prove that CEO gender and age are significantly associated with the DCR level of adoption. Nonetheless, the relationship is significant in some components of DCR rather than the overall DCR. The results support UET that managers' characteristics influence corporate-level decisions. Moderating effects of CGM were tested and revealed a low influence on the depicted relationships denoting that CEO is more powerful. Bounded rationality is difficult to be cured by CGMs.

Chapter 7 provides the results and discussion of investigating the relationship between chairman characteristics and online LTS readability in the AME.

CHAPTER 7: EMPIRICAL RESULTS AND DISCUSSION OF ANALYSIS OF THE RELATIONSHIP BETWEEN CHAIRMAN CHARACTERISTICS AND THE READABILITY OF LTS

7.1. Introduction

This chapter represents the second empirical part of the research study on digital corporate reporting and has two primary objectives. What are the extent and patterns of the readability of LTS accompanying digital reporting? What is the association between the chairman's characteristics and the readability of these LTS? The remainder of the chapter is laid up as follows. The descriptive analysis is provided after this introduction. The results of OLS regression assumptions are then discussed. Then, the clustered regression results are provided, together with the results of hypothesis testing. The next step is a further analysis designed to determine whether or not certain variables have a moderating role in the relationships. The sensitivity analysis section then verifies the findings. Finally, the findings are analysed in light of the theoretical framework and the corresponding literature. The conclusion and summary are presented last.

7.2. Descriptive Statistics

This section aims to answer the fourth research question concerning the level and patterns of the readability of the LTS accompanying digital reporting. The descriptive statistics do this by covering the statistics of the dependent variables as presented in Table 7.1 below (readability measures). In addition, statistics for both the independent (the chairman's characteristics) and the control (other sample characteristics) variables are shown in the table (firm-level and country-level).

Table 7.1 Descriptive Statistics (2014-2018)

Variable	Obs	Mean	Std. Dev.	Min	Max
Panel A: Dependant Variables					
FRE	379	32.28	7.55	4.6	51.2
FOG	379	17.71	2.85	1.7	33.4
Word Count	379	900.3	467.35	109	3807
Legibility	379	0.813	0.3512	0	2
Panel B: Independent Continuous Variables					
TENURE	379	6.81	6.492	1	41
AGE	379	57.96	10.12	32	85
SIGSZ	379	0.393	0.543	0	2
TA_L	379	22.885	6.47	17.415	94.98
TA (Million US$)	379	20,360	38,610	36	71,500
ROA	379	-0.282	6.02	-117.19	2.35
CMOW	379	0.026	0.093	0	.722
GOVOW	379	0.83	5.506	0	67.76
CONOWN	379	0.552	0.256	0	1
FAGE	379	35.19	18.96	6	88
LEV	379	30.53	23.094	-2.53	99.56

Panel C: Independent Dummy and Categorical Variables				
	Category	Freq.	Per cent	Cum. %
Education	BSc or lower	219	57.78	57.78
	Masters	119	31.40	89.18
	Doctorate	41	10.82	100
	Total	379	100	
Chairman Independence	Not Independent	219	57.78	57.78
	Independent	160	42.22	100
	Total	379	100	
Big4 Auditor	Big4	7	1.85	1.85
	Not Big4	372	98.15	100
	Total	379	100	
Duality	Non-Duality	361	95.25	95.25
	Duality	18	4.75	100
	Total	379	100	
Gender	Female	2	0.005	0.005
	Male	377	0.995	100
	Total	379		

These findings suggest that chairpersons in these companies appear ineffective in terms of reaching the target audiences of narrative disclosure in general and chairman letters in particular.

According to Panel A in the table above, the Flesch Reading Ease (FRE) index has a mean value of 32 out of 100, which means that the average LTS are difficult to read and only college graduates can read these narratives with ease. For every letter that is between 20-30 score, only university graduates are able to read it easily and understand it. Consistently, FOG index results show a mean value of approximately 17, denoting that LTS are hard to read. Such results denote the issuers' negligence. One potential justification managers might use is that English is not the official language in these nations; hence, minimal effort is likely being paid to ensure disclosure clarity. However, a review study stressed that plain language is relevant to native English readers and second-language readers Schriver (2017). The length of LTS varies widely as well, from a minimum of 109 words to a maximum of over 3800 words, with an average of around 900 words. Extensive research has shown that the average length of narrative reports is rising in almost every region globally (e.g., FRC, 2009). Furthermore, significant historical evidence suggests that sentence length is one of the most often encountered reading issues, making this a serious cause for alarm (Dale and Chall, 1948). Last but not least, the typical LTS has a poorer legibility score (a mean value of 0.8 out of 2), indicating difficulty when readers perceive the text visually. (Ham et al., 2018, Aabo et al., 2020).

Independent variable statistics in Panel B show that the average age of chairpersons is 58 years, while the youngest was 32. There was quite a noticeable number of chairpersons above 60, symbolising adequate age diversity among governing bodies in the AME. There were 153 letters with signatures displayed on them; the mean value is 0.393 out of 2, which is less than expectations[61]. The average length of the chairman's tenure is around seven years. The shortest-tenured chairman has only a year, while the longest has 41. Results also show that most chairpersons hold BSc or less (57.8%), 31% hold MSc, while doctorate holders represent 11%. The results are consistent with the notion of holding high degrees among corporate leaders worldwide. Regarding gender, it is found that 1% of the sample LTS are issued by female chairpersons. Such a finding is consistent with previous studies highlighting gender imbalance in decision-making positions (e.g., Rincón Diez et al., 2017). Not only developing countries[62] have such issues, but also developed countries. For instance, as of 2018, women held 5.0 per cent of Fortune 500 CEO roles (Fortune, 2018).

The average value of the leverage ratio is 30.5% indicating only some ability of companies to sustain their operations. In addition, the mean value of a typical firm's return on assets is -28%, and the firm age variable has an average age of 35 years. Concerning the ownership structure, the mean value of the concentrated ownership is 55% which may be associated with negative externalities, as prior research suggests. On the other hand, government ownership has a mean value of 83%, and the chairman's ownership's mean value is very low at 2.6%.

61 Signature size results can be compared with Aabo et al., (2020) when the mean was 0.38 for a sample in the UK and Ham et al. (2018) found a mean of 0.49.

62 Detailed discussion of such current situation of female misrepresentation is beyond the current study's objectives.

Furthermore, there are only 7 LTS or firms audited by non-big4 auditors. This confirms that the largest big four auditors audit most listed firms in the AME.

Lastly, less than half of the sample firms (42%) have an independent chairman, which is the preferable situation worldwide. Moreover, there are only a few cases of CEO duality in these firms (5% of LTS issued by chairpersons who are also CEOs). These results are consistent with different AME CG models that remark splitting the responsibilities of the chair and the CEO as an effective governance approach. Table 7.2 below shows the readability statistics by country.

Table 7.2 Descriptive Readability Statistics by Country

Country	FRE mean	Obs.	W. Count mean
Oman	37.4	26	1,239
Bahrain	36.6	26	751
Kuwait	36.2	45	1,205
UAE	33.1	43	659
Jordan	30.6	105	974
KSA	30.2	74	749
Qatar	29.5	60	820
Overall mean	**32.2**	**379**	**900**

Based on the table above, the average LTS length is 900 words. The average readability score is 32.2, which is very low. Omani companies have the lengthiest and most readable LTS among all countries. UAE and KSA have the shortest LTS, which is contrasted to the IFRS adoption year (the two most recent countries adopting IFRS). Differences in FRE cannot be due to known differences among these countries. For example, they have similar legal systems (civil law)[63].

63 On the other hand, ' mixed legal systems' denote legal systems where two or more of the previous legal systems exist together.

It is important to note here that Arab-speaking countries have embraced the English language to a great extent. In recent years, English has considerably impacted Middle Eastern nations, especially gulf countries like Saudi Arabia, UAE, Kuwait, and Iraq (Aljaffery, 2015). However, when it comes to corporate reporting, reading ease scores are not well considered by issuers (i.e., firms). Moreover, the use of the English language for corporate reporting in the AME, especially when published on corporate websites, is relevant to the study's objectives. Even when there is no evidence of distributing hard copy annual reports in English in the AME, the English language may denote the intention to attract global shareholders; therefore, disclosure needs to be more readable.

Moreover, the global audience for online annual reports from companies is significant. Adding more languages can be simple (through translation), and there is no need for further printing or distribution. English annual reports in the AME are studied by some scholars of different fields, such as language and translation (e.g., Obaidani, 2016).

7.3. Robustness Checks

There are some crucial presumptions upon which multiple regression analysis rests. Therefore, reliable regression results may be ensured by meticulously inspecting the correctness of the acquired data for analysis (Osborne and Waters, 2002b). Moreover, with the help of these pre-sumptions, we may make reliable predictions and see how well a properly specified model matches the data (i.e., how much of the variance in the dependent variables can be accounted for by the response variable). The assumptions of normality, linearity, independence, homo-scedasticity and non-multicollinearity must be met while doing a multiple regression (Allison, 1999, Osborne and Waters, 2002b). The results of the assumption tests are discussed in the following paragraphs.

The data quality needs to be checked to ensure it can be used in an analysis. There are a lot of presumptions behind multiple regression analysis. If these conditions are not satisfied, the results cannot be relied upon (Osborne and Waters, 2002a). These presumptions are vital because they allow researchers to draw reliable inferences about the best way to evaluate a model's accuracy. In addition, they are useful for understanding the extent to which changes in the dependent variables may be accounted for by the predictor (i.e., independent) variables. To check whether the assumptions hold, the data have been inspected before the regression analysis. All of these presumptions are laid forth in the next section.

First, normality. A normal distribution of the residuals is anticipated in multivariate regression. Therefore, it was necessary to investigate whether or not the dependent variable was normally distributed. The histogram in Figure 7.1 below has been shown alongside a normality curve, indicating that the data has a nearly normal distribution. This is because the majority of the points fall directly on the diagonal. Further proof of data normality may be obtained using a P-P plot.[64]

64 Even if the normality assumption is violated, OLS regression analysis is efficient and reliable. Valid hypothesis testing requires verifying for normality (Gujarati et al., 2004). This assumption might be disregarded in big sample instances (>100) as demonstrated by Gujarati et al. (2004).

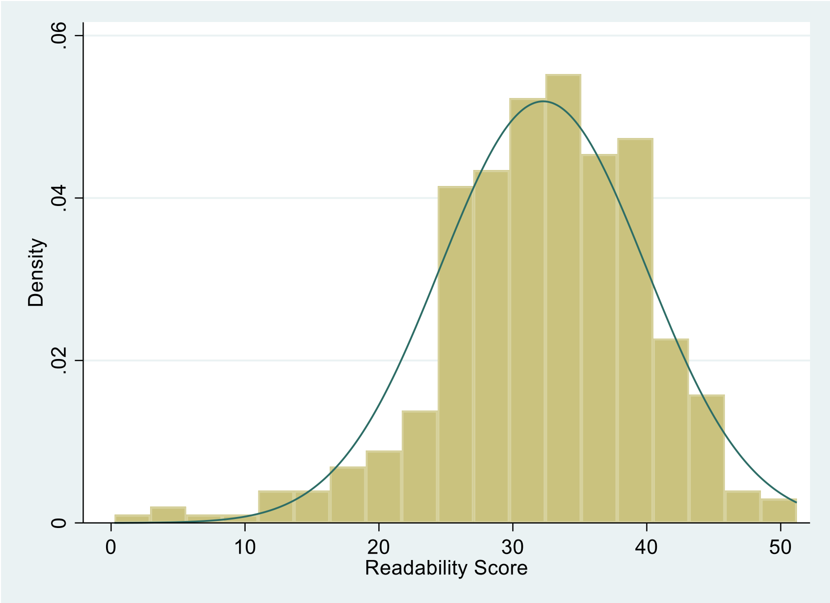


Figure 7.1 Distribution of the Dependent Variable

The histogram figure reveals that the data are slightly negatively skewed; the mean is usually less than the median because the few low scores tend to shift the mean to the left. The rules tell that "for medium-sized samples (50 < n < 300), absolute z-scores for either skewness or kurtosis should be below 3.29, which corresponds with an alpha level 0.05, and concludes that the distribution of the sample is non-normal (West et al., 1995). Accordingly, as the current dependent variable data skewness score is less than the 3.29 cut-off point, the data has passed this test for proceeding to regression. The departure from normality is not too extreme. This is confirmed by visually examining the histogram of the same data shown in the relevant Figure.

Second, independence. The residuals are supposed to be not correlated with one another. However, according to Hintze (1998), model misspecification or time-sequenced data contradict this assumption. The solution is to utilise the right functional form of independent variables and numerous regressions. Durbin-Watson Statistic ranges from 0 to 4; however, a value close to 2 is preferable as this is an indication of no correlation between the residuals.

Linearity. Another assumption of multiple regression is called linearity. It means that those independent variables are linearly related to the dependent variable. In addition, each independent variable by itself is linearly related to the dependent variable. Results validate the linear relationship, so both sub-assumptions have been met. Overall, generated partial regression plots indicate a linear relationship between independent variables (the chairman's characteristics) and the dependent variable (readability). Accordingly, the assumption of linearity was met.

Third, multicollinearity. Statistics precludes multicollinearity. Multiple regression implies independent variables are not substantially correlated. Multi-collinearity tends to develop if two or more of the independent variables (predictors) are significantly associated with each other. This may confound which factors accounted for the variation and make regression model formulation difficult. The correlation results are in Table 7.3, which shows no correlations over 0.6 among variables. If the correlation analysis shows strong correlations between two variables (0.60 or higher), the most associated variable should be dropped.

Table 7.3 Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) TA_L	1.000									
(2) ROE	0.021	1.000								
(3) FAGE	0.072	-0.048	1.000							
(4) N_ED	-0.159*	-0.007	0.098	1.000						
(5) INDEP	0.075	-0.036	-0.106*	0.280*	1.000					
(6) WORDS	0.023	0.003	0.172*	0.058	0.048	1.000				
(7) LEGIB	0.060	-0.058	0.293*	-0.069	-0.171*	0.139*	1.000			
(8) DUAL	-0.049	0.029	-0.115*	-0.406*	-0.166*	-0.090	-0.041	1.000		
(9) LOSS	-0.089	-0.025	-0.100	-0.090	0.012	-0.103*	0.022	0.017	1.000	
(10) LEV	-0.053	0.000	-0.185*	-0.152*	0.147*	-0.017	-0.126*	0.130*	0.027	1.000

7.4. Regression Results and Hypotheses Testing

The previous section presented the results of the descriptive statistics. The findings reveal noteworthy differences in readability that necessitate a thoughtful investigation of the possible reasons and explanations for these variations. Therefore, this section provides the multivariate analysis and discussion to answer the second group of research questions on the relationship between chairman characteristics and the extent of readability in AME (questions from 5-8).

The section aims to answer the research question of whether the top echelon's preferences and styles are associated with different levels of LTS readability. In particular, the aim is to test the relationship between the chairman's age, educational level, tenure and overconfidence on one side and the readability of the chairman's LTS on the other. This section provides regression analysis results on chairman characteristics. Panel data differs from cross-sectional data because it covers many points in time, leading to more information and variability. The next few paragraphs explain the chosen model formula before presenting and discussing the results.

Pooled ordinary least squares (OLS) method is used when we have a different sample for each period (e.g., year) of the panel data (Wooldridge, 2010). Since the current study uses the same companies over the years covered, OLS regression may seem unsuitable (Al Farooque et al., 2020). Therefore, following Luo et al. (2018) approach that suggests the model is imprecise due to omitted variables[65] (a source of endogeneity), the analysis included control variables to control for fixed effects of the year, firm, country and industry to alleviate any potential endogeneity.

65 Other type of endogeneity is called simultaneous endogeneity. It is not expected to affect the study because chairman is elected.

Various control variables are included based on the relevant literature results and the study context. Theoretically, there is a minimal possibility of reverse causality since the position of the chairman is elected by shareholders and is not appointed by the firm.

Accordingly, and following Cameron et al. (2011) and Sun et al. (2018), in the accounting and finance research field, all regression models in the current study are conducted with two-way clustering[66] by company and year. Therefore, the two-way clustering method is used to control for the potential effect of serial correlation, heteroscedasticity, outliers, or any anomaly in the data. Since the study uses unbalanced panel data, potential cross-sectional correlation and time-series autocorrelation may bias OLS regression estimates. Furthermore, the observations of this pooled OLS are theoretically not well independent since the same chairman is examined over the study period (2014-2018). To alleviate these potential issues, we follow Petersen (2009) and Luo et al. (2018), who recommended the approach of concurrent clustering by the firm and year dimensions. Lastly, clustering is appropriate since a feature of text complexity phenomena may normally increase over the years (Rahman, 2014); however, based on the UET, the differences among firms are more due to differences in leaders' characteristics. Table 7.4 provides the results of the main regression analysis.

66 Sun et al. (2018) stated that "Essentially, the two-way clustering method first obtains three different cluster-robust variance matrices for the OLS estimator from one-way clustering in, the firm dimension, the time dimension, and the intersection of the firm and time, respectively" (p.1642). Moreover, they added that their accounting study "uses a real data set and constructs an empirical application of the estimation procedures of two-way cluster-robust regression estimation with and without finite-sample adjustment and the results show that finite-sample adjusted estimates are superior to unadjusted asymptotic estimates" (p.1652).

Table 7.4 Regression Analysis with Cluster Standard Errors of the Relationship between Chairman Characteristics and Letters to Shareholders Readability

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TENU_L		-0.457					-0.511
		(-0.722)					(-0.975)
AGE			0.048				0.153**
			(0.868)				(2.156)
FEM				4.807			10.455**
				(1.584)			(2.234)
EDU_M					3.247***		3.950***
					(2.613)		(2.667)
EDU_D					-4.081		-5.109**
					(-1.522)		(-2.185)
SIGSZ						-0.490	-0.195
						(-0.624)	(-0.256)
TA_L	0.151***	0.158***	0.146***	0.151**	0.173***	0.149***	0.170***
	(3.008)	(2.853)	(2.763)	(2.415)	(3.187)	(2.839)	(2.929)
ROA	-0.064***	-0.065***	-0.060***	-0.067***	-0.072***	-0.067***	-0.067***
	(-3.414)	(-3.396)	(-2.961)	(-3.503)	(-3.542)	(-3.494)	(-3.195)
INDEP	-0.500	-0.674	-0.422	-0.561	-0.645	-0.437	-0.734
	(-0.303)	(-0.407)	(-0.260)	(-0.336)	(-0.415)	(-0.270)	(-0.464)
CMOW	10.242***	11.168***	9.878***	10.751***	13.707***	10.235***	15.455***
	(2.960)	(3.123)	(2.764)	(3.149)	(3.979)	(2.956)	(4.186)
GOVOW	0.233***	0.231***	0.229***	0.234***	0.316***	0.238***	0.321***
	(3.118)	(3.155)	(3.012)	(3.067)	(3.598)	(3.121)	(3.693)
CONOW	-0.452	-0.432	-0.166	-0.512	-0.582	-0.562	0.170
	(-0.137)	(-0.131)	(-0.051)	(-0.154)	(-0.184)	(-0.168)	(0.054)
IFRS	1.889***	1.883***	1.856**	1.916***	1.728***	1.991***	1.682**
	(2.698)	(2.735)	(2.427)	(2.794)	(2.600)	(3.041)	(2.144)
BIG4	-5.533***	-5.287***	-5.996***	-4.828***	-10.006***	-5.619***	-10.767***
	(-3.500)	(-3.227)	(-3.515)	(-3.038)	(-3.796)	(-3.492)	(-3.845)
FAGE	-0.027	-0.028	-0.028	-0.030	-0.031	-0.026	-0.041
	(-0.786)	(-0.887)	(-0.818)	(-0.686)	(-0.995)	(-0.795)	(-1.321)
LEV	0.007	0.008	0.005	0.006	-0.006	0.009	-0.012
	(0.177)	(0.216)	(0.142)	(0.153)	(-0.190)	(0.254)	(-0.388)
DUAL	-2.527	-2.385	-2.696	-2.613	-2.081	-2.478	-2.548
	(-0.956)	(-0.929)	(-0.994)	(-1.010)	(-0.923)	(-0.949)	(-1.220)
Constant	35.625***	35.799***	33.621***	35.158***	39.369***	35.851***	33.175***
	(10.649)	(10.896)	(12.911)	(9.981)	(12.817)	(9.866)	(10.313)
CTRY_D	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YEAR_D	Yes	Yes	Yes	Yes	Yes	Yes	Yes
INDU_D	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	379	379	379	379	379	379	379
R-squared	0.196	0.198	0.199	0.197	0.263	0.197	0.296
Adj. R^2	0.144	0.144	0.145	0.143	0.211	0.142	0.238

AGE age of the chairman, FEM female chairman, TENU the chairman's tenure in years, EDU_M Chairman hold MSc or doctorate EDU_D Chairman hold doctorate, SIGSZ size of chairman signature in the letter, INEP independent chairman, TA_L logarithm for total assets. BIG4 auditor is big4, ROA return on assets, SOLV solvency ratio, FAGE firm age in years, DUAL duality of chairman (he is CEO as well), CMOW chairman ownership ratio of chairman, GOVOW governmental ownership ratio, CONOW Concentrated ownership ratio, CTRY FE country fixed effect, INDU FE, YEAR FE year fixed effect. Significance level *** p<.01, ** p<.05, * p<.1

Testing the hypotheses is based on the t-stat values for each variable in the final regression model. The results are interpreted and discussed in light of their support of the UET and with a comparison to the relevant literature. A general discussion is provided in the last section of this chapter.

7.4.1. Age

Based on the UET, it was hypothesised that there is a positive association between age and the readability of corporate narratives assuming that younger managers may tend to under-evaluate the consequences of issuing complex texts or behave less ethically than older managers. The results show a significant association (t-test value is 2.156 at P<5%). Accordingly, this hypothesis (H5) is supported. Such a result is expected and consistent with the argument that older CEOs, due to experience, maybe more confident (i.e., age can mirror their experience) (Malmendier et al., 2011) and consequently have more rationality in deciding on communication styles. This is also in line with studies on the psychological effects of ageing broadly discussed in an organisational context (e.g., Schaie and Willis, 2010). These findings suggest that chairpersons become more conservative and ethical as they age (Xu et al., 2018) and thus pay more effort into their decisions. Likewise, younger CEO might be boundedly rational in their decision on communication due to limited knowledge (e.g., about audience needs of simpler narratives). These findings support the UET argument that managers exercise high judgement when there is a lack of guidance and *alternatives* are acceptable with no objections (Hambrick, 2007). The prior result shows that older generation leaders are better able to explain any operating complexities and remain ethical in decisions and reporting (Xu et al., 2018). Also aligned with the established results in the sociology and management literature that as individuals age, they advance in ethical and competency (Blonigen, 2010, Huang et al., 2012). Moreover, the results are consistent with the previous evidence that older people develop more ethical behaviour and capabilities in fields of business (e.g., Wimalasiri, 2001, Huang et al., 2012) and sociology (e.g., Blonigen, 2010).

7.4.2. Education

The results reveal that readability is significantly positively associated with degree holders of master's (at p<1%) and negatively with doctorate holders (at p<5%). The t-test values are 2.156 for a master's and -2.185 for a doctorate. Thus, both hypotheses H7 and H7a are supported. This denotes that higher education is advantageous to some extent.

In general, highly educated chairmen produce easier-to-read LTS compared to chairpersons with a BSc or less. The results are partially in line with historical arguments that education increases some abilities, such as information processing (Kimberly and Evanisko, 1981). The negative relationship between education level and readability means that chairpersons who hold doctoral degrees are likely to produce less readable letters than those who hold lower degrees.

However, companies led by chairpersons holding a Doctorate are associated with lower readability than those holding master's or bachelor's degrees. One plausible interpretation is the effect of prestige power instigated by higher education within some environments and societies. Prestige power increases with the executive's level of education. The results align with prior research that suggests that CEOs who have earned high degrees, especially from prestigious institutions or been on company boards, have been shown to have considerable indirect power (Daily and Johnson, 1997, Custódio et al., 2013). Perhaps the most intangible and difficult-to-measure kind of power is *prestige power* (Asimakopoulos and Yan, 2019). Such informal power is when business leaders who hold degrees from famous universities or serve on corporate boards use these high degrees to add to their prestige (Daily and Johnson, 1997, Custódio et al., 2013). Holding a master's degree is an indicator of skills or abilities and a lower level of prestige power than with a Doctorate. In other words, the evidence indicates that higher education increases the readability of LTS but to a certain level. The explanation is that a person with a higher level of education is expected to have developed related communication and business knowledge and skills and is considered to be more risk-aware and cognizant of the ramifications of issuing more complex texts than the average leader.

The activity of explaining the perhaps complex company situation in narratives in simple and clear ways can be a reasonably specialised task. However, this is found to be truly valid for master's degree holders only. A plausible explanation for such a negative effect of holding high degrees is prestige power, which is evident in many parts of the world (Asimakopoulos and Yan, 2019). In fact, this is associated with the issues surrounding corporate leaders' appointments and the corruption publicised in many AME countries, such as political connections. This is consistent with the bounded rationality assumption that decision accuracy depends on the willingness of the decision-maker to optimise or satisfice (Gigerenzer, 2010). Likewise, attempts to obfuscate users may denote opportunistic behaviour or higher-risk-taking activity (Smith et al., 2006b).

7.4.3. Tenure

Tenure is the length of time the chairman has spent in their current role. It was hypothesised that the longer the tenure, the more ability managers would have how to reach the company's audience with simple or readable language. However, the results demonstrate that tenure is not significantly (at all levels) associated with readability. This means that the used sample failed to provide sufficient evidence of the suggested relationship. Accordingly, this hypothesis was not supported.

These results could not support any assumption that higher tenure gives more skills and abilities. Likewise, no support is provided to the suggestions of managerial entrenchment that can be caused by tenure (among other factors) (Luo et al., 2018, Salehi et al., 2022). Moreover, given that the chairman's letter is not audited, the chairman's power is not displayed by long tenure as was in education. In other words, power misuse is caused by higher education rather than long tenure. Sources of managerial entrenchment: tenure, board independence, duality, and ownership are used for calculating (Salehi et al., 2022).

7.4.4. Signature Size

The results show that signature size (a proxy of overconfidence) is not significantly associated with the readability of LTS. Thus, the results did not support this hypothesis (H8). Based on the UET, it was hypothesised that firms led by overconfident chairpersons are associated with less readable LTS, suggesting that those chairmen may behave differently due to their self-esteem.

Signature size is a well-known proxy of overconfidence and narcissism (e.g. Ham et al., 2018). However, the results do not support that it affects readability. An alternative explanation for the findings is that the magnitude of the signature does not always correspond to an individual's level of self-confidence and the corresponding potential behaviours. Therefore, it is recommended to use different measures or proxies of overconfidence, such as photo size (Chatterjee and Hambrick, 2007). Zudana et al. (2022) used this proxy and found that easier-to-read tax footnotes are associated with narcissism.

This is not supporting the argument that signature size, itself, may be considered impression management, as suggested by (Bozzolan et al., 2019). Moreover, it is not supporting the studies on the relationship between complexity and earnings management and managers' overconfidence (Healy and Wahlen, 1999). Moreover, the current results do not contradict the evidence available from AME reported by Alqatamin et al. (2017), who found a positive association between a CEO's overconfidence and some forms of opportunistic behaviours (earning management) in a middle east country context, Jordan.

In summary, the idea that the accuracy of decisions regarding writing in a complex language is impaired by leaders' overconfidence (Vilanova, 2016) has gained insufficient evidence from this research. Despite the empirical evidence on impression management being positively associated with earnings management (Guillamon Saorin et al., 2016), prior research did not explain how exactly management is incentivised to engage in EM practices.

Based on model 5, the overall regression model is statistically significant, and the adjusted R-squared value is 0.238, the highest among all models in the previous columns. This value denotes that the model can explain approximately a quarter of the differences in the readability in LTS. The model R-squared can be compared to those in the literature, such as Xu et al. (2018), which was 0.370 for the entire annual report and 0.139 for the MD&A section. Because of including more relevant variables, the model offers a good prediction.

7.5. Additional Analysis

This section provides an in-depth analysis of the readability results. It aims to examine the moderation effect of corporate governance mechanisms on readability determinants and seeks to examine other features of the LTS, particularly legibility. Moreover, sub-sampling analyses are provided to test whether the main results differ. The first section presents the moderating effect of chairman age on the relationship between chairman education and readability. The second section presents the moderating effect of chairman ownership on the chairman effect of readability.

7.5.1. The Moderation Effect of Chairman Education on the Relationship between chairman Education, Tenure, and Readability

The UET logic implies that *powerful actors* can influence corporate decisions. This includes DCR as an innovative communication channel to enhance company transparency. Accordingly, the current study provided evidence that a CEO's education and tenure were associated negatively with the important activity of modern corporate communication (i.e., financial and non-financial information via websites). Such a negative role of these two traits can be caused for many reasons, as may signify misuse of power. Following suggestions of UET that moderators can help better understand top managers' influence on firm-level decisions, the interaction effects of education and age are studied in this section. Table 7.5 below provides the regression results.

The results show that the negative effect of doctorate education on issuing complex LTS is higher when chairmen have average age, whereas ageing for chairmen, in general, lead them to issue LTS with improved readability. Similarly, the positive impact of holding a master's degree is dependent on the chairman being of average age only. Despite the adverse impact of prestige power on readability, age's interaction with education resulted in new results. Older persons who are more educated (doctorate holders) issue more readable chairman letters. Such results are consistent with the prior research on managers' misbehaviour (i.e., opportunistic behaviour) that found that younger managers can exercise many misconducts, such as earnings management (e.g.Guillamon Saorin et al., 2016).

Table 7.5 Regression Analysis with Cluster Standard Errors and Interaction Terms of Education on the Relationship between Chairman Characteristics and Readability

Variables	Model 1	Model 2
TENU	-0.086	-0.088
	(-0.792)	(-0.909)
AGE	0.165**	0.176**
	(2.293)	(2.563)
EDU_M	10.718***	2.836*
	(3.070)	(1.822)
EDU_D	-29.809***	-7.500***
	(-2.715)	(-3.062)
FEM	13.660**	9.152*
	(2.410)	(1.702)
SIGSZ	-0.248	-1.259
	(-0.316)	(-1.418)
EDU_M x AGE	-0.125*	
	(-1.738)	
EDU_D x AGE	0.388**	
	(2.351)	
EDU_M x SIGSZ		3.632**
		(2.546)
EDU_D x SIGSZ		9.301
		(1.450)
TA_L	0.164***	0.161***
	(2.896)	(3.019)
ROA	-0.061***	-0.066***
	(-2.936)	(-2.989)
INDP	-0.673	-1.112
	(-0.455)	(-0.719)
CMOW	15.173***	16.708***
	(4.376)	(5.047)
GOVOW	0.306***	0.310***
	(3.846)	(3.943)
CONOW	0.460	0.491
	(0.147)	(0.153)
IFRS	1.850**	1.597*
	(2.122)	(1.817)
BIG4	-15.333***	-10.427***
	(-3.651)	(-3.918)
FAGE	-0.038	-0.049
	(-1.299)	(-1.475)
LEV	-0.017	-0.020
	(-0.526)	(-0.590)
DUAL	-2.741	-2.993
	(-1.333)	(-1.581)
CTRY_FE	Yes	Yes
YEAR_FE	Yes	Yes
INDU_FE	Yes	Yes
Constant	37.155***	32.675***
	(7.390)	(10.521)
Observations	379	379
R-squared	0.323	0.317
Adjusted R-squared	0.262	0.256

AGE age of the chairman, FEM female chairman, TENU the chairman's tenure in years, EDU_M Chairman hold MSc or doctorate EDU_D Chairman hold doctorate, SIGSZ size of chairman signature in the letter, INEP independent chairman, TA_L logarithm for total assets. BIG4 auditor is big4, ROA return on assets, SOLV solvency ratio, FAGE firm age in years, DUAL duality of chairman (he is

CEO as well), CMOW chairman ownership ratio of chairman, GOVOW governmental ownership ratio, CONOW Concentrated ownership ratio, CTRY FE country fixed effect, INDU FE industry fixed effects, YEAR FE year fixed effect. Significance level *** p<.01, ** p<.05, * p<.1

7.5.2. The Moderation Effect of Chairman's Ownership on the Relationship between CEO's Characteristics and LTS Readability

High levels of concentrated ownership may negatively impact corporate stability and minority shareholder protections (Kim et al., 2007). Consistently, less sophisticated users are expected to be highly impacted when provided with less readable disclosures (Firtel, 1998).

Moreover, in emerging economies contexts, many studies have found that corporate governance mechanisms have a positive effect by weakening the opportunities for misconduct, such as the practices of earnings management (e.g., Suyono and Al Farooque, 2018). Accordingly, it is suggested that ownership moderates the relationship between chairman characteristics and readability. Table 7.6 below provides the regression results.

The results show that a high percentage of chairman ownership strengthened the positive relationship between holding a master's degree and issuing more readable LTS. The interaction term of tenure and chairman ownership is negative, meaning the tenure's effect is depicted only when they have higher ownership in the company shares. This denotes misuse of power where the chairman may neglect the shareholder's rights to receive clearer information. Another plausible interpretation is that chairpersons may be willing to provide readable information to decrease their cost of debt.

Table 7.6 Regression Analysis with Cluster Standard Errors and Interaction Terms of Chairman Ownership on the Relationship between Chairman Characteristics and Readability

Variables	Model 1	Model 2
TEN_L	-0.686	0.129
	(-1.122)	(0.215)
AGE	0.098	
	(1.479)	
FEM	3.737	9.338***
	(1.120)	(2.742)
MSc x CMOW	40.846***	
	(3.774)	
DOC x CMOW	-30.816	
	(-0.959)	
AGE x CMOW		0.141
		(0.408)
CMOW x TEN_L		
SIGSZ	-0.649	-0.323
	(-0.746)	(-0.404)
TA_L	0.153**	0.164***
	(2.033)	(3.210)
ROA	-0.064**	-0.083***
	(-2.393)	(-2.958)
CMOW	9.348***	5.916
	(3.821)	(0.276)
GOVOW	0.232***	0.320***
	(2.987)	(3.292)
CONOWN	0.618	-0.561
	(0.198)	(-0.187)
IFRS	1.994***	1.836***
	(2.714)	(3.144)
BIG4	-5.661**	-9.001***
	(-2.268)	(-3.734)
FAGE	-0.034	-0.032
	(-1.038)	(-1.083)
LEV	0.008	-0.006
	(0.199)	(-0.176)
DUAL	-1.857	-2.026
	(-0.808)	(-0.986)
MSc		3.283**
		(2.375)
DOC		-4.504*
		(-1.768)
Constant	31.026***	38.335***
	(10.050)	(12.351)
Observations	379	379
R^2	0.222	0.269
Adj. R^2	0.159	0.211

AGE age of the chairman, FEM female chairman, TENU the chairman's tenure in years, EDU_M Chairman, hold MSc or doctorate EDU_D Chairman hold a doctorate, SIGSZ size of chairman signature in the letter, INEP independent chairman, TA_L logarithm for total assets. BIG4 auditor is big4, ROA return on assets, SOLV solvency ratio, FAGE firm age in years, DUAL duality of chairman (he is CEO as well), CMOW chairman ownership ratio of chairman, GOVOW governmental ownership ratio, CONOW Concentrated ownership ratio, CTRY FE country fixed effect, INDU FE industry fixed effects, YEAR FE year fixed effect. Significance level *** p<.01, ** p<.05, * p<.1

7.5.3. Control Variables Results

The industry type of a company signifies the complexity of its operations; thus, its reports may be justifiably less readable. The results show that the readability of firms of different industries is significantly different. In other words, industry type is a determinant of disclosure complexity. This is in line with Lo et al. (2017) and Clatworthy and Jones (2003). The results reveal that female chairperson issues LTS with a higher level of readability. However, the number of observations with females is not statistically representative; thus, the results will not be interpreted. Moreover, the current results show no significant relationship between leverage and readability. This indicates that the level of reliance on shareholders as primary sources or not may influence readability.

Regarding profitability, the results demonstrate that profitability is associated with lower readability. This is not in line with the results of Smith and Taffler (2000), who reported that poor readability is strongly associated with poor performance. The results are also not in line with Dorrell and Darsey (1991), who suggested that executives who were ‘highly successful in their companies were more effective in reaching their target addressees (by more readable narratives) than average performing executives. Prior studies argue that firms of different profitability may have varying writing styles. Since a shareholder letter mainly outlines the company's performance throughout the year, it is expected that it is affected by the performance. Previous research revealed that less profitable firms obfuscate negative organisational outcomes by rendering their chairpersons' statements difficult to read. The current study results have supported this to some extent. Results align with some studies, such as Asay et al. (2018), who explained that managers with a strong self-enhancement motive produce less readable bad news disclosures. Rather than intentionally obscuring poor performance, the differences may be driven by attempts to write more readable good news reports.

The independent chairman can serve as the primary source of communications for shareholders and may help ensure impartial board decisions, i.e., ensuring the board strikes a balance between the interests of the administration and those of the company's shareholders and stakeholders. Firm age is not significantly associated with readability level. Such a finding is unexpected given the assumption that older firms gained knowledge and expertise over the years and knew how to deliver readable narratives. Such findings are not in line with studies such as (Bakarich et al., 2019), which outlined that companies' disclosures are more readable when moving from the beginning to maturity. Concerning auditor type, Big-4 auditors are found to be associated with a lower level of readability; this is inconsistent with Smith and Smith (1971). Although KPMG suggests that firms should use plain English (KPMG, 2013), this is not evident in the AME. The current results also show that IFRS adoption is associated with improved readability. These are consistent results from developed countries such as Australia (Cheung and Lau, 2016). Word count results are consistent with (Cheung and Lau, 2016) that financial reports after IFRS are significantly lengthier.

The results show a significant positive relationship between chairman ownership and more readable LTS at the 99% significance level. The results are expected and consistent with some studies, such as those on FS footnote readability and CEO ownership, that was found to be positively associated (Roiston and Harymawan, 2022). The results indicate more rational behaviour of the chairman (i.e., more commitment).

In general, the ownership structure is relevant to readability, given its potential to reduce information asymmetry. In other words, managers pay more effort and adhere to accountability because they will also be affected by its potential consequences, such as agency costs. Likewise, if mangers are not incentivised to produce more readable LTS, then their ownership may reduce any negligence. This is consistent with the argument about loyalty in high-family ownership firms (Roiston and Harymawan, 2022). This does not support results in the literature that found this factor associated with readability, such as Bakarich et al. (2019) and moderating the relationship between IFRS adoption and readability Jang and Rho (2016).

Government ownership is found to be positively associated with improved readability. This is not supporting the results of Choi et al. (2010) that lower state ownership is associated with lower information asymmetry in China. Moreover, firm size, measured by total assets, is not significantly associated with more readable letters. Such a result is reasonable because larger firms are usually more complex; thus, it may be difficult to issue readable narratives about their performance. However, there was no clear expectancy regarding the readability of chairman letters from larger firms. For instance, a counter possibility is that larger firms may have more resources and better-trained personnel to prepare more readable reports (Xu et al., 2018) if they edit all reports before publishing. Overall, the results support the suggestion that the chairman has an incremental effect on LTS readability.

7.5.4. Other Findings

To assess if Arabic language chairman letters differ from English versions in terms of word and sentence length. 35 chairman LTS from 35 different firms (5 LTS from each country) were tested to examine if they differed from their English versions. The results show that 32 of them have an accurate translation. The lengthy letters in English are also lengthy in the Arabic version. This suggests that English versions of LTS are indicative of the complexity level of the Arabic versions, which supports the study's relevance and generalisability.

Moreover, to test if there is any trend in the reading ease of LTS over the years. The results show that reading ease decreases over the five years (the base year 2014) (coefficient value is significant at p<5%).

7.6. Sensitivity Analysis

The current findings are tested for validity by performing the following sensitivity tests.

First, an alternative method of measuring readability was used to validate these findings: the Gunning Fog formula. The change in results is immaterial (the same significance level). Therefore, the results are robust for different dependent variable measures. Second, to eliminate the possibility of results bias because the entire sample includes banks, tests are carried out to validate the findings. Results have not changed from those of the primary model. Therefore, the results are valid. Third, a different measure of the education variable was used in further regression analysis. Fourth, a different measure of education is used; a continuous variable was used to score the manager's number of certificates (between 1 and 3). The results were not changed. Fifth, to assess if outliers cause differences in results, outliers are removed from the dataset, and regressions are redone. The differences from the main results are minimal and not relevant. Lastly, non-significant variables are moved from the last model, and the regression is redone. The results have not changed—the same level of significance but different coefficient values.

The preceding steps conclude that the findings are valid and reliable over a wide range of model parameters and measurements. In other words, the findings can be assessed as not dependent on the model specification.

7.7. General Discussion

In general, it was found that UE's characteristics have partially explained variances in reading ease of corporate narratives. Such a result is in line with some literature documenting the significant association between managers' characteristics and financial statements' quality, such as Marquez-Illescas et al. (2019), Bamber et al. (2010), and Bonsall et al. (2017). This section expands the discussion of the findings in the previous sections based on the UET perspective and cultural environment and context of the AME.

First, the low reading ease of the narrative reporting in AME is comparable to the annual reports in developed English-speaking countries; FRE scores were 30 in Canada, 35 in the USA and 40 in the UK. Notably, they are lower than results from the UK, and the US emphasise reading ease (i.e., plain English rule). However, the fresh results are from different economic and cultural environments.

Second, education and age allow more experience and ability to be reflected in the chairman's writing. The difference is that more education after MSc leads to the extra power and adversely impacts readability may denote that a chairperson neglects to perform reviews or proofreading by others, as suggested by SEC and FRC[67]. Third, The preparer's responsibility over the quality and usefulness of information implies the necessity to assess its complexity before publishing it. Unfortunately, the deficiency of guidance from regulators in the AME contributes to managers' bounded rationality. These differences can lead to more discretion by chairpersons. The implications of the differences are evident in the work of Blanco et al. (2021), who demonstrated that augmented audit effort (i.e., lengthier audit time and higher audit fees) is associated with lower annual report readability due to a perceived increase in financial misstatement risk

[67] The FRC clarified that managers must review annual reports to avoid problems and encourage firms to: "Read the annual report all the way through. Don't duplicate information elsewhere in the annual report (unless required). Use each other: Ask teams to review each other's disclosures for clarity and conciseness." (FRC, 2014, p.14).

for US firms[68]. They also add that more complex narratives increase the probability of auditors using more descriptive dialectal in unqualified audit reports (Blanco et al., 2021). In the context of developing countries, results reveal that lower readability of FS notes is associated with audit report lags and low audit fees (Salehi et al., 2020).

Fourth, the overall readability scores of corporate reporting in the Arab Middle East are low compared to several scores from developing countries such as Malaysia (Abdul-Raman et al., 2012). In general, corporate reporting readability is lower than other types of texts. Moreover, differences among the seven countries can be contrasted with recent evaluations of countries' corporate governance. For instance, a recent project ranked Oman as one of the top countries in the region regarding compliance with corporate governance. Fifth, regarding the recommendations of regulators to consider the audience, there is a lack of information on the reading abilities of companies' known audience. However, this is not an actual issue since issuers/writers must be prudent and ethical and must use simple English in their communication regardless of the readers' abilities (SEC, 2013). Sixth, the results may indicate that low readability may be for the intention to obfuscate for two reasons. First, the chairpersons also know that individual investors and potential readers in the AME states might not have the essential English reading skills. Second, letters are not subject to legal requirements or auditing; thus, they are more subject to misbehaviour by management

Seventh, if the poorly readable reports are used as a foundation for litigation against issuers, then readability formulas are valid and used in courts to sue issuers, as discussed by Fry (1989) on court activities and legislation. While some previous studies raised the likelihood of litiga-

68 The FRC mentioned consulting the auditors to make reporting clearer and stated that auditor must be involved early.

tion risks because of text complexity (obfuscation), the current results suggest little understanding by corporate leadership of such risks. Relevant to the AME, Omet (2005) explained that recent financial scandals had shaken investors' trust (e.g., Enron, HealthSouth, Worldcom), and several Arab stock exchanges have reflected them in regulations. However, he further clarified, "Relative to these scandals and following some thorough examination of the regional press; we cannot refer to any major scandals at listed companies in the MENA region" (Omet, 2005, p.23). This signifies the lack of public accountability and transparency at the regional level (see Hattar, 2017).

Eleventh, current results highlighted several issues with narrative reporting in the AME that can be improved, including clarity or reading complexity. However, the issues of legibility and word count can be easier to resolve and aimed at improved reporting. This quality of concise reporting, the acceptable length, is easier to avoid than clarity, which is harder to recognise (FRC, 2014). In addition to quantitative information, annual reports include qualitative data or narratives intended to assist readers in making decisions and thus have to be useful (IASB, 2010). Since IFRS standards set out how a company prepares its financial statements, it was expected that adopting IFRS would improve readability. Despite the line of research that argues that understandability is not necessarily corresponding to readability, the current results have proven IFRS's positive impact on the readability of LTS among AME firms.

Lastly, the current findings suggest that AME companies may be overlooking any unwillingness by minority investors to buy their shares, based on arguments of Lundholm et al. (2014). Even with the weak evidence of obfuscation intention, leadership is paying little attention to providing higher-quality disclosure and lower any stockholders' information hindrances (Lundholm et al., 2014). In summary, the combined suggestions denote that it is still avoidable obfuscation.

7.8. Summary

Previous studies show many factors associated with corporate reports' readability. However, the theories used in previous research mostly assume rational decisions (i.e., opportunistic behaviour to obfuscate readers). Therefore, the current study highlighted the gap in knowledge regarding the upper echelons' influence on corporate reporting readability, specifically readability. The UET literature has highlighted the significance of leaders' influence on corporate outcomes. Researchers (e.g., Carpenter et al., 2004) appraised UET theory and concluded that the UE understanding, beliefs, and perception affect the organisation's decisions. Still, they also concede that it is difficult to measure these qualities. Therefore, researchers rely on characteristics that signify these biases and perceptions.

Accordingly, the current study used demographic characteristics that proxy internal biases, behaviours and perceptions. Using panel data from 2014 through 2019, the study examined the relationship between chairman characteristics and the reading ease of their letters using a sample of 379 letters from 101 firms in the Arab Middle East. It was hypothesised that the chairman's age, tenure, and education are associated with the readability scores of chairperson letters. In addition to these independent variables, many control variables were included. The necessary sensitivity tests followed this.

The empirical findings show that readability is positively associated with the chairman’s age and negatively associated with firms led by the chairman holding doctorate degrees after controlling for firm-level and country-level variances. None of the signature size, tenure, leverage, firm age, CEO duality, concentrated ownership, and chairman independence variables is significantly associated with the readability of LTS. The findings are robust to different measures of many variables. Thus, this study contributes to the growing body of literature by introducing educational level as a new factor that affects readability. The study contributes to the previous studies in the AME area, such as Hassan et al. (2018), who investigated Qatari companies and provided evidence of inferior readability of narrative reporting. The current study provided more generalisable results from listed firms across the seven AME countries. It also contributes to the literature documenting unexpected adverse impacts of corporate leaders' education (e.g., Ali et al., 2021) by identifying readability as another aspect affected by those leaders. The theoretical discussion demonstrated that the sources of discretion regarding readability in the AME could be due to the nature of LTS, the regulatory environment, and the channel used in publishing it.

Chapter 8 presents the conclusions, implications, and recommendations for future research.

CHAPTER 8: CONCLUSIONS AND IMPLICATIONS

8.1. Introduction

The emergence of corporate websites as innovative channels for corporate reporting and other developments in the traditional corporate reporting model, such as expanded narratives, have created some issues that attracted researchers' attention. These are the high divergence in DCR adoption among listed firms, especially in developing countries, in addition to the increased complexity of corporate narratives accompanied by corporate websites. Such issues may delay capital market progress.

The inadequacy of traditional corporate reporting has urged regulators (e.g., IASB and FRC) to require reforms such as expanding it with more coverage of strategic and forward-looking information (Beattie et al., 2004, Jenkins, 1994). These growing changes in the business environment lead to increased voluntary disclosures, particularly narrative reporting (FASB, 2001), that make up a huge percentage of annual reporting (KPMG, 2013). Such disclosures could improve transparency and enhance markets, especially when delivered via innovative mediums, such as websites (e.g., Beattie, 2014). Developed countries have advanced technology and regulatory environments that reasonably facilitate DCR adoption. On the other hand, developing countries lack mechanisms to diffuse DCR among a high percentage of firms. Such frequent information updates are essential for transparency and could facilitate a market for disclosure (Haeberle and Henderson, 2018).

The AME countries need to expand their markets and provide timely and high-quality disclosures to different groups of stakeholders. However, regulators also overlook both DCR in general and the importance of text complexity, increasing the lack of proper knowledge; thus, adoption decisions can be boundedly rational based on the UET. This theory explains managerial biases and preferences are based on this bounded rationality when making complex decisions (Hambrick, 2007). Corporate disclosure is a complex decision (Evans III and Sridhar, 2002); utilising corporate websites can be risky; consequently, corporate leaders' perceptions can be influenced (Li and Yang, 2019).

Accordingly, the current study uses the UET perspective to investigate these interrelated issues. It attempted to answer the following research questions: RQ1: What are the extent and patterns of DCR of the Jordanian publicly listed companies? RQ2: What is the relationship between the

CEO's characteristics (age, tenure, education, gender) and the extent of DCR? RQ3: Does the relationship between the CEO's characteristics (age, tenure, education, gender) and the extent of Digital Corporate Reporting differ between the dimensions of DCR? RQ4: What are the extent and patterns of the readability of LTS accompanying digital reporting? RQ5: What is the relationship between the chairman's characteristics (age, tenure, education, overconfidence) and the readability of LTS accompanied within digital reporting?

8.2. Summary of Findings

The current study expands on prior DCR literature that identified a theoretical gap in DCR (Kelton and Yang, 2008; Poon and Yu, 2012; Al-Htaybat et al., 2011) and on those advised using UET in DCR future research (Momany et al., 2014). Likewise, deciding the levels of narrative readability may be influenced not only by laws, regulations and boards but also by the awareness and commitments of both managers (supply) and users (demand side). Narratives presented on corporate websites have unique features, such as the difficulty in completely knowing the audience; thus, writers' judgement on style and complexity may increase. Chairpersons are powerful and have great discretion over the readability of LTS (particularly in developing countries due to high power distance). The present research incorporated corporate leaders' characteristics in studying DCR along with the financial and governance variables used in previous relevant studies. The research has aimed to answer two groups of questions on DCR from the perspective of upper echelons theory in the context of the Arab Middle East.

First, to examine the CEO's influence on the extent of DCR practices, the study employed a cross-sectional study on the companies listed in Jordan. The results of the first group of questions revealed a moderate level of DCR and a noticeable variance in the content and presentation format of DCR (RQ1). The robust multiple regression analysis demonstrated the negative impact of CEOs with longer tenure and higher educational levels on the extent of DCR (RQ2).

Notably, the current study revealed that the significance of the CEO's education and tenure association for the format dimension is stronger than for the content dimension (RQ3). Such results suggest adverse effects of prestige power and negligence of the importance of innovation to disclosure transparency.

Second, to expand on the revealed impacts of upper echelons, the study's second group of questions focus on the impact of the chairman's characterises on readability, an essential quality of online narrative disclosures. The study used panel data from 2014 through 2018 to investigate the relationship between the chairman's characteristics and the reading ease of online LTS issued in companies listed in seven AME countries. It was hypothesised that the chairman's age, tenure, education, and overconfidence are associated with the readability of chairpersons' LTS. The descriptive analysis revealed that LTS readability is poor (difficult to read), denoting chairpersons as ineffective at reaching narrative disclosure audiences (RQ4). After controlling for fixed effects of years, firms, industries, and countries (with various firm and country-level control variables), the clustered OLS Regression analysis revealed that easier-to-read LTS are associated with firms with older chairpersons holding doctoral degrees (RQ5). Moreover, the results indicate no intentional obfuscation, which generally supports the UET. The negligence of readability in AME is likely caused by the lack of knowledge, which is one reason for boundedly rational decision-making.

The findings about the overall adverse effect of UE are in line with the previous studies on AME cultural norms (i.e., high power distance) (Hofstede et al., 2010). The overall impact of UE revealed in this study is consistent with the extant body of studies that documented that CEO and chairman characteristics can influence corporate decisions, including innovation and corporate disclosure clarity (e.g. Singh, 2006, Bamber et al., 2010). The results of both DCR extent and readability support the UET idea that organisational decisions are influenced by the prevalent power of corporate leaders in some contexts, such as the middle east. Those powerful leaders are prone to boundedly rational decisions (Hambrick, 2007).

8.3. Contributions to the Literature

The study has provided theoretical, empirical, and methodological contributions to the literature. Principally, it expanded on prior DCR literature that identified a theoretical gap in DCR (Kelton and Yang, 2008, Poon and Yu, 2012, Al-Htaybat et al., 2011) and on those advised using UET in DCR future research (Momany et al., 2014). First, the current research suggests a revised conceptual definition of the DCR by stressing its uniqueness in nature and purpose than other channels. Thus, the additional variables suggested are based on the UET's perspective, per the theoretical discussions in chapters 2 and 3. These are based on the CEOs' and chairpersons' high discretion over DCR extent and clarity. Second, the fresh evidence from developing countries on the ability of UET to complement the neo-classical theories by providing additional explanatory variables to such variation in DCR extent and quality. These are highly founded on the perceived bounded rationality of managers when they face complex decisions and situations around DCR. This has been proved empirically and contributes to Bamber et al. (2010) research by confirming that the R^2 squared of the model increased once more variables based on UET were incorporated into the model. Third, the study contributes to the UET literature by demonstrating that researching the DCR phenomenon based on samples from developing countries is likely to generate results more supportive of UET than in developed countries, given the lack of diffusion support, guidance, and CG, as the UET suggests. This is based on the results that two CEO characteristics (tenure and education) are associated with DCR in Jordan. It is not straightforward to claim that these factors are unlikely in developed countries; however, they are unlikely to contribute to impaired decisions.

Fourth, concerning RQ3 on the DCR extent, the statistical associations between the content dimension and firm size, industry type, and other factors are stronger than with the format dimension. In the main model, many of these control variables (CV) are insignificant, which is not a concern by itself. Remarkably, many of such CVs are significant in content subgroups but not in the format dimensions subgroups. This conclusion confirms one of this research's suppositions: agency theory can explain variations in DCR content more than the 'website-related' index items. Fifth, the current study contributes to the speculative argument that each of the theories used in accounting corporate disclosures is useful in the disclosure 'puzzle' (Verrecchia, 2001, Pavlopoulos et al., 2017). This study's empirical methods and results supported such argument, as discussed in chapter 3, and by incorporating UET in studying DCR. Sixth, the results contribute to our knowledge about how the chairman's responsibilities on promoting the highest standards of integrity (tone at the top) are impacted by their negligence of the importance of clear writing styles. This thesis can make an original empirical piece of evidence on the weakness of CG concerning DCR in Jordan (which supports EBRD, 2017) and regarding the clarity of narrative disclosure across the AME.

The current study contributes to the UET literature by highlighting a new area of managerial influence, the complex DCR phenomenon, and contributes to previous relevant corporate disclosure studies (Bamber et al., 2010, Plöckinger et al., 2016). Other contributions to the extant body of empirical literature include providing fresher evidence of the CEO and chairman's adverse influence on disclosure in this modern age, particularly in emerging economies. Out of the four hypotheses in the theoretical background chapter, only two predictors have been statistically supported, CEO tenure and educational level. The sample data on the other two predictors (gender and age) could not find statistical support, apart from the age that was associated with website existence only.

Other contributions relevant to the adopted methodology are as follows. First, cross-sectional and longitudinal approaches have been used to investigate the upper echelons' impact on corporate communication styles (i.e., the evidence has been based on two methodologies). Second, the study contributes to the literature on the content analysis approach, such as its ability to depict linguistic features influenced by managerial characteristics derived from the UET. Third, the combined results from a single country (Jordan) and across countries (AME) in general confirm some managerial influence of upper echelons on DCR; thus, the generalisability is supported. Fourth, the study has used a range of methods to capture the readability. Lastly, incorporating variables (main interest and control) from different theories is justified (Verrecchia, 2001, Kelton and Yang, 2008); it has been revealed that multiple theories can explain more of the DCR variation among firms, which is apparent through higher R-squared values.

This contributes to the argument that “there is no comprehensive, or unifying, theory of disclosure” (Verrecchia, 2001, p.98). In specific, the current results found that agency theory explained differences in the ‘content’ dimension of DCR, including financial and non-financial information, more than the ‘format’ dimension. In other words, companies' practices of utilising their website to present information identical to those accessible in conventional channels with little use of website features can be highly predictable using agency theory. In light of the results and theoretical analysis framework, it can be concluded that DCR is complex in its nature and purpose (user support) (FRC, 2015). Variables based on UET can be useful and act as an ‘incremental’ to ‘known economic determinants of disclosure’ (Bamber et al., 2010).

Moreover, the study finds no indication that obfuscation is intentional[69], which indirectly supports the UET proposition. The negligence of readability in AME is partially caused by the

[69] Based on the negative significant association between profitability and readability, as reported in table 7.4.

lack of knowledge (of its importance and users' needs/literacy), which is one reason for boundedly rational decision-making on disclosure quality.

The current study also extends Verrecchia (2001), who underlined how executives and companies exercise discretion concerning what and how corporate information is disclosed. Earlier researchers based their views on rational management, which assumes that managers know when it's better to disclose or withhold information. However, corporate disclosure studies provided inconsistent and contradictory results regarding DCR determinates, despite researchers' use of similar methodologies (Chavent et al., 2006). The intrinsic complexity of assessing firms' disclosure of the information is a significant reason for such contradiction (Urquiza et al., 2010).

It is essential to stress that out of the four hypotheses in the theoretical background chapter on DCR extent, only two predictors have been statistically supported that are CEO tenure and education. The sample data on the other two variables could not find statistical support. Moreover, two variables were found to be associated with readability, that is, chairman education and age. For the two empirical frameworks, the characteristics of education, tenure and age lend credence to the UET and the bounded rationality perspectives[70]. There is apparent divergence on the influence of the age variable between the CEO and chairman which indicate that age is relevant to more rational decisions on readability and website existence (but not to DCR adoption extent. This can be due to the higher complexity of DCR adoption (supportive of Kelton and Yang (2008) argument). The reason behind the divergence in characteristics among DCR extent and readability is that the two aspects are different given the different roles of CEO and chairman.

[70] Based on significance levels of either 1%, 5% or 10%.

In conclusion, the combined results contributed to DCR, UET and bounded rationality research. Specifically, by revealing that some of the CEOs and chairman characteristics have partially influenced corporate decisions regarding DCR adoption and reading ease of digital narratives.

8.4. Implications for Policy Makers and Researchers

The implications inferred from the current findings are for practitioners, policymakers, and regulators. In summary, based on the revealed high complexity, companies need to pay more attention and make sure that their message is delivered successfully to the audience via more readable disclosure. Regulators need to issue laws to impose using clear language. Moreover, stakeholders and others who are involved in appointment decisions can be affected if not consider managers influence on disclosure.

Disclosure is very important to give an impression about the ethical behaviours of firms' leaders. Everyone can see, comprehend, and assess the organisation in light of its available information, especially web-based information. The mission statement on the web and its relationship capital argument is an example (see: Bart, 2001). Reporting is analogous to painting a picture of the organisation, and users utilise this image to analyse and act based on what they learn; therefore, this idea is consistent with the view that business communication is (Hines, 1988). An anticipated implication to the AME is that empirical research from the UET perspective can advise CEO appointments and chairperson election processes. The study’s results can uncover the traits associated with unfavourable managerial and strategic decisions and activities. For instance, the role of corporate leaders' qualifications and diversity (e.g., higher education and long tenures) was expected to enhance disclosure transparency and symmetry, thus promoting market performance. However, the current findings have found negative impacts of such qualities on this aspect (i.e., higher education is associated with lower DCR and worsened readability). Appointments in developing countries, such as AME, could be based on qualities linked to prior performance (or political connections). It is unknown how the used qualities add value to shareholders; rights, as CG codes, claim to enhance transparency by more diversity (e.g., ages, education).

Another relevant implication of the results on education is that CEOs and chairmen with doctorates or distinguished education levels may often have privy to chances and networks that enable them to advance on the career ladder. This may give them a powerful edge over individuals who may have better performance and decision-making skills but did not have the same educational chances. Thus, more awareness can be communicated among stakeholders about the qualities of good leadership that may affect their criteria for elections/appointments. Moreover, based on the current results, it is recommended that the policymakers consider regulating the plain English criteria for the narratives because some qualities of qualified leaders (e.g., educational level) have been proven to be linked with better disclosure. Awareness and cooperation in this matter with stakeholders and listing authorise need to be established since narrative complexity can lead to negative consequences on the market.

In general, as per the UET, researching the correlation between UE's traits and DCR extent and readability can lead to useful recommendations for shareholders (voters) and practitioners attempting to fill leadership roles with more qualified individuals. Moreover, the arguments in accounting literature that boards affect financial reporting integrity (e.g. Anderson et al., 2004) do not explain to what degree these would affect it. Therefore, the current study explains some of the variations. There is a belief that the chairperson should lead the board in ensuring the best information is delivered to shareholders, particularly minority shareholders who can be disadvantaged because of low readability.[71] Such results could be beneficial for reviewing individuals' qualities taken into account for elections of chairman in the AME.

For instance, CEOs' tenure impact on DCR suggests that excessive power could have resulted from their long service. CEO's long tenure in one firm is highly likely to adversely impact managers' decisions regarding transparency by inadequate DCR adoption. The literature suggests that a higher level of chairman ownership adds more power to them and thus may lead to entachment. Even the current results do not support this point; other sources of 'power' have contributed to impaired decisions regarding disclosure quality, such as prestige power. Therefore, policymakers and regulators should ensure that vigilant mechanisms and support (via more regulations to facilitate faster diffusion of DCR and improved readability) are in place to enhance shareholders' interests.

Concerning DCR adoption, a suggested way to foster it is based on analysing the adoption stage (in chapter 2) and the current research outcomes. For instance, at the country level, the earliest low DCR adoption in the UK has been facilitated by interventions of researchers and regulators (e.g., FRC), and results have been 'communicated' with related parties for action. However, there is an apparent lack of such practical actions and support from regulators in the context of AME.

Regarding readability, this study compared different countries within the AME. Even though they share similar values, cultures and languages, managers still have many differences (e.g., educational levels, ages, tenures) whose effects should not be neglected. The provided evidence on corporate narratives' complexity denotes those investors and stakeholders cannot process

[71] Board communication with shareholders has been discussed by corporate governance codes. Even in developing countries, the chair's role is more significant than what we could think. "Direct communication between directors and shareholders should be coordinated through—and with the knowledge of—the board chair, the lead independent director, and/or the nominating/corporate governance committee or its chair." (FRC, 2017).

and analyse the information efficiently, which impairs disclosure transparency. Building on its importance, regulators in developing countries, such as AME countries, have overlooked such issues of narrative complexity and have not yet issued any guidelines or regulations. Such a lack of readability guidelines in this region could make it difficult for investors to assess whether issuers (and leaders) are truthful in their communication. There is clear importance for selecting managers and appointing directors based on qualities other than educational level. Especially when the current results suggested that the actual contribution of such qualities in ensuring unprofessional shareholders' interests can be questionable, policymakers must stress ethical and professional behaviour and executives and boards discharge their responsibilities effectively. The relevant practical implication for firms here is that more attention must be paid to the clarity and reading ease of narrative disclosures. It is avoidable by careful reviews before publishing such reports, as suggested by FRC (2015b), to ensure a wider audience can grasp the meaning.

Moreover, minority shareholders' rights and their engagement in governance in many emerging countries tend to be hampered by legal system inefficiencies (Haque et al., 2008). Regulators may need to review the existing CGMs and evaluate their effectiveness, such as board independence and non-duality. In this regard, there is a difference between *informed* and *uninformed* investors because of the costs and skills required to gather information (Nel et al., 2018). To make the case, outside investors could be disadvantaged, unlike the 'informed' who have access to private information (Chang et al., 2008). Accordingly, DCR needs to be enforced by regulators and governing bodies. Results on moderation effects highlight that when governance is weak, in fact vs in appearance, higher discretion and power misuse are apparent. In particular, regulators need to evaluate the overall benefits of duality and make deep examination on how it is affecting the achievements of both companies' objectives and shareholders benefits. The overall weak CG, including weak boards in the AME, has increased decision-makers discretion concerning utilising websites for improved DCR. A weak board is one of the sources/moderators of increased discretion (e.g., negligence to DCR importance), according to the updated UET model (Hambrick, 2007).

Lastly, the results could not support the hypothesis that females influence the extent of DCR. Since the descriptive results show that only five female chairpersons out of 122 in the Jordanian sample, there are several potential obstacles that women CEOs face before becoming leaders. Recommendations for reducing such obstacles can then be provided after considering the AME and Jordanian context. Widespread obstacles include gender bias due to stereotypes about their lower capabilities and ambitions than males. Discrimination, lack of mentors, and male-dominated sectors may limit women's job progress. The Jordanian cultural and social settings may also contribute to the lower percentage, such as family responsibilities and lack of support from the community (and husband). Coupled this with the fact that women in underdeveloped regions marry an average of 6.5 years sooner than their OECD counterparts (OECD, 2016). These could contribute to a lack of self-confidence. Intuitions into how female leaders understand detrimental stereotypes and discrimination within Jordanian society have been discussed by Koburtay et al. (2022). Regulators in Jordan need to enforce laws and increase awareness to prevent any discrimination, anti-diversity workplaces, or pay gas.

8.5. Research Limitations and Future Research

Despite the significance of the study's findings, there are still a few limitations that prevented the study from encompassing wider aspects of the problem under investigation. The following are the main limitations, along with relevant suggestions for future research pertinent to the empirical investigation of both the extent of DCR and its readability are also clarified.

First, the number of observations in the longitudinal readability study is influenced by data collection procedures. Specifically, many companies have been dropped because of not qualifying with the representation criteria for at least 40% of the years in the study (i.e., two years or more). Therefore, future studies using larger samples (longer time frames) may provide diverse results. Additionally, the data is limited to the LTS published on the firms' websites, and no attempt was made to get annual reports or letters from other sites, such as stock exchanges. One reason behind this procedure is that many stock exchanges present the reports in a scanned format, and the text cannot be copied.

Second, relying on quantitative methods to examine the relationship between chairman characteristics and readability can be objectively judged since readability is objectively measured. However, the language and features may be difficult to quantify with complete accuracy, especially in different contexts. Thus, possible scrutiny is expected against measuring the readability of the *language* used in corporate communications in specific. As highlighted in the literature, readability measures are helpful but are only guides or indicators of reading ease.

Third, the current study addresses the chairman's LTS. The CEO letters were unavailable for an adequate number of firms on their websites. As such, the analysis and discussion were based on the known capacity of the chairman's role (e.g., governor). The chairman is believed to be unaffected by the CEO as each prepares a separate letter to shareholders. Nonetheless, as it could be debated which one is more read in the context of developing countries, future research could investigate the relationship between the readability of both letters and draw more in-depth results. Moreover, results on the chairman's characteristics could be different than the CEO ones given the different communication roles due to differences in their responsibilities.

Fourth, the chairman's characteristics are wide-ranging and may have different measures. Finally, although efforts were made to collect most of the data manually, there are limited data in the Middle East Arab countries. Thus, the study has not controlled all variables that may affect the results. In other words, the regression model could be stronger if more variables were included.

Fifth, the study focuses on the chairman's letters published on the company's website, whether within the annual report document or in a separate PDF file or HTML. The study did not differentiate between these, and no comparison was made between the website letter and any letters published on other channels (such as checking if the hardcopy letter is the same as the one on the website).

Sixth, the study focused on the chairman's letter; studying other sections of annual reporting is recommended. Comparisons can be made. In addition, the study focused on readability and legibility; future studies could expand the analysis to include other textual features.

Seventh, the study acknowledges that readability is a machine evaluation process. It may not be 100% accurate, and some differences may be present when a human reads. As in most literature, there was no attempt to check any differences between human evaluation and the results of the used scoring system.

The following are additional recommendations for future research.

First, future studies are encouraged to explore various website functions in the AME (e.g., branding). Companies must maintain relevant and high-quality websites since they might affect their corporate identity strategy and image (Braddy et al., 2008). In addition, the DOI model aspect of the experience might be used to identify any intrinsic encouragement towards DCR adoption. Thus, more website use increases website abilities.

Second, the discussion in this study contrasted DCR diffusion in a developing country (Jordan) to the context of developed countries. This comparison is restricted, given cultural norms and behaviours in various nations. Future research could broaden the scope to empirically examine how the *communication* stage in the DOI model and national regulations can influence DCR diffusion. Essentially, the UET and DOI theories provide great opportunities to highlight possible ways for DCR diffusion improvements. For example, regulators could explore in-depth the ways to effectively 'communicate' the usefulness and opportunities of DCR.

Third, DCR requires investments in accounting departments (i.e., more IT use). This may not increase disclosure transparency as anticipated. Xiao et al. (1997) noted that IT usage may have worsened information asymmetry if internal reporting is improved more than external reporting. Therefore, studying IT use in internal versus external reporting is critical in identifying information asymmetry before solving it.

Fourth, factors affecting reading ability can include education, motivation, and context. However, available reading formulas take no account of the interests and motivations of the reader. Therefore, researchers could study preparers' views on their audience reading abilities to judge the adverse impact of corporate reporting leaders, such as their prestige power.

Fifth, this empirical study has not considered the COVID-19 crisis and its significant effect on businesses worldwide, including a decline in the reliability and quality of financial reporting, which has been reported in some developing countries, such as Morocco (Jabrane et al., 2022). Accordingly, future researchers are encouraged to examine these effects on DCR, given the increased percentage of internet users worldwide.

Sixthly, the technological knowledge and experience of a CEO may allow them to be more likely to adopt online financial reporting and convey the company's financial data properly and quickly. However, it was found difficult to measure how much they are acquainted with technology due to data availability. Therefore, this variable has been excluded from the current study. The study focuses on CEO's role as a decision maker regarding DCR (i.e., adoption and confirmation) based on the fact that technology is more about strategy (Kane et al., 2015) (not only determinable by technology itself). In addition to the CEOs' IT skills and knowledge, they need to believe in technology and its users' need for DCR regardless of their own IT skills. Future research could attempt different methods to collect such data.

Seventhly, the current study admits the limitations of data availability that prevent addressing potential endogeneity in a complete manner. Despite the use of fixed effects of year, firm, country and industry and the use of two-way clustering to alleviate some sources of endogeneity, the study could not find external shocks that may account for some variability in readability scores for the sample firms. However, the current study uses the IFRS adoption variable (as a dummy variable, see chapter 4) to control any external effect. This is informed by some studies that utilized IFRS adoption as an exogenous shock to companies' information environment (Shroff et al., 2014). Nonetheless, it is not straightforward to realize the clearer macro-level effects of accounting shocks (De George et al., 2016). Moreover, the study period covered the years prior to the COVID-19 pandemic, which could have been a potential external shock. According it is believed that the study's results have a satisfactory level of causality.

Eighthly, Due to the availability of data, upper echelons education subject has not been tested. Education may not capture all potential attitudes toward technology in general. It may influence investment in technology in general but may not necessitate more DCR (e.g., focusing on internal reporting improvement, according to Xiao et al. (1997).

Lastly, this research measured effective communication using readability indices like Flesch and Fog indices. Future studies can address dialogic corporate communication that emphasises connecting information and firms to their audiences (Brennan and Merkl-Davies, 2018).

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Appendices

Appendix A: Tables

Table A.1 Source of items included in the DCR measurement index

Content items	Reference
Current year AR	Etterdge et al. (2002); Larrian and Giner (2002); Lybaert (2002); Xiao et al. (2004); Kelton and Yang (2008); Al Arussi et al. (2009); Elsayed (2010); Uyar (2012)
Previous years AR	Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Bonson and Escobar (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Turel (2010); Henchiri (2011); Uyar (2012)
AR in English language	Supports foreign users' needs Al-Motrafi (2008); Turel (2010); Al-Htaybat (2011) ; Nurunnbi and Hossain (2011); Uyar (2012)
Performance highlights	Etterdge et al. (2002); Abdel-Salam and Street 2007; Elsayed (2010)
Updated financial newsletter	FASB (2000); Allam and Lymer (2003); Lodhia et al. (2004); Bollen et al. (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Al Arussi et al. (2009); Salehi et al. (2010) Al-Htaybat (2011)
Recent quarterly report	Marston and Polei (2004); Elsayed (2010); Salehi et al. (2010); Nurunnbi and Hossain (2011)
quarterly financial info	Marston and Polei (2004); Elsayed (2010); Salehi et al. (2010); Nurunnbi and Hossain (2011)
Up-to-date share price	FASB (2000); Etterdge et al. (2002); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Al-Motrafi (2008); Al Arussi et al. (2009); Elsayed (2010); Salehi et al. (2010); Turel (2010); Al-Htaybat (2011);
Calendar to investors	Etterdge et al. (2002); Larrian and Giner (2002); Marston and Polei (2004); Abdel-Salam and Street 2007; Abdel-Salam and El-Masry 2008; Davey and Homkajohn 2004; Xiao et al. (2004); Bollen et al. (2006); Bonson and Escobar (2006); Al-Htaybat (2011); Nurunnbi and Hossain (2011)
Code of ethics employed	Al-Motrafi (2008); Elsayed (2010); Nurunnbi and Hossain (2011); Uyar (2012)
Historical share price	FASB (2000); Larrian and Giner (2002); Lybaert (2002); Etterdge et al. (2002); Allam and Lymer (2003); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Kelton and Yang (2008); Elsayed (2010); Salehi et al. (2010); Turel (2010); Al-Htaybat (2011); Bozcuk et al. (2011) ; Nurunnbi and Hossain (2011)
Dividend history	Bonson and Escobar (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Turel (2010); Nurunnbi and Hossain (2011); Uyar (2012)
Forecasted financial info	Xiao et al. (2004); Kelton and Yang (2008) Elsayed (2010)

Recent month's financial info	Deller et al. (1999); FASB (2000); Etterdge et al. (2002); Lybaert (2002); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Bonson and Escobar (2006); Bollen et al. (2006); Al-Motrafi (2008); Kelton and Yang (2008); Al Arussi et al. (2009); Al-Htaybat (2011); Henchiri (2011)
List of BOD members	Brennan and Hourigan (1999); FASB (2000); Allam and Lymer (2003); Lodhia et al. (2004); Xiao et al. (2004); Al-Htaybat (2005); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Salehi et al. (2010); Al-Htaybat (2011)
CSR Information	Brennan and Hourigan (1999); Al Arussi et al. (2009) Uyar (2012); Turel (2010)
Other reports (e.g. MD&A)	Allam and Lymer (2003); (Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Al-Htaybat (2005); AlMotrafi (2008); Al Arussi et al. (2009); Elsayed (2010); Turel (2010); Al-Htaybat (2011); Bozcuk et al. (2011)
BOD meetings minutes or invitations	Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Al-Motrafi (2008); Elsayed (2010); Salehi et al. (2010); Nurunnbi and Hossain (2011); Uyar (2012)
Internal CG guidelines	Jordan's CG code requires that for the banks.
Investors relation section on the website	FASB (2000); Larrian and Giner (2002); Marston and Polei (2004); Bonson and Escobar (2006); Al-Motrafi (2008); Elsayed (2010); Turel (2010); Al-Htaybat (2011);
Feedback and complaints	Alsayed (2010)
FAQ	Deller et al. (1999); Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Bonson and Escobar (2006); Al-Motrafi (2008); Elsayed (2010); Al-Htaybat (2011); Henchiri (2011); Nurunnbi and Hossain (2011); Uyar (2012)
assembly /BOD decisions	Etterdge et al. (2002); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Kelton and Yang (2008); Elsayed (2010); Uyar (2012)
invitation to AGM meeting	Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Al-Motrafi (2008); Elsayed (2010); Salehi et al. (2010); Nurunnbi and Hossain (2011); Uyar (2012)
Panel B: Format dimension items	
English website	FASB (2000); Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Al-Htaybat (2005); Bollen et al. (2006); Al-Motrafi (2008); Elsayed (2010); Salehi et al. (2010); Turel (2010) ; Al-Htaybat (2011); Henchiri (2011); Bozcuk et al. (2011)
Internal search engine	Deller et al. (1999); FASB (2000); Lybaert (2002); Allam and Lymer (2003); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Al-Htaybat (2005); Bollen et al. (2006); ; Bonson and Escobar (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Salehi et al. (2010); Al-Htaybat (2011); Hodge et al. (2004)

Dynamic graphic images	FASB (2000); Marston and Polei (2004); Xiao et al. (2004); Kelton and Yang (2008); Elsayed (2010); Turel (2010); Henchiri (2011); Uyar (2012)
links to other websites	Bonson and Escobar (2006); Kelton and Yang (2008)
AR in PDF format	FRC (2015); Deller et al. (1999); FASB (2000); Larrian and Giner (2002); Lybaert (2002); Al-Htaybat (2005); Bollen et al. (2006); Marston and Polei (2004); Xiao et al. (2004); Bonson and Escobar (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Turel (2010); Al-Htaybat (2011); Bozcuk et al. (2011) ; Nurunnbi and Hossain (2011)
Direct e-mail to the company	Alhtaybat (2011); Nurunnbi and Hossain (2011)
Copy and search in PDF	FASB (2000); Lodhia et al. (2004)
Easy to locate AR	Marston and Polei (2004); Xiao et al. (2004); Kelton and Yang (2008); Elsayed (2010) FASB (2000)
AR is disclosed from the homepage	Lybaert (2002); Marston and Polei (2004); Xiao et al. (2004); Kelton and Yang (2008); Elsayed (2010) FASB (2000); Lybaert (2002); Al-Motrafi (2008)
Video files	FASB (2000); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Henchiri (2011); Nurunnbi and Hossain (2011); Uyar (2012)
Direct Receive of e-mail (mailing list)	Deller et al. (1999); FASB (2000); Larrian and Giner (2002); Lybaert (2002); Allam and Lymer (2003); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Bonson and Escobar (2006); Kelton and Yang (2008); Elsayed (2010); Salehi et al. (2010); Turel (2010); Al-Htaybat (2011); Henchiri (2011); Nurunnbi and Hossain (2011); Uyar (2012)
Multiple formats of AR	Deller et al. (1999); FASB (2000); Larrian and Giner (2002); Lybaert (2002); Al-Htaybat (2005); Bollen et al. (2006); Marston and Polei (2004); Xiao et al. (2004); Bonson and Escobar (2006); Al-Motrafi (2008); Kelton and Yang (2008)
Process-able Format of AR	Deller et al. (1999); FASB (2000); Larrian and Giner (2002); Lybaert (2002); Allam and Lymer (2003); Fisher et al. (2004); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Kelton and Yang (2008); Turel (2010); Al-Htaybat (2011)
Hyperlinks in AR	Hyperlinks to multiple sources of information can improve verifiability. Marston and Polei (2004); Xiao et al. (2004); Al-Htaybat (2011); Bozcuk et al. (2011); Nurunnbi and Hossain (2011)
Audio files	FASB (2000); Marston and Polei (2004); Xiao et al. (2004); Bollen et al. (2006); Al-Motrafi (2008); Kelton and Yang (2008); Elsayed (2010); Bozcuk et al. (2011)
Quick link to Annual reports Home page	FASB (2000); Lodhia et al. (2004); Bollen et al. (2006); Al-Motrafi (2008); Elsayed (2010); Al-Htaybat (2011); Bozcuk et al. (2011); Henchiri (2011); Nurunnbi and Hossain (2011)
link to Social media pages	Facebook Twitter Youube, Instagram, LinkedIn, Google Brenan

Site Map	FASB (2000); Allam and Lymer (2003); Lodhia et al. (2004); Marston and Polei (2004); Xiao et al. (2004); Al-Htaybat (2005); Bonson and Escobar (2006); Al-Motrafi (2008); Elsayed (2010); Salehi et al. (2010); Al-Htaybat (2011); Walton et al., (1997).
vision and mis-sion	FASB (2000); Allam and Lymer (2003); Lodhia et al. (2004); Elsayed (2010); Al-Htaybat (2011)

Table A.2 DCR index groups relevance and sources

Group / Item	Relevance and justification	Sources
User support (e.g. Usability)	First is the site map. The Internet website benefits from having a clear structure and links that prevent the user from getting lost. The second is the internal search engine. It offers the ability to search the content (such as PDF). The importance of search-ability within digitally available financial information is addressed by the results of Hodge et al. (2004) study that instructs that such technologies "aid financial statement users by improving the transparency of firms' financial statement information and managers' choices for reporting that information”. Therefore, not only the search engine is essential, but also the search-ability option within the document (e.g. PDF) or content (e.g. HTML).	Hodge et al. (2004)
Content DCR - CSR	The Internet allows companies to publicise more information less expensively and faster than ever (Wanderley et al. (2008). The Web is Significant for strengthening the company's communication abilities on environmental performance and results, including social responsibility (Nielsen, 2001).	Khasharmeh & Desoky Bolivar and Garcia (2004) Zakaria and Dewa (2010
CSR	Perhaps easy accessibility to the information makes the ‘web’ the best medium to meet the needs of stewardship and management disclosures of the entities for financial and non-financial reporting (Lymer 1997 and Wallman 1995). CSR website disclosures constitute an alternative CSR disclosure medium.	(Lymer 1997 and Wallman 1995; Tagesson et al., 2009; Ingenhoff and Koelling, 2012; Kamla and Rammal, 2013)
Investor’s relation IR	The literature in different countries shows that the IR section of a firm website is an established element in a company's internet presence (Bollen et al., 2006)	
Timeliness	Companies need to voluntarily focus on improving the timeliness dimension of their corporate internet reporting so that accounting regulators do not replace recommendations with regulations (Abdelsalam and Street, 2007)	Ettredge and Gerdes (2005), Abdelsalam and Street (2007), Abdelsalam and El-Masry (2008), Ezat and El-Masry (2008)
General Attribute, Investor relation attributes	It is essential to consider the dimension of accessibility in terms of website appearance and visual design from different perspectives. The observed variation in web design and the information disclosed, especially not including investors relation section, reduces the accessibility and provides the	FASB (2000) Khadaroo (2005) Celik et al. (2006) Chatterjee and Hawkes (2008)

	possibility of confusion when trying to compare information across companies. Chatterjee and Hawkes (2008)	
Hyperlinks to other sites Hyperlinks inside the AR	With Hyperlink, users use less effort than users of paper-based information. In addition, hyperlink users integrate less information into their judgments than paper users.	Kelton and Pennington (2012) Debreceny et al. (2002)

Table A.3 Matrix of Correlations – (Sample: 176 firms, adopters and non-adopters)

Variables	FEM	AGE	EDU	L_TEN	TA_L	ROI	M_B_R	LEV	BDSZ	IND_P	BIG4	DIS_O	FOR_O	INST_O
FEM	1.000													
AGE	-0.097	1.000												
EDU	0.058	0.018	1.000											
L_TEN	-0.015	0.240	0.124	1.000										
TA_L	0.088	0.136	0.126	-0.025	1.000									
ROI	0.030	0.043	0.062	0.051	0.146	1.000								
M_B_R	-0.066	0.090	-0.064	0.045	0.089	0.290	1.000							
LEV	0.084	0.072	-0.010	-0.071	0.401	-0.360	0.108	1.000						
BDSZ	0.051	0.232	0.195	0.079	0.535	0.068	0.006	0.257	1.000					
IND_P	0.118	0.028	0.051	0.014	-0.062	0.095	-0.126	0.017	-0.047	1.000				
BIG4	0.124	0.053	0.038	-0.094	0.523	0.078	0.090	0.200	0.235	-0.020	1.000			
DIS_O	-0.086	0.086	0.110	-0.017	-0.016	-0.015	-0.142	-0.135	0.238	0.127	-0.265	1.000		
FOR_O	0.217	0.016	-0.047	0.011	0.363	0.033	0.156	0.176	0.216	-0.054	0.347	-0.293	1.000	
NST_O	0.065	0.001	0.016	0.029	0.290	-0.003	0.084	0.120	0.097	-0.074	0.387	-0.578	0.437	1.000

Table A.4 OLS Regression – CEO Characteristics and DCR for Non-banks Sample

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
FEM		4.225				5.442
		(1.358)				(1.235)
AGE			-0.036			-0.015
			(-0.608)			(-0.268)
EDU				-2.209**		-2.294***
				(-2.512)		(-2.660)
TEN_L					-1.541**	-1.341*
					(-2.169)	(-1.789)
DUAL	-1.452	-1.434	-1.336	-1.184	-0.146	0.036
	(-0.388)	(-0.380)	(-0.361)	(-0.302)	(-0.038)	(0.009)
TA_L	5.132***	5.231***	5.126***	5.301***	5.268***	5.552***
	(3.366)	(3.432)	(3.357)	(3.727)	(3.611)	(4.098)
ROI	0.016	0.014	0.019	0.015	0.017	0.015
	(0.121)	(0.107)	(0.150)	(0.119)	(0.133)	(0.122)
M_B_R	0.356	0.378	0.383	0.350	0.419	0.445
	(0.548)	(0.581)	(0.594)	(0.551)	(0.699)	(0.763)
LEV	-0.447	-0.433	-0.350	-0.906	-0.716	-1.099
	(-0.260)	(-0.247)	(-0.207)	(-0.524)	(-0.422)	(-0.643)
BDSZ	-0.334	-0.327	-0.296	-0.284	-0.276	-0.205
	(-0.946)	(-0.921)	(-0.811)	(-0.867)	(-0.796)	(-0.628)
IND_P	-3.761	-4.443	-3.666	-3.383	-3.370	-3.868
	(-1.405)	(-1.582)	(-1.337)	(-1.335)	(-1.299)	(-1.525)
BIG4	0.099	-0.015	0.190	0.066	-0.059	-0.179
	(0.)	(-0.011)	(0.144)	(0.052)	(-0.045)	(-0.136)
DIS_O	-0.007	-0.006	-0.006	0.002	-0.005	0.006
	(-0.192)	(-0.157)	(-0.167)	(0.070)	(-0.149)	(0.189)
FOR_O	0.038	0.035	0.036	0.029	0.033	0.020
	(1.145)	(1.030)	(1.096)	(0.887)	(1.016)	(0.605)
INST_O	0.001	0.003	0.000	0.005	0.002	0.007
	(0.057)	(0.127)	(0.019)	(0.197)	(0.081)	(0.303)
Constant	-20.044*	-21.104*	-18.532*	-18.402*	-18.003*	-17.290*
	(-1.857)	(-1.957)	(-1.687)	(-1.852)	(-1.734)	(-1.753)
INDU	Yes	Yes	Yes	Yes	Yes	Yes
Observations	106	106	106	106	106	106
R-squared	0.284	0.294	0.286	0.330	0.324	0.382
Adjusted R-sq	0.183	0.185	0.177	0.227	0.220	0.263

FEM Female, AGE: age, EDU CEO education: it takes one point for each CEO's certificate; Bachelor, Masters and Doctorate. TEN_L logarithm of CEO tenure, DUAL duality role (CEO holds the chairman role), TA_L logarithm of total assets, ROI return on investment, M_B_R market-to-book value ratio[72]. LEV leverage measured by debt ratio, BDSZ board size, IND_P percentage of independent directors on the board, BIG4 big four auditors, DIS_O percentage of dispersed ownership, FOR_O percentage of foreign ownership, INST_O percentage of institutional ownership, INDU Sector type dummy variable (according to the ASE classifications). VIF variation inflation factor.Robust *t*-statistics in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.5 Previous Studies on Readability (by the Sections of AR Studied)

Part studied	Reference
Integrated reports	Du Toit (2017), Melloni et al. (2017), Stone and Lodhia (2019)
Annual report (Entire)	Pashalian and Crissy (1950, 1952), Soper and Dolphin (1964), Lewis et al. (1986), Courtis (1986, 1987, 1995, 2004), Subramanian et al. (1993), Courtis and Hassan (2002), Linsley and Lawrence (2007), Li (2008), Bloomfield (2008), Clarke et al. (2009), You and Zhang (2009), Lehavy et al. (2011), Stone (2011), Dempsey et al. (2012), Callen et al. (2013), Tan et al. (2014), Lang and SticeLawrence (2015), Richards and van Staden (2015), Ajina et al. (2016), Hwang and Kim (2017), Luo et al. (2018), Cho et al. (2019), Fisher et al. (2019)
Summary annual reports	Hrasky and Smith (2008) Bradbury et al. (2018)
Operating and financial review	Rutherford (2003)
Press releases	Rennekamp (2012)
Chairperson's statement	Still (1972), Jones (1988), Smith and Taffler (1992), Courtis (1998), Clatworthy and Jones (2001), Bayerlein and Davidson (2011), Fisher et al. (2019).
MD&A, Remuneration report	Schroeder and Gibson (1990) Laksmana et al. (2012), Lo et al. (2017), Hooghiemstra et al. (2017)
Report to employees	Lewis et al. (1986)
CSR (full report)	Abu Bakar and Ameer (2011), Nazari et al. (2017), Wang et al. (2018), Fisher et al. (2019), Muslu et al. (2019), Martínez-Ferrero et al. (2019), Harjoto et al. (2020).
Bond rating disclosures	Bonsall and Miller (2017)

Tables A.6 - A.8 Examples of Texts with Different Levels of Legibility

Table A.6: Examples of Highly Legible Fonts

Fonts	Notes
Verdana	Designed for monitors by Microsoft. Many sites on accessibility use Verdana.
Lucida Sans (PC)/ Lucida Grande (Mac)	Relatively new font. Used as a Mac system font.
Tahoma	Available from Microsoft
Georgia	Serif. Designed for monitors by Microsoft.
Palatino (Mac)/ Palatino Linotype (PC)/ Book Antiqua (PC)	Serif. Traditional print font. Weight can be light.
Andika	A free sans-serif font from SIL designed for beginning readers with clear letter forms and foreign language support. May also be suitable for readers with some reading disorders. Get Andika.

Table A.7 Additional Fonts of Reasonable Legibility

Fonts	Notes
Helvetica	Traditional print font. Available on Mac, Unix and newer versions of Windows. Some letterforms can be confused.
Arial	A Windows analogue to Helvetica. Some typographers prefer Helvetica, but the two are generally similar.
Calibri	Released by Windows for Office 2007/Windows Vista. Good distinctions among most characters, but x-height is not especially large.
Trebuchet MS	Available from Microsoft. Good x-height, but some letterforms (e.g. "g" and &") considered too unusual for some readers, especially if literacy is an issue.
Century Gothic	Sans-serif, somewhat Art Deco. Good x-height, but some letters can be confused. Weight is light.
Bookman Old Style	Available from Microsoft. Traditional serif font designed for legibility. Good x-height, but may not be on all computers.
Cambria	Released by Windows for Office 2007/Windows Vista. Good distinctions among most characters, and large x-height. Width slghtly narrower than some fonts.
Candara	Released by Windows for Office 2007/Windows Vista. Similar to Optima font with some serif features.
Garamond	Available from Microsoft. Traditional font, but x-height relatively small and weight is light.
Times New Roman	Serif. Relatively small x-height, but succeeds with regard to legibility.
Comic Sans	Considered legible by some, but also criticized as being "childlike." May be appropriate for sites with younger audiences.

Table A.8 Narrow vs. Wide Letter Spacing

narrow letter spacing	natural letter spacing	wide letter spacing
Readability refers to the ability easily read a line or block of text. Illegible text is difficult to read, but readability is also influenced by alignment and line length. Left alignment helps the reader quickly scan from the end of one line of text to the beginning of the next. Similarly, if lines are too long, it (theoretically) makes is more difficult for the reader to scan to the beginning of the next line. (I say "theoretically" because there is some evidence that this is less of an issue online than in printed form).	Readability refers to the ability easily read a line or block of text. Illegible text is difficult to read, but readability is also influenced by alignment and line length. Left alignment helps the reader quickly scan from the end of one line of text to the beginning of the next. Similarly, if lines are too long, it (theoretically) makes is more difficult for the reader to scan to the beginning of the next line. (I say "theoretically" because there is some evidence that this is less of an issue online than in printed form).	Readability refers to the ability easily read a line or block of text. Illegible text is difficult to read, but readability is also influenced by alignment and line length. Left alignment helps the reader quickly scan from the end of one line of text to the beginning of the next. Similarly, if lines are too long, it (theoretically) makes is more difficult for the reader to scan to the beginning of the next line. (I say "theoretically" because there is some evidence that this is less of an issue online than in printed form).