Disclosure of COVID-19 Pandemic related Information and Audit Committee Characteristics in the context of Saudi Arabia

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Abstract

Recently, the world has witnessed an unexpected event, namely the COVID-19 pandemic that has created massive changes to many aspects of our daily lives. Firms need to respond proactively to such an event through extending their level of disclosure level of COVID-19 pandemic related information. This study extends the previous studies concerned with the voluntary disclosure through exploring in the context of Saudi Arabia the level of disclosure of COVID -19 related information. Further, the study aims to investigate the expected impact of the Audit Committee (AC) characteristics on the disclosure of COVID-19 pandemic related information in the Saudi Arabian environment. In addition, the study seeks to examine the economic consequences of COVID-19 disclosure. The empirical findings illustrate that the sampled listed Saudi Arabian non-financial firms disclose in their annual reports high levels of COVID-19 pandemic related information. Further, four AC characteristics are associated significantly with the disclosure of such information. These are: namely, AC meetings; AC expertise; AC directorship; and AC remuneration. These indicate the impact of AC effectiveness on the disclosure of COVID-19 pandemic related information. In addition, this study's findings show that the disclosure of COVID-19 related information has a positive impact on the listed Saudi Arabian non-financial firms' value. This indicates the existence of economic consequences of their disclosure of such information. Accordingly, this study's findings contribute to the accounting studies and motivate the need for future research studies to shed light on the determinants of the disclosure of COVID-19 related information.

Keywords: COVID-19 pandemic; Disclosure of COVID-19 pandemic related information; Audit Committee (AC) characteristics; Audit Committee (AC) effectiveness; Saudi Arabia.

الملخص

شهد العالم في الآونة الأخيرة حدثا غير متوقع، ألا وهو جائحة كورونا-19 (COVID-19)، والذي أحدث تغييرات هائلة في العديد من جوانب الحياة. وفي هذا الصدد، تحتاج الشركات إلي الإستجابة بشكل إستباقي لمثل هذه الأحداث و ذلك من خلال توسيع نطاق الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19. وبناءا عليه، فإن هذه الدراسة تعتبر إمتداد للدراسات السابقة في مجال الإفصاح الإختياري وذلك من خلال قيامها بمحاولة التعرف على مستوي الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19 في البيئة السعودية. بالإضافة إلى ذلك، فإن هذه الدراسة تستهدف إختبار الأثر المتوقع لخصائص لجنة المراجعة علي مستوي الإفصاح عن المعلومات المتعلقة بجائحة كورونا 19. فضلا عن ذلك، تستهدف هذه الدراسة أيضا التحقق من الأثر المتوقع الناجم من قيام الشركات السعودية بالإفصاح عن المعلومات المتعلقة بجائحة كورونا-19 في تقاريرها المالية السنوية. وقد توصلت النتائج التطبيقية لهذه الدراسة إلى أن الشركات غير المالية المقيدة في سوق الأوراق المالية السعودي تفصح بنسبة عالية عن المعلومات المتعلقة بجائحة كورونا-19 في تقاريرها المالية السنوية. بالإضافة إلى ذلك، فقد أشارت النتائج إلي أن هناك أربعة متغيرات متعلقة بخصائص لجنة المراجعة تؤثر معنويا علي مستوي الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19 وهي: عدد مرات إجتماع لجنة المراجعة، خبرة أعضاء لجنة المراجعة، تعدد عضوية أعضاء لجنة المراجعة في شركات أخري، و مكافآت أعضاء لجنة المراجعة، و هو ما يعني ضمنيا أن قيام لجنة المراجعة بأداء الدور المنوط بها بفاعلية يؤثر معنويا علي مستوي الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19. كما أوضحت النتائج التطبيقية أن مستوي الإفصاح عن المعلومات المتعلقة بجائحة كورونا -19 يؤثر تأثيرا إيجابيا علي قيمة الشركات غير المالية المقيدة في سوق الأوراق المالية السعودي، مما يدل علي وجود أثر إقتصادي للقيام بمثل هذا الإفصاح من قبل الشركات السعودية. وبناءا عليه، فإن هذه الدراسة من خلال ما توصلت إليه من نتائج تكون قد ساهمت في تقديم إضافة علمية للدراسات المحاسبية المتعلقة بمجال الإفصاح الإختياري، كما أنها تكون قد فتحت المجال نحو مزيدا من الأبحاث المستقبلية التي تستهدف دراسة محددات الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19 في مختلف الأسواق المالية.

الكلمات الدالة: جائحة كورونا-19، الإفصاح عن المعلومات المتعلقة بجائحة كورونا-19، خصائص لجنة المراجعة، فعالية لجنة المراجعة، المملكة العربية السعودية.

1. Introduction

In late 2019, the world witnessed a novel coronavirus in Wuhan, China. Consequently, this led to the rapid spread of coronavirus to various countries worldwide. The World Health Organization (WHO) announced in March 2020 that the spread of this virus could be described as a pandemic and it was called COVID-19 (Benton *et al.,* 2020). The COVID-19 pandemic constraints the freedom of human beings and leads to many problems in every aspect of their lives (Koutoupis *et al.,* 2021). Consequently, it is argued that the COVID-19 pandemic is one of the worst global crises to threaten the survival of humankind. Most countries' Governments began to take some precautionary measures, such as, "travel warnings, border closures, regional lockdown, and curfews" to slow down the severity of the COVID-19 pandemic. (Stephany *et al.,* 2020).

As a result of these precautions, the global economy has been affected adversely and dramatically. Since the Great Depression, the COVID-19 pandemic is widely regarded as the most severe crisis because of the significance of its economic and financial consequences' (Elmarzouky *et al.,* 2021a; Albitar *et al.,* 2021). The COVID -19 pandemic has impacted not only on people's health but, also, has affected the global economies and capital markets (Majumdar and Singh, 2021; Wang and Xing a, 2020). Unlike the global financial crisis, the COVID-19 pandemic is a natural disaster that has hit all the business sectors and, therefore, its impact is much worse than an economic crisis faced by only certain sectors (Albitar *et al.*, 2021). The main dilemma is the uncertainty associated with the spread of COVID-19 and the fuzzy vision about the future of the world. Further, the impact of the COVID-19 pandemic is unusual, unexpected, and has had unforeseen risks on all the business sectors worldwide and on all firms' future performance. (Elmarzouky *et al.,* 2021b).

Consequently, firms should deal with this extraordinary situation in terms of their stakeholders. Firms' executives have encountered great challenges and dealt with their ethical and social responsibilities toward the COVID-19 pandemic through applying various precautionary measures to protect their employees and their customers (Albitar *et al.,* 2021). One of the most unusual challenges is how to convey to the firms' various stakeholders, through the disclosure of all issues related to the COVID-19 pandemic, true images of the firms' situation (Benton *et al.,* 2020).

The disclosure of information has an essential impact on the capital market due to its vital role in the efficient allocation of the capital markets' scarce resources (Healy and Palepu, 2001). Accordingly, firms' managers are more likely to be prudent about what they disclose since information can impact on their firms' liquidity and on the markets' participants (Kim and Lim, 2011; Majumdar and Singh, 2021; Tibiletti *et al.,* 2021).

Therefore, they are eager to present their firms' good performance to various stakeholders through disclosing selective types of information to maintain the images held by the market (Bolino and Turnley, 1999; Clatworthy and Jones, 2003), and to influence the stakeholders' behaviours. Stakeholders need the disclosure of various types of information to make rational decisions. Also, over time they require more transparency which encourages the firms to increase the provided amount of both financial and non-financial information and, hence, extend the levels of their disclosure. (Ezat, 2019; Larcker *et al.,* 2020). Therefore, stakeholders depend mainly on the firms' disclosure of information to assess the value of the firms in which they invest and to determine their future investments in these firms (Larcker *et al.,* 2020).

Nowadays, each firm's management extends the level of their narrative disclosure to provide the financial information required to fulfill their stakeholders' various needs. Stakeholders require more disclosed information about the firms' current and future performance. This increases the usefulness of narrative sections more than pure financial information and enhances their attractiveness to stakeholders (Moreno and Casasola, 2016). The accounting narrative constitutes the main parts of the firms' annual reports to reflect both the quantified and narrative information which discusses various topics related to their past and current performance and their prospects.

Annual reports represent one of the firms' main sources to communicate all their required information (e.g., historical events, current status, and future prospects) to their stakeholders for better decision making and to reflect all the aspects related to the various firms (Courtis, 1995; Rodrigue *et al.,* 2015; Tibiletti *et al.,* 2021). However, the financial section alone is inadequate to enable the stakeholders to make holistic decisions (Maines *et al.,* 2002). Consequently, many firms widen the narrative disclosure in their annual reports and, thereby, the non-financial section derives its importance to stakeholders (Clatworthy and Jones, 2001; Amran *et al.*, 2009; Lo *et al.,* 2017). Therefore, this study relies on the narrative disclosure of COVID-19 pandemic related information in the listed non-financial Saudi Arabian firms' annual reports because they are the most comprehensive medium of disclosure and the most widely spread among market participants (Griffin, 2003, You and Zhang, 2009, Li, 2008, Lo *et al.,* 2017; Wang and Xing, 2020 a,b).

Recently, the COVID-19 pandemic has spread across the world and has caused several deteriorations in the countries' economies. Firms should respond proactively to the COVID-19 pandemic through extending their level of disclosure about all the related issues. Consequently, the COVID-19 pandemic provides a great opportunity to explore the diversity of narrative disclosure's levels among various firms responding to the unprecedented shock which have had noticeable effects on all the firms listed on the Saudi Arabian stock exchange (Larcker *et al.*, 2020).

Although the COVID-19 pandemic has had an obvious impact on many aspects of the firms' activities, little guidance has been issued about the disclosure of COVID-19 related information (Wang and Xing, 2020 b). In responding to this situation, the UK government issued the COVID-19 Secure Guidelines which consists of fourteen guides related to different activities which firms were required to perform to verify the safety of their working environments (GOV.UK 2020). Some UK firms are engaged in more than one activity and have disclosed several items of information about their activities, while the others have preferred not to expand their level of disclosure since they operate in violated enforcements (Elmarzouky *et al.*, 2021 a).

Consequently, firms are keen to present their responses to the COVID-19 pandemic through disclosing information related to the pandemic, to deliver their prevention strategies to their stakeholders. By extending the level of disclosure of COVID-19 related information, firms signal their ethical behaviors and operating performance to various stakeholders. These actions reflect the firms’ commitments to deal with the impact of the COVID-19 pandemic on their society. The hidden nature of the COVID-19 pandemic has meant that there are no previous procedures in place that could be followed again to deal with its effects. Many unique precautions and practices have been taken and these are shown in the firms’ various customized contingency plans. Accordingly, it is crucial to disclose all these procedures to stakeholders and to identify the expected consequences of the COVID-19 pandemic on firms’ operations and performance (Majumdar and Singh, 2021). Consequently, this study’s first objective is to explore the level of disclosure of COVID-19 pandemic related information in the listed Saudi Arabian non-financial firms’ annual reports.

However, the disclosure of COVID-19 pandemic related information is voluntary, and firms have the option to either expand or reduce that level of disclosure. On one hand, some firms intend to extend their level of disclosure of COVID-19 related information to determine the amount of disclosed information and their preferred content about the impact of the COVID-19 pandemic on their current and future operations. Further, firms prefer to extend their level of disclosure about all the topics related to the COVID-19 pandemic and how they have dealt with this situation to inform their stakeholders about their handling of this pandemic and to be more transparent (Larcker *et al.*, 2020; Koutoupis *et al.*, 2021). In the same vein, the findings of previous studies have argued in the various sections of the firms’ annual reports and, more especially, in the risk factor sections the informativeness of the COVID-19 pandemic. Such information has a considerable impact on equity and debt holders (Campbell *et al.*, 2014; Filzen 2015; Gaulin 2017; Chiu *et al.*, 2018; Wang and Xing, 2020 b). In addition, firms’ disclosure of information may change the investors’ attitudes during the COVID-19 pandemic and encourage them to respond positively to the firms’ performance (Wang and Xing, 2020 a). Therefore, the extension of the disclosure’s level related to COVID-19 information can reduce the stakeholders’ uncertainty about the firms’ future routes and aid them to making rational decisions.

On the other hand, some firms prefer not to expand their disclosure's level of COVID-19 pandemic related information. They are concerned about the negative impact on stakeholders when they read the COVID-19 pandemic related information. After sudden crises, firms' stock prices have fluctuated dramatically and have left poor impressions with investors about the firms' future performance and how they dealt with the COVID-19 pandemic (Loughran and McDonald, 2020). Easily and O'Hara (2009) and Kravet and Muslu (2013) have documented the increased panic for some investors, which accompanied the unexpected risk factor, before the firms' disclosure of such sudden risk. Some firms choose to disclose their uncertainty concerning the COVID-19 pandemic rather than discussing its negative impact (Majumdar and Singh, 2021). The decision to lower the level of COVID-19 pandemic disclosure and hide its related information may create the worst image of the firms among their stakeholders and impact negatively on their positions in the market.

Accordingly, the COVID-19 pandemic represents an interesting scenario that provides a unique setting to explore the quality of the narrative disclosure in the annual reports of listed non-financial Saudi Arabian firms. The Saudi Arabian Government requires such firms to disclose their responses to the COVID-19 pandemic to determine the content of the disclosed information; to identify the topic discussed when uncertainty about the COVID-19 pandemic increased; and the level of transparency that the firms ought to offer to their stakeholders (Larcker *et al.*, 2020). The COVID-19 pandemic is an extraordinary event that has required firms to follow unusual procedures and convey them to their stakeholders thorough detailed disclosure (Wang and Xing, 2020 a). Firms need to respond proactively to the COVID-19 pandemic and disclose not only general information but, also, all related meaningful information in their annual reports to various stakeholders to aid them to make rational decision (Larcker *et al.*, 2020; Elmarzouky *et al.*, 2021b). Therefore, this study's second objective is to identify the main content of the disclosed information relating to the COVID-19 pandemic and what are the main topics of the information disclosed in the various sections of the listed on-financial Saudi Arabian firms' annual reports to determine whether the disclosed pandemic information is meaningful to various stakeholders or simply general information.

In Saudi Arabia, the disclosure of COVID-19 pandemic related information is on a voluntary basis, and, hence, the decision to extend or reduce its level is, also, voluntary and relies on the choses made by management boards (Majumdar and Singh, 2021). Therefore, this destructive event provides great explanation on the level of disclosure's impact on the firms' board of directors and managers. Corporate governance (CG) plays crucial role in shaping the structure of COVIID-19 disclosure. The CG structure can monitor the management's role in the disclosure process. Strong CG has an impact on the managers' decision on the level of disclosure of COVID-19 related information and on the strategies performed to extend such levels of disclosure (Allegrini and Greco, 2013: Elmagrhi *et al.*, 2019; Elmarzouky *et. al.*, 2021b). Based on agency theory, strong CG can alleviate the agency problems that arise between the firms' management and stakeholders through extending the level of disclosure of COVID-19 pandemic related information.

However, when considering the recent scandals and crises (e.g. WorldCom , Enron , and the financial crises) which indicated the weakness of firms' CG structures (Akhtaruddin *et al.*, 2009; Akhtaruddin and Haron, 2010; Hussain, 2012; Othman *et al.*, 2014), the Audit Committee (AC)'s responsibility and role has increased in monitoring the duties of the firm's board of directors and in ensuring the quality of financial reporting provided to stakeholders (Al-Matari, 2022). In this regard, Fama and Jensen (1983) argue that, by monitoring the management and directors' decisions, the AC plays a critical role in enhancing the CG's effectiveness. In addition, the AC supports the board of directors in monitoring the firms' reporting policy to enhance its clarity, relevance and completeness of the information disclosed to stakeholders (Arcay and Vazques, 2005; Allegrini and Gerco, 2013; Samaha *et al.*, 2015). Consequently, many regulatory bodies (e.g., Blue Ribbon Committee (BRC, 1999), the Securities and Exchange Commission (SEC, 1999), and the Smith report (2003)) have asked to increase the AC's control role in the firms to provide an accurate evaluation of the decisions taken by directors and management to avoid the convergence of interests between management, board of directors and stakeholders (Rezaee *et al.,* 2003; Samaha *et al.,* 2015).

Therefore, during the COVID-19 pandemic, the AC's role increased to monitor the board of directors; and the management's behaviours toward what will be disclosed, more particularly, how it will be disclosed; and will be expected to enhance the quality of firms' reporting policies (Samaha *et al.,* 2015). Accordingly, AC represents the cornerstone in any effective CG structure through which the firms signal their ethical commitments to extend the disclosure of COVID-19 related information to various stakeholders (Othman *et al.,* 2014).

The Saudi Corporate Governance Code (2017) (see Article 55) declares that Saudi Arabian firms should establish audit committees in their CG to provide effective monitoring over the preparation of financial reports. In addition, the CG organized some matters that Saudi Arabian non-financial firms needed to consider to achieve effective monitoring (such as, the number of members, the number of meetings, the independency of member…etc.). Sommer (1991) and Abbott and Parker (2000) state that the AC's presence does not always guarantee the efficient monitoring of the board's duties. There should be detailed characteristics of such a committee to achieve this outcome.

Many studies have discussed the role of AC characteristics in mitigating the agency problem (Ho and Wang, 2001; Chung *et al.*, 2004; Akhtaruddin and Haron, 2010; Samaha and Dahawy, 2011; Li *et al.*, 2012; Njokuji and Chukwu, 2022). Further, according to stewardship theory, strong CG, through an effective AC, motivates firms to disclose the negative impact of the COVID-19 pandemic to reflect the firms' actual performance (Donaldson and Davis, 1991; Ezat, 2020). Therefore, this study's third objective is to examine the relationship between AC characteristics and the disclosure of information related to the COVID-19 pandemic.

Numerous studies have argued the economic consequences of voluntary disclosure. However, few studies have discussed its impact on firm value. Insufficient studies have examined the expected impact of the disclosure of COVID-19 pandemic related information on firm value. Previous studies applied various proxies of the economic consequences of voluntary disclosure such as: market beta (Clarkson and Thompson, 1990); stock returns (Bushee and Leuz, 2005); stock prices (Lai *et al.*,2007); the number of analysts (Bushee and Noe, 2000); the cost of equity capital (Botosan and Plumlee, 2002); the cost of debt capital (Wang *et al.*, 2008); and firm value (Baek *et al.*, 2004). This study focuses on firm value as a proxy for the economic consequences of the disclosure of COVID-19 pandemic related information. The disclosure in the firms' annual reports of information related to the COVID-19 pandemic can aid the stakeholders to reevaluate the firms' values and can aid them to make rational decisions about their future in these firms. Stakeholders can obtain the required information for valuable decision making which, in turn, reduces the information asymmetry problem and, hence, increases the firm value. Both legitimacy and signalling theories can explain the impact of the disclosure of COVID-19 related information on firm value. Accordingly, this study's fourth objective is to examine the potential impact of the disclosure of COVID-19 pandemic related information on the listed Saudi Arabian non-financial firms' value.

Several points have motivated the researcher to conduct this study in the context of Saudi Arabia. First, the Saudi capital market authority's willingness to achieve high-quality financial reporting and disclosure through high quality audit has led it to introduce restricted regulations. One of these regulations is the 2007 CG Code (CGC) which obligated Saudi Arabian firms to audit the disclosure of their information both internally and externally. Accordingly, the Saudi Arabian CGC requires Saudi Arabian firms to establish ACs to achieve the required quality of disclosure through the AC's monitoring role. Therefore, there is a need to investigate the AC's effectiveness and its impact on the disclosure of COVID-19 pandemic related information. Second, the lack of academic studies which explored the disclosure of such information has given the researcher greater motivation to conduct this study. Stakeholders need to understand the impact of COVID-19 on various firms' aspects to evaluate their investment positions. Therefore, the determination of the content of the disclosed information relating to the COVID-19 pandemic and the detailed topics disclosed in the firms' annual reports will aid stakeholders to meet this goal.

Finally, few studies' findings have argued the importance of disclosing information related to the COVID-19 pandemic. However, these studies have paid insufficient attention to investigate empirically the determinants of such disclosure. Accordingly, by examining the AC characteristics as one of the most important disclosure's determinants, this study will fill the existing academic gap.

Turning to this study's objectives, the findings indicate that most listed Saudi Arabian non-financial firms disclose in their annual reports various topics and contents about the COVID-19 pandemic. Accordingly, these meet this study's first and second objectives. In addition, the findings indicate that some of the AC characteristics have positive impacts on the disclosure of information related to the COVID-19 pandemic. These findings suggest that AC effectiveness plays a critical role in extending the level of disclosure of such information. Accordingly, this study's third objective is met. Moreover, the findings demonstrate the positive impact of the disclosure of COVID-19 related information on the listed Saudi Arabian non-financial firms' value. Accordingly, this reveals the economic consequences of the disclosure of such information and, therefore, this study's fourth objective is met.

This study contributes to the existing literature in several ways. First, it sheds light on the content of the disclosed information relating to the COVID-19 pandemic. This study explores the level of such disclosure in the Saudi Arabian environment either at the firms' level or at the sectors' level. Further, this study examines in detail the content of the COVID-19 information disclosed by the listed Saudi Arabian non-financial firms to determine the main topics of such disclosed information. In addition, this study determines the main sections of listed Saudi Arabian non-financial firms' annual reports that include the information related to the COVID-19 pandemic. To a large extent, these in-depth analyses have paved the way for future research studies to examine the disclosure of information related to the COVID-19 pandemic. Second, many studies have justified the need to disclose such information. However, few studies have aimed to investigate empirically either the antecedents of the disclosure of information related to the COVID-19 pandemic or its economic consequences in the developing countries. By investigating the dual impact of the disclosure of information related to the COVID-19 pandemic, this study is one of the pioneers in this field that. Third, although many previous studies have discussed AC characterises' impact on voluntary disclosure, there remains many other AC characteristics needed to be examined widely. Therefore, this study contributes to the academic accounting studies by investigating (individually and aggregated) eight various AC characteristics in one model.

The rest of the paper is outlined as follows. Section 2 identifies the theoretical framework and reviews the related literature that support the formulation of the hypotheses. Section 3 presents the research methodology. Section 4 analyses and discusses this study's main findings. Section 5 introduces additional analysis to support the main findings. Finally, section 6 sets out the conclusions.

2. Theoretical Framework, Literature Review and Formulation of the Hypotheses

Agency theory assumes that the firm's management possess valuable information and, therefore, are better informed than the stakeholders who may not hold the required information to make rational decisions. Accordingly, there has been a conflict in interests between the firm's management and its stakeholders which has led to the asymmetry information problem. Effective AC can lessen this conflict through extending the control role over the decisions taken by the firm's management and board of directors. One of these decisions is the voluntary disclosure of information related to the COVID-19 pandemic. AC encourages firms to extend the level of such information to better inform stakeholders (Elmarzouky *et al.,* 2021b) and, thereby, mitigates the information asymmetry problems. Accordingly, based on agency theory, effective audit committee characteristics have a positive impact on the disclosure of information related to the COVID-19 pandemic.

In addition, the firm's management is motivated to signal their current and future conditions through narrative disclosure in the firm's annual reports. Signalling theory encourage firms to extend their level of disclosure of such information to signal their responses to the outbreak of the COVID-

19 pandemic. The AC can organise the management's role in disclosing the information related to the COVID-19 pandemic. Through monitoring the various procedures followed by the firm to deal and overcome the effects of the COVID-19 pandemic, an effective AC increases the management's motivation to disclose more such information.

Further, based on stakeholder theory, the firm is motivated to inform various stakeholders about their current and future positions regarding the COVID-19 pandemic. Through extending and analysing the level of disclosed information related to the COVID-19 pandemic, an effective audit committee can assist the stakeholders by helping them to make rational decisions.

However, stewardship theory assumes that there has been a goal congruence between the firm's management and stakeholders. Therefore, the management acts in line with the stakeholders' interests by disclosing all the current and expected impacts of COVID-19 pandemic even if this information impacts badly on the firm. The management shares the negative information with various stakeholders to aid them to understand the firm's real position. An effective AC increases the management's motivation to disclose the information related to the COVID-19 pandemic through the role of advising the members of the board of directors.

Finally, institutional theory postulates that firms have an ethical commitment to the society in which they operate (DiMaggio and Powell, 1983; Scott, 2001; Campopiano and Massis 2015). Firms should respond proactively to any sudden and extraordinary event, such as the COVID-19 pandemic, through disclosing any types of related information even if these types may affect the firms' performance in maintaining the society's values. Through their controlling role on the managements' behaviours, effective ACs can achieve this commitment and encourage firms to extend their level of COVID-19 pandemic disclosure.

Recently, many researchers have responded to COVID-19 pandemic and aimed to examine various aspects that have occurred over the period. Several studies have investigated the investors' reactions towards COVID-19 pandemic announcements through the relationship between the COVID-

19 data and the stock market's reactions. Their findings show that the negative and significant impacts of the COVID-19 pandemic have resulted in reduced stock returns and increased stock volatility (Erdem, 2020; Mazur *et al.*, 2020; Salisu and Vo, 2020; Hossain, 2020; Wang and Xing, 2020a; Broadstock *et al.*, 2020). Further, some studies have examined the economic consequences of the COVID-19 pandemic on the financial markets, financial institutions and different industry sectors (e.g., Goodell, 2020; Donthu and Gustafsson, 2020); on financial performance pre- and post- the COVID-19 pandemic (e.g. Khatib and Nour, 2021); on environmental sustainability, CSR and marketing (e.g. He and Harris, 2020; Severo *et al.*, 2021); and on audit quality (e.g. Albitar *et al.*, 2020). In addition, some studies have discussed the theoretical perceptions of the COVID-19 pandemic on the future reporting of non-financial firms (e.g., Hassan *et al.*, 2021), and on CG (Koutoupis *et al.*, 2021).

Few studies have investigated the disclosure of information related to the COVID-19 pandemic. Stephany *et al.* (2020) have collected from the Electronic Data Gathering, Analysing, and Retrieval System (EDGAR) database all the 10-K filling published in 2020 that contained a risk factor section under which all the types of risks encountered by the firms are discussed and illustrated to stakeholders. In this study, the researcher applied Latent Dirichlet Allocation (LDA) as a data mining approach to determine all the risk topics in the firms' reports. LDA counts, also, the number of "corona" and "covid" words per report to determine the disclosure in the risk factor section. The findings indicate that the risk sections of the firms' annual reports present forward-looking perceptions of the expected economic risks related to the COVID-19 pandemic that affect developments in the stock market. In addition, such COVID-19 pandemic perceptions vary significantly between different sectors.

In the same vein, Wang and Xing, (2020a) have investigated the informativeness of COVID-19 disclosure and analysed both conference calls and the 10-K filling published in the first quarter of 2020 to. For conference calls, they employed a sample of earnings conference calls that referred to the key words related to COVID-19 and Coronavirus during two sessions, namely, presentation and Q and A. To measure the level of COVID-19 disclosure in each session, they counted the numbers of times that these words are mentioned. Their findings indicate that investors are more likely to react to COVID-19 discussion performed during the presentation of the conference calls but not to those that happened in the Q and A session. This suggests that there is a significant association between market reaction and COVID-19 pandemic discussion performed only in the presentation session. Turning to the 10-K filing, this study depends on 2320 annual reports that include COVID-19- related disclosure based on counting the number of words related to COVID-19 and Coronavirus. The findings reveal that the disclosure of COVID-19 pandemic related information is associated significantly with short -term abnormal returns. This suggests that such disclosure is generally informative to the equity market. Further, the findings confirm the informativeness of the risk factor section since it discusses many topics related to the COVID-19 pandemic.

Moreover, Wang and Xing (2020b) have explored the firms' COVID-19 disclosure behaviours in SEC fillings during the first quarter of 2020. In terms of analysing the disclosure of COVID-19 related information, this study uses SeekEdger to search for keywords related to COVID-19 and Coronavirus to analysis the disclosure of COVID-19. In terms of the firms' annual reports, there are 8639 filings disclosing COVID-19 related information and these confirm the importance of the COVID-19 pandemic and its great economic impact. In addition, by using the number of disclosed words, this study examined the content of COVID-19 disclosure in the firms' annual reports. The risk factor section contains the highest level of COVID-19 disclosure.

In the UK, by measuring the level of COVID-19 disclosure in the CSR reports for the FTSU non-financial firms listed in 2020, Albitar *et al.*, (2021) aimed to illustrate the association between the disclosure of COVID-19 related information and the assurance of CSR reports. Their study uses an automated textual analysis technique to analyse the CSR's narrative sections of the firms' annual reporting. To measure the level of COVID-19 disclosure, they depends on wordlist derived from the UK Government's COVID-19 Secure Guidelines. The findings indicate that there is a positive association between the existence of independent assurance and the disclosed information related to the COVID-19 pandemic. Further, the level of COVID-19 disclosure increases when the firm's annual report is assured by one of the Big4 audit firms. The findings reveal, also, that when compared to small firms, large firms have a higher level of COVID-19 disclosure when assured by one of the Big4 audit firms.

Almarzouky *et al.,* (2021a) have examined CG's moderated effect on the relationship between COVID-19 related information and the level of financial disclosure by the UK FTSU non-financial firms in 2020. Like the previous study, their study uses a computerised textual analysis that depends on computerised software, constructed by Lancaster University, to extract the words related to COVID-19 disclosure in the listed firms' annual reports. The findings demonstrate that there is a positive association between the level of COVID-19 disclosure and the level of performance disclosure. In addition, the findings provide empirical evidence of the moderating impact of both board independence and gender diversity in enhancing the relationship between COVID-19 and firm disclosures.

Similarly, Elmarzouky *et al.,* (2021b) have tested the relationship between the level of COVID-19 disclosure and uncertainty in the annual reports of the UK-FTSU non-financial firms in 2019. Their study depends on Corporate Financial Information Environment (CIEF) software to analyse the narrative sections of the sampled firms' annual reports. They uses the same measurement as Albitar *et al.,* (2021) for the levels of COVID-19 voluntary disclosure in the firms' annual reports. This depends on a wordlist derived from UK Government's COVID-19 Secure Guidelines. Their study's findings show that the level of COVID-19 disclosure varies remarkably between the UK's different industries. Further, there is a positive association between both the level of COVID-19 disclosure and uncertainty in the firms' annual reports.

Moreover, Majumdar and Singh (2021) have explored the level of risk sentiment of the disclosure of COVID-19 related information in the annual reports of the USA publicly listed IT firms in 2020. Further, their study has examined the relationship between the level of COVID-19 disclosure in the annual reports' risk sections and information asymmetry as measured by the bid-ask spread. By using the SeekInf search facility, the annual reports has analysed for all the IT firms that include the term COVID-19 or its variations. The findings indicate that IT firms are less likely to disclose information related to the COVID-19 pandemic in their annual reports. In addition, when compared to the other industries that have been affected by the COVID-19 pandemic, the findings reveal a low level of risk sentiment related to the COVID-19 pandemic in the IT firms' annual reports. Further, it has been demonstrated that the annual reports' disclosure of information about the COVID-19 pandemic improves the IT firms' information asymmetry situation.

In Italy, to determine the impacts of the COVID-19 pandemic on financial disclosure and the firms' going concerns, Tibiletti *et al.* (2021) have examined the narrative disclosure in the Italian listed firms' annual financial statements at the end of 2020. Their study depends on the manual content analysis to extract the paragraphs related to the disclosure of COVID-19 related information in both the explanatory notes and the management reports. Their findings demonstrate that most of the listed firms disclosed negative judgments about their future performance. However, there is no significant discussion about their going concerns. Detailed topics are discussed in terms of sectors to determine the COVID-19 pandemic's impact on the listed firms. Their findings indicate that industrial, energy, and consumer products are among the sectors that have been greatly affected by the COVID-19 pandemic.

In considering the firms' partisan positioning in the American context, Benton *et al.*, (2022) have investigated the relationship between the disclosure of COVID-19 risks and the partisanship of their political giving. Based on an analysis of the S&P 500 firms' conference calls for during the first quarter of 2020, their study depends on a constructed word list to measure the voluntary disclosure of COVID-19 risks. The OLS analyses report a significant association between the amount of COVID-19 risk discussions in the earnings calls and the sampled firms' democratic position. When firms are more likely to hold a democratic patrician position, they are less likely to voluntary disclose the risks related to the COVID-19 pandemic.

Several studies (e.g. Healy and Palepu, 2001; Core, 2001; Botosan and Plumlee, 2002; Haji and Mohd Ghazali, 2012; Graham *et al.* 2005) have investigated the economic consequences of voluntary disclosure. However, the various authors have not paid sufficient attention to the impact of the disclosure of COVID-19 pandemic related information on firm value.

Based on the above discussion, the researcher's review of the previous studies has indicated that a lack of investigation in firstly, exploring the various content of the disclosed COVID-19 information to determine whether such disclosure is meaningful or represents only general disclosure. Second, there has been insufficient examination of the impact of the AC characteristics on the voluntary disclosure of COVID-19 related information to establish if an effective AC can extend the level of the disclosed COVID-19 pandemic related information. Third, there has been insufficient investigation of the economic consequences of the disclosure of COVID-19 pandemic related information to reveal COVID-19's impact on firm value.

Consequently, there is a need for more studies to investigate the AC's effectiveness in times of extraordinary events (Koutoupis *et al.,* 2021) and the expected impact of the voluntary disclosure of COVID-19 related information on firm value. Therefore, in this study, the researcher seeks to fill the gap through, studying the disclosure's level of COVID-19 pandemic related information; examining the impact of AC characteristics on such disclosure; and testing the expected effect of the disclosure of COVID-19 pandemic related information on the listed Saudi Arabian non-financial firms' value during 2020.

Therefore, the researcher formulated the following hypotheses to achieve the main objectives of this study and are discussed in the following:

2.1 Examining the Impact of Audit Committee Characteristics on the Disclosure of COVID-19 Pandemic Related Information

Due to their various responsibilities, AC have a major impact on the effectiveness of firms' CG structures. One of the most important responsibilities relates to the quality of the information disclosed in firms' annual reports. In developing countries, such as Saudi Arabia, the capital markets rely basically on the information disclosed in the annual reports to reduce the information gap between the firms' management and various stakeholders. One way to achieve this goal is to construct a strong CG structure that may protect firms from massive events such as the COVID-19 pandemic.

AC play a key role in enhancing the efficiency of Saudi Arabia's CG structure through their effective control over the various duties of the firms' board of directors and management. In addition, they ensure from the ethical behaviours of Saudi Arabian firms and encourage them to improve their regulatory interests by motivating them to disclose to their stakeholders all the related information about the COVID-19 pandemic. Further, AC have valuable roles in explaining most of the critical accounting issues and in choosing the accounting policies and procedures which increase their influence over the firms' behaviours toward financial reporting and disclosure (Khan *et al.,* 2012).

The Saudi Arabian CG code, launched in 2007, requires all listed Saudi Arabian firms to set up an AC with detailed responsibilities and duties to ensure the quality of their disclosed information and financial reporting. Article (54) states that the number of audit committee members should not be less than three or more than five with at least one member specialises in accounting and finance matters. The AC should not include any executive director and should have at least one independent member among the appointed members. Further, the AC chairman should be, also, independent. In addition, Article (57) states that the AC convenes periodically with at least four meetings annually.

Accordingly, AC's effectiveness in performing the accounting and financial duties is basically contingent on the achievement of specific AC characteristics. Many studies' findings have revealed the importance of AC characteristics in attaining the AC's efficiency (Madi *et al.,* 2014). Therefore, to implement its responsibilities effectively when the AC is established, some criteria should be considered such as: the appointed number of AC members, the number of meetings to be held in the year, the number of financial and accounting experts appointed to the AC, the number of accounting and financial qualifications, obtained by the AC's members, and the directorships of the AC's members. Therefore, this study aims to investigate the impact of AC characteristics on the listed Saudi Arabian non-financial firms' disclosure of COVID-19 pandemic related information.

Many studies (e.g. Forker, 1992; Felo *et al.*, 2003; Yuen et al., 2009; Akhtaruddin and Haron, 2010; Alkadi, 2012; Li *et al.*, 2012; Madi *et al.*, 2014; Samaha *et al.*, 2015; Appuhami and Tashakor, 2016; Sellami and Fendri, 2017; Agyei-Mensah, 2019) have examined the association between AC characteristics and voluntary disclosure. However, these studies' empirical findings are mixed. Samaha *et al.*, (2015) have performed a meta – analysis study to explain the reported mixed findings from investigating the impact of audit committee characteristics on voluntary disclosure. They have mentioned that these findings are restricted to only one country and, therefore, this makes the generalisation of these findings meaningless and hinders the benefits from implementing the theoretical developments discussed in such studies. In addition, few studies have demonstrated the impact of audit committee characteristics on voluntary disclosure in the context of Saudi Arabia (Al-Aali *et al.*, 2014; Habbash, 2015; Bin-Ghanem and Ariff, 2016; Omar *et al.*, 2018; Buallay and Al-Ajmi, 2020; Al-Matari, 2022). Consequently, this study aims to fill the research gap by investigating the association between the audit committee characteristics and the voluntary disclosure of COVID-19 pandemic related information in the context of Saudi Arabia.

Consequently, the hypotheses, which the researcher formulated to test the impact of various audit committee characteristic on the disclosure of COVID-19 pandemic related information, are discussed in the following:

2.1.1 AC Size

AC size refers to the number of members either outside or inside the board of directors' members who should have the adequate skills and experience required to perform the monitoring role over the board members and management and to ensure the quality of the firm's disclosed information and financial reporting. To carry out these duties effectively, the AC should possess the adequate authority and be characterized by full independency.

On the one hand, some authors have embraced the resource dependency theory to indicate the benefit of increasing the AC's size. They have demonstrated that the larger the AC size the greater the knowledge, experience, skills, and diversity in views among its members. This results in solving the complicated problems efficiently and, through effective monitoring, increases the possibility of delivering meaningful scrutinized financial reporting (Bedard and Gendron, 2010, Li *et al.,* 2012; Madi *et al.,* 2014; Buallay and Al-Ajmi, 2020; Klein, 2002). Bedard *et al.,* (2004) have indicated the magnitude of increasing the AC's size in overcoming the problems related to the financial reporting process. Based on the above arguments, the larger the AC's size, the higher the level of the firm's disclosure of COVID-19 related information.

On the other hand, increasing the AC's size of AC may cause delays in making decisions due to the diversity between the members and the diffusion in responsibilities which may lead to conflicting views and weaken the communication process (Karamanou & Vafeas, 2005; Lin *et al.,* 2008; Othman *et al.,* 2014). This view embraces the agency theory which indicates the AC members' self -interests that may lead to problem and hinder the efficiency of making decisions (Buallay and Al-Ajmi, 2020). This suggests that increasing the AC's size may delay the decision about the disclosure of COVID-19 related information and result in reducing the level of such disclosure.

The empirical studies have shown mixed results about the impact of AC size on voluntary disclosure. Some studies have demonstrated that AC size has a positive and significant impact on voluntary disclosure (e.g Felo *et al.,* 2003; Madi *et al.,* 2014; Appuhami and Tashakor, 2016; Buallay and Al-Ajmi, 2020), whilst other studies' findings show this relationship to be insignificant (e.g. Othman *et al.,* 2014; Sellami and Fendri, 2017; Agyei-Mensah, 2019). Therefore, according to resource dependency and agency theories, the researcher formulated the following first hypothesis:

***H1*: There is a significant association between AC size and the firm's disclosure of COVID-19 pandemic related information.**

2.1.2 AC Meetings

AC meetings refers to the persistence of AC members to carry out their duties through the number of meetings held annually. An AC, which meets more frequently, enables their members to execute their monitoring role efficiently because they are more diligent and informed about the accounting and financial issues that the firm has encountered and they have more time to discuss these issues and to provide the required consultation and advise about any arising related problems and, therefore, they ensure the adequacy of the information disclosed by the firm (Karamanous and Vefeas, 2005; Othman *et al.,* 2014).

Yang and Krishnan (2005) and Krishnan and Visvanathan (2007) have indicated the importance of increasing the number of AC meetings to monitor the firm's management effectively and to detect the issues related to fraud, discretionary accruals and the weakened internal controls that may hinder the quality of the disclosed information. Accordingly, there should be adequate meeting times assigned to the critical issues (e.g., the disclosure of COVID-19 related information) to keep AC members more informed and proactive about these issues (Raghunandan and Rama, 2007; Appuhami and Tashakor, 2016; Omar *et al.,* 2018).

Based on signalling and stakeholder theories, firms, which have more AC meetings, provide a good signal to stakeholders about their members' diligence and their commitment to the disclosure of COVID-19 related information to aid stakeholders to make rational decisions based on the analytical views discussed at the frequent AC meetings. Consequently, the frequency of meetings is one of the crucial elements in achieving the efficiency of the firm's activities and in dealing with major issues such as the disclosure of COVID-19 related information (Buallay and Al-Ajmi, 2020). Hence, AC diligence represents one of the effective AC characteristics.

Empirical findings on the impact of AC meetings on voluntary disclosure are inconclusive. While some studies' findings show that this impact is significantly positive (e.g. Li *et al.,* 2012; Appuhami and Tashakor, 2016; Agyei-Mensah, 2019; Buallay and Al-Ajmi, 2020), other studies' findings show that it is insignificant (e.g. Felo *et al.,* 2003; Li *et al.,* 2012; Othman *et al.,* 2014; Njokuji and Chukwu, 2022). Accordingly, based on signalling and stakeholder theories, the researcher formulated the following hypothesis to test the impact of AC diligence on firms' disclosure of COVID-19 related information:

H2: **There is a significant association between AC Meetings and the firm's disclosure of COVID-19 pandemic related information.**

2.1.3 AC Independence

AC independence refers to the number of AC members who are free from influence and have no personal or financial relationship with the firm. Therefore, they perform their duties without any pressure either from the firm's management or the members of the board of directors (Mangena and Pike 2005; Pucheta-Mart´ınez and De Fuentes 2007; Appuhami and Tashakor, 2016). To increase the effectiveness of AC, the members should be characterized by full independence since that achieves their effective monitoring role over the management and the board of directors' duties (Carcello and Neal, 2003; Lie *et al.,* 2012). Accordingly, the presence of independent members on the AC enhances the AC's competence and effectiveness and, hence, ensures the reliability of the firm's financial reporting and the creditability and quality of its disclosed information (Carcello and Neal, 2003; Mangena and Pike, 2005; Omar *et al.,* 2018; Buallay and Al-Ajmi, 2020).

Stewardship theory assumes that AC members have no economic or personal interests in the firms (Madi *et al.,* 2014). This suggest that there is goal congruence in interests between the firm's management and the AC's independent members. Accordingly, the AC's independent members are more likely to increase its effectiveness and maintain the management's interests through motivating the disclosure of any negative impact of COVID-19 to stakeholder to protect the management from any blame. Further, they maintain the stakeholders' interests through disclosing the expected impact of the COVID-19v pandemic to reflect the firm's real current situation.

In addition, agency theory postulates that the AC's monitoring role of the firm's management can be enhanced when they are more independent. Management can withhold valuable information (e.g., COVID-19 pandemic related information) from stakeholders which leads to the information asymmetry problem. Independent AC members can mitigate the management's opportunities to withhold valuable information through motivating them to disclose to stakeholders more accurate and timely information about the COVID-19 pandemic (Madi *et al.*, 2014).

There are mixed findings about the association between AC independent members and voluntary disclosure. On the one hand, the findings of studies by Akhtaruddin and Haron, (2010); Madi *et al.*, (2014); Appuhami and Tashakor, (2016); Sellami and Fendri, (2017); Agyei-Mensah, (2019); and Buallay and Al-Ajmi, (2020) have indicated a significant positive relationship. On the other hand, the findings of Li *et al.*, (2012); Felo *et al.*, (2003); Othman *et al.*, (2014); Njokuji and Chukwu, (2022) show an insignificant relationship. Accordingly, based on the stewardship and agency theories, the researcher formulated the following third hypothesis:

***H3*: There is a significant association between AC independence and the firm's disclosure of COVID-19 pandemic related information.**

2.1.4 AC Expertise

AC expertise refers to the proportion of AC members who have accounting and financial backgrounds (Appuhami and Tashakor, 2016). The AC deals with complicated accounting and financial issues that require high levels of recent and relevant accounting and finance experience (Raghunandan and Rama, 2007; Lie *et al.*, 2012). Financial expertise provides the required support to the AC to better understand the accounting and finance issues raised by the firm's management and external auditor, these matters influence the AC's effectiveness (Buallay and Al-Ajmi, 2020; Boshnak, 2021). In this vein, Knapp (1987) and Levitt, (2000) argue the importance of including a financial expertise in the AC structure to reflect the creditability in the AC's duties about the technical auditing and financial reporting which increase the AC's effectiveness. Accordingly, financial expertise enables the AC's members to communicate effectively with management and to ask challengeable questions and provide highly professional discussions with auditors about the financial reporting that increases the reliability and creditability of the firm's disclosed information (Madi *et al.*, 2014; Buallay and Al-Ajmi, 2020).

According to institutional theory, firms have an ethical commitment to their society. This commitment motivates the firm's AC to act in proactive way to any sudden event (such as the impacts of the COVID-19 pandemic) and to analyze the influence of such a pandemic on the firm's accounting and finance issues. This require the AC to appoint at least one accounting and finance expert to better indicate the expected influence of COVID-19 pandemic on the firm's financial position and the relevant information related to the COVID-19 pandemic that needs to be disclosed to stakeholders to enhance their awareness. This suggests that the existence of an AC financial expert results in the higher level of disclosure in relation to the information about the COVID-19 pandemic.

On the empirical front, there are mixed findings. On the one hand, Felo *et al.*, (2003), Sellami and Fendri, (2017) and Agyei-Mensah (2019) have indicated that there is a positive and significant association between AC financial experts and voluntary disclosure. On the other hand, Li *et al.*, (2012), Buallay and Al-Ajmi, (2020), have indicated a negative and significant association between them. However, Akhtaruddin and Haron, (2010), Othman *et al.*, (2014), Madi *et al.*, (2014), Appuhami and Tashakor, (2016) and Njokuji and Chukwu, (2022) have failed to provide any empirical evidence that AC financial experts impact on voluntary disclosure. Therefore, based on institutional theory, the researcher formulated the following fourth hypothesis:

***H4*: There is a significant association between AC expertise and the firm's disclosure of COVID-19 pandemic related information.**

2.1.5 AC Education

AC education refers to the AC members' accounting and finance qualifications. These qualifications range from bachelor, master, and PhD in accounting and finance to holding top professional certificates such as CPA, CMA, ACCA, CIMA, CFA, CIA, SOCPA, IFRS diploma …etc. Holding such high accounting and finance qualifications enables AC member to perform their duties efficiently.

Many regulatory bodies (such as the Securities and Exchange Commission (SEC)) and accounting firms (such as the Performance Work Statement (PWS)) have demonstrated the importance of AC members holding accounting and finance qualifications to ensure the monitoring of financial reporting and the creditability and quality of disclosure (Boshnak, 2021). In addition, many studies have argued the critical role of educated AC members. Davidson (2004) reports that AC members, who have accounting and finance knowledge, have a significant impact on a firm's financial performance. In the same vein, Schmidt and Wilkins (2013) emphasis the necessity of AC members having accounting and finance education to execute their duties. Abad and Bravo (2018) mention that AC members, who have insufficient accounting and financial education, may lead to poor performance and knowledge. Accordingly, this means that more investigation is required of the impact of AC accounting and financial education on voluntary disclosure. Further, increasing the AC's number of members, who possess very good accounting and finance education, increases the efficiency of using the firm's resources (Sweiti, 2017).

Based on agency theory, an AC whose members possess very good accounting and finance education, reduces the information asymmetry between the firm's stakeholders and management. Highly educated members can determine the accounting and finance impacts arising from the COVID-19 pandemic. Therefore, an AC, which has such members, emphasizes the importance of disclosing to stakeholders the information related to the COVID-19 pandemic to clarify the resulting accounting and finance outcomes and to determine the expected future consequences. Accordingly, stakeholders, who are presented with the critical information related to COVID-19 pandemic, can determine rationally the firm's future and, in turn, this reduces the information asymmetry raised with the management.

In addition, firms, which include well educated members on their ACs, provide good signals to stakeholders about these firms' abilities to overcome and manage the consequences of a sudden event such as the

COVID-19 pandemic. AC educated members motivate management to disclose information related to COVID-19 pandemic whether it has either a positive or negative influence to reflect the firms' procedures to address this pandemic. Therefore, based on signalling theory, firms, who have AC educated members, are more likely to increase the level of disclosure of COVID-19 related information.

Previous studies examined very rarely the impact of AC education on voluntary disclosure. Lo *et al.*'s (2010) and Boshnak's (2021) findings show that AC education has a positive impact on audit quality. Consequently, due to the previous lack of investigation on AC education's impact on voluntary disclosure, in this study. the researcher concentrates on agency and signalling theories to formulate the following fifth hypothesis:

***H5*: There is a significant association between AC education and the firm's disclosure of COVID-19 pandemic related information.**

2.1.6 AC Directorship

AC directorship refers to the number of AC members who sit on more than one firm's board or committees. Their membership of more than one board increases the burden of AC members in terms of time consumed and effort performed in monitoring the firm's management (Madi *et al.*, 2013; Othman *et al.*, 2014).

A directorship provides members with additional experience of the firm's policies, practices and procedures on which they sit and this results in better performance (Madi *et al.*, 2014; Al Lawati *et al.*, 2021). Further, sitting on the board of more than one firm enables members to determine the various management styles when dealing with sudden events such as the COVID-19 pandemic and in recognizing the various monitoring styles in different firms (Madi *et al.*, 2014). This motivates them to share such different knowledge and spread various ideas and suggestions about the different issues that have occurred. However, multiple directorships may harm the effectiveness of their monitoring role because directors are too busy and have no time to carry out this role effectively (Fich and Shivdasani, 2006; and Liu and Sun, 2010).

Based on institutional theory, AC should respond proactively to the sudden events, such as the COVID-19 pandemic, because of its ethical commitment to the firm's board and to society. To achieve this, firms are motivated to appoint AC members, who sit on more than one board or committee, since those members have more experience about how different firms are dealing with the COVID-19 pandemic. AC members, who hold too many directorships, provide their firms with various pieces of advice and knowledge about any critical issues which, in turn, enables these firms to achieve their commitments to society. One of the most recent critical issues is the disclosure of COVID-19 related information. Therefore, AC members, who sit on more than one board, gain more appropriate experience about the monitoring role through asking the management more valuable questions which, in turn. may improve the financial reporting and disclosure outcomes (Madi *et al.*, 2014; Al Lawati *et al.*, 2021). Consequently, AC members with multiple directorships enhance the communication with auditors; control earnings management efficiently; and improve the monitoring role (Al Lawati *et al.*, 2021). By extending the level of disclosure of COVID-19 related information, this increases the quality of disclosed information in such unexpected circumstances.

In terms of the association between AC directorship and voluntary disclosure, the findings of previous studies have been mixed. Many studies report that there is either positive and significant association (e.g. Madi *et al.*, 2014) or a negative and significant association (e.g. Othman *et al.*, 2014). However, Al Lawati *et al.*, (2021) failed to find any empirical evidence of the impact of AC directorship on voluntary disclosure. Based on institutional theory, the researcher formulated the following sixth hypothesis:

***H6*: There is a significant association between AC directorship and the firm's disclosure of COVID-19 pandemic related information.**

2.1.7 AC Remuneration

AC remuneration refers to the sum of money gained by AC members as rewards for their duties. Firms require AC members to execute unique duties to increase the AC's effectiveness. These duties (such as issues related to financial reporting, discussing internal and external auditing remarks, determining the firm's disclosure policies, detecting fraud and earnings management, and describing the internal control systems, etc…) require unique members to implement them efficiently and require more time and efforts from AC members who should be compensated by the firms. Habbash *et al.*, (2013) argue that AC members are more committed and more likely to monitor management when they receive more remuneration. In addition, Engle *et al.,* (2010) document the positive and significant relationship between compensation and AC members' expertise.

The amount of remuneration paid to AC members varies considerably between firms according to the complexities of the firms' conditions, policies and activities (Puspasari and Sujana, 2021). Therefore, firms, which are characterized by high risk factors (e.g. COVID-19), demand an intensive monitoring role of the firm's financial reporting process to ensure the quality of their disclosed information and, hence, to their AC members are paid a high amount of remuneration (Engel *et al.,* 2010).

Agency theory suggests that there is a conflict in interests between the firm's management and the board's members. One way to mitigate this conflict is by giving remuneration (Puspasari and Sujana, 2021). Firms increase the amounts of their remuneration paid to AC members in recognition of the unique duties that they perform. In turn, AC members are motivated by large amounts of remuneration to increase their monitoring role and to ensure the increasing level of disclosure of COVID-19 related information to reduce the information asymmetry between the firm's stakeholders and management.

In addition, based on stakeholder theory, firms are more likely to inform their stakeholders about the impact of the COVID-19 on their operations and positions. Therefore, firms appoint highly educated AC members with huge experience in the field of accounting and finance who highly compensated to deal with such extraordinary situations and to guarantee the disclosure of COVID-19 related information. Accordingly, this suggests that the higher the AC remuneration, the higher the disclosure level of COVID-19 pandemic related information.

Few previous studies have illustrated the relationship between AC remuneration and voluntary disclosure. Engle *et al.*'s (2010) findings provide evidence of the positive and significant relationship between AC remuneration and the demand for monitoring of financial reports.

Based on both agency and stakeholder theories, the researcher formulated the following seventh hypothesis:

***H7*: There is a significant association between AC remuneration and the firm's disclosure of COVID-19 pandemic related information.**

2.1.8 AC Chairman's Expertise

The AC chairman's expertise refers to the accounting and financial experience that the AC chairman possesses. The chairman plays a vital role in achieving AC effectiveness. The AC chairman represents the AC's backbone due to his strategic duties, these are such as: ensuring the flow of critical information properly among AC members, ensuring the close relationship with internal and external auditor and CFO, undertaking the mediating role between the board and the AC, ensuring the monitoring of financial reporting, and the accountability of the other AC members in respect of the failure of financial reporting and inadequate disclosure of information (Bédard and Gendron, 2010; Schmidt and Wilkins, 2013; Tanyi and Smith, 2014; Al-Matari, 2022).

According to stakeholder theory, firms need to extend the level of COVID-19 disclosure to aid their stakeholders to make rational decisions and to decide their firms' future. Therefore, firms are more likely to appoint to the AC a highly experienced chairman in accounting and financial matters to monitor the disclosure to stakeholders of COVID-19 related information and to ensure the quality and adequacy of such disclosure. Accordingly, when the AC's chairman has an accounting and financial experience, there is expected to be a high level of COVID-19 disclosure.

The accounting field suffers from few studies having investigated the impact of AC chairmanship on voluntary disclosure. Jaime and Wilkins (2013) provide empirical evidence of the positive and significant impact of the AC chairman's expertise on the timeliness of improved financial reporting. In addition, Al-Matari's (2022) findings show that there is a positive association between the AC chairman's experience and the firm's financial performance. Therefore, based on stakeholder theory, the researcher formulated the following eighth hypothesis:

***H8*: There is a significant association between the AC chairman's expertise and the firm's disclosure of COVID-19 pandemic related information.**

2.2 Examining the Impact of the COVID-19 pandemic Disclosure on Firm Value

Firms are motivated to increase their levels of voluntary disclosure to gain more benefits. One of these benefits is the reduction in the cost of required capital. Increasing the level of COVID-19 disclosure can reduce the adverse selection problem that lowers the cost of investment capital. Therefore, extending the level of disclosure of COVID-19 related information has a negative impact on firms' cost of capital (Diamond and Verrechia, 1991). Further, disclosing more information about the COVID-19 pandemic can provide stakeholders with the valuable information needed to justify their investments in such firms. This has a positive impact on firms' stock liquidity which reduces the firms' cost of capital and increases the demand on firms' shares (Amihud and Mendelson, 1986; Diamond and Verrecchia, 1991). Accordingly, firms can benefit from either reducing the cost of their capital or from increasing the cash flow accruing to their stakeholders. Both sides can enhance firm value.

Based on legitimacy theory that postulated a contract between firms and the society, firms are motivated to extend their disclosure's level of COVID-19 pandemic to various stakeholders (Magnes, 2006; Hoque, 2006). Firms should respond to the expectations, required by the society in which they operate (Hoque, 2006), through disclosing more information about their positions related to the COVID-19 pandemic to keep the congruence that legitimacy theory advocates between the society's value system and the firms' value system (Lindblom, 1994). Many previous voluntary disclosure studies have discussed legitimacy theory to justify increasing the disclosure level after a social crisis to avoid legitimacy gap (e.g., Deegan *et al.*, 2000;

Haniffa and Cooke, 2005; Haji and Mohd Ghazali, 2021). Therefore, based on legitimacy theory, the greater the level of COVID-19 disclosure, the greater the improvement in Saudi Arabian non-financial firms' value.

In addition, according to signalling theory, firms can differentiate themselves through extending their level of disclosure of COVID-19 related information to signal their commitment to the extraordinary event. This gives the stakeholders more confidence in the firm's procedures to deal with the COVID-19 pandemic. This may result in attracting more investors to deal with such firms which, in turn, may increase the obtained cash flow and, hence, enhance firm value (Hunter and Smith, 2009). Consequently, in the context of Saudi Arabia and based on signalling theory, the higher the level of disclosure of COVID-19 related information the greater the firm value.

Previous studies have reported mixed results on the economic consequences of voluntary disclosure. Whereas Baek *et al.,* (2004) and Hassan *et al.,* (2006) have reported that voluntary disclosure has a positive and significant impact on firm value, Botosan and Plumlee's (2002) findings show that there is an insignificant relationship between the cost of capital and various types of disclosure.

Accordingly, the researcher formulated the following nineth hypothesis:

***H9*: There is a significant association between the disclosure of COVID-19 pandemic related information and Saudi Arabian non-financial firms' value**

3. Methodology

3.1 Sample and Data Collection

This study comprises a sample of all Saudi Arabian non-financial listed firms' annual reports in 2020. The researcher obtained these annual reports from the Saudi Arabian Stock Exchange's (Tadawul) website. Following the previous studies (Wang and Xing, 2020 a; Albitar *et al.,* 2021; Elmarzouky *et al.,* 2021a,b; Tibiletti *et al.,* 2021), the stduy employed some criteria to reach the sample's final size. First, all financial and bank sector firms are excluded from this study due to their exclusive features in terms of disclosure practices and CG structures. Second, the study's sample includes only the firms that disclose any information related to the COVID-19 pandemic. Third, this study ignores the firms that have missing data. Accordingly, the final data include 128 observations from 18 different Saudi Arabian sectors. Table 1 summarizes the previous criteria applied to identify the final sample.

Table (1): Study Samples and Sub-samples

	Total Study Period (2020)
Initial Size	194
Less: Banks	(11)
Less: Insurance companies	(30)
Less: Firms have not disclosed COVID-19 information	(12)
Less: Firms have missing data	(13)
Final Size	128

3.2 Research Design

3.2.1 Measurement of the Disclosure of Information related to the COVID-19 Pandemic

The firms' annual reports represent one of the effective communication tools to disclose either financial or non-financial information. To measure the disclosure's level of COVID-19 related information in the Saudi Arabian non-financial firms' annual reports, this study applied some steps followed by previous studies (Wang and Xing, 2020; Majumdar and Singh, 2021). First, to determine whether the firms disclose any information about the Covid -19 pandemic, the researcher investigated all the downloaded annual reports to search for some specific terms, such as Corona, COVID-19, pandemic, virus, attributed to the Covid -19 pandemic or its variations. The firm that did not include any of the previous words is excluded since it did not disclose information related to Covid -19 pandemic. Second, the study conducted a manual content analysis technique to extract the narrative paragraphs containing any of the previous searched word related to the

Covid 19 pandemic. This step yielded the general paragraphs that included Covid -19 words. Third, all the obtained paragraphs are scanned to determine if they introduced either general information about COVID-19 or meaningful information. Then, all the paragraphs containing meaningless information about the COVID-19 pandemic are excluded. Fourth, after removing all the punctuation marks, the study calculated the number of words included in the previous paragraphs. This step provided the number of words in each determined paragraph that related to the COVID-19 pandemic. Consequently, by using the total number of words used in meaningful paragraphs, this study measures the disclosure of information relating to the COVID-19 pandemic.

3.2.2 Measurement of AC Characteristics

To test the impact of AC characteristics on the disclosure of information relating to the COVID-19 pandemic, this study considered eight AC variables obtained from the listed Saudi Arabian non-financial firms' annual reports. Based on the following studies (Akhtaruddin and Haron, 2010; Li *et al.,* 2012; Felo *et al.,* 2003; Othman *et al.,* 2014; Madi *et al.,* 2014; Appuhami and Tashakor, 2016; Agyei-Mensah, 2019 ; Buallay and Al-Ajmi, 2020; Boshnak, 2021; Al Lawati *et al.,* 2021; Njokuji and Chukwu, 2022; Al-Matari, 2022), seven continuous proxies in this study are utilised to measure seven AC determinants. These are: AC size (AC Size) as measured by the number of AC's members; AC meetings (AC Meet) as measured by the actual number of AC's meetings; AC independence (AC Ind) as measured by the average number of AC members outside the board; AC expertise (AC Exp) as measured by the average number of AC members who have accounting and financial experience; AC education (AC Edu) as measured by the average number of accounting and financial qualifications held by AC members; AC directorship (AC Dirc) as measured by the member of AC members who sit on the boards or ACs of other listed Saudi Arabian non-financial firms; and AC remuneration (AC Rem) as measured by the natural log of the total sum of the amount of remuneration.

Further, the study employed only one dichotomous proxy to measure AC Chairman's expertise (ACC Exp). This takes "1" if the AC chairman has accounting and financial experience or, otherwise, takes"0". The AC members' experiences and qualifications are obtained from the detailed AC members' biographies in the listed firms' annual reports.

3.2.3 Measurement of Saudi Arabian Non -Financial Firms' Firm Value

In this study, Tobin's Q ratio is applied as a proxy for the Saudi Arabian non-financial firms' firm value. Lewellen and Badrinath (1977, P.77-78) described Tobin's Q ratio as "the ratio of the market value of the outstanding financial claims on the firm to the current replacement cost of the firm's assets". Tobin's Q ratio is calculated as follows:

Q = (MVE + Debt)/BVT

Where:

Q = Tobin's Q

MVE = the market value of the equity calculated by multiplying the number of outstanding shares of Saudi's firms at the end of 2020 times the share's closing price for the same period.

Debt = The book value of the total debt (liabilities).

BVT = The book value of total assets.

3.2.4 Measurement of Control Variables

Previous studies have argued the importance of including some control variables when examining the disclosure of COVID-19 related information (Wang and Xing, 2020; Albitar, 2021, Elmarzouky *et al.*, 2021(a,b); Majumdar and Singh, 2021). Accordingly, this study includes seven control variables. These are: firm size (*size*); risk (*Lev*); Auditor type (*Aud_Type*); profitability (*ROA*), Board size (*BSize)*; Non-executive members *(Non Exc);* and Board meetings (*Meet*). Table 2 presents the proxies of the variables.

Table 2: The variable definitions and their proxies

Variable	Acronym	Proxy
(A) Dependent Variable:		
COVID-19 pandemic disclosure	COVID-19 Dis	COVID-19 Dis= The number of word related to COVID-19 disclosed by a firm i on 2020
Firm value	Firm V	Tobin Q=
(B) Independent variables		
AC Size	AC Size	The actual number of AC members
AC Meeting	AC Meet	The actual number of meetings held by the AC
AC Independence	AC Ind	The proportion of AC members outside the board
AC expertise	AC Exp	The proportion of AC members who have accounting and financial experiences
AC education	AC Edu	The proportion of accounting and financial qualifications held by Ac members.
AC directorship	AC Dirc	The number of AC members who sit on the board of directors of other listed Saudi companies
AC remuneration	AC Rem	The natural log of total sum of remuneration amount
AC Chairman's expertise	ACC Exp	Dummy variable equal to 1 when the AC chairman has accounting and financial experiences, 0 otherwise
(C) Control variables:		
Company Size	size	Natural logarithm of total assets
Risk	Lev	Total liabilities deflated by total assets
Profitability	ROA	Net income deflated by total assets
Audit Type	Aud_Type	Dummy variable equal to 1 when the company is audited by big4 audit companies, 0 otherwise
Board Size	B_Size	The total number of board numbers
Board meetings	Meet	The number of board meetings per year
Non-Executive members	Non Exc	The percentage of non-executive members to the total members on the board

3.2.5 Research Model

Empirically, this study aims to examine firstly the impact of AC characteristics on the disclosure of COVID-19 related information and, secondly, to investigate the economic consequences of the disclosure of such information. Therefore, this study ran the following two OLS multiple regression models:

The first model, which denotes the association between AC characteristics and COVID-19 disclosure, is presented in the following:

COIVD-19 Dis = $\beta_0 + \beta_1$ *AC Size* + β_2 *AC Meet* + β_3 *AC Ind* + β_4 *AC Exp* + β_5 AC Edu +β_6 AC Dirc + β_7 *AC Rem* + + β_8 ACC Ind + + β_9 *Size* + β_{10} *Lev* ++ β_{11}*ROA* + β_{12} *Aud_Type* + β_{13} *B_Size* + β_{14} *Meet* + β_{15} *Non_Exc* + **ε**

To investigate the economic consequences of COVID-19 disclosure, the study tests the impact of COVID-19 disclosure on Saudi firms' value by using the second following model:

Firm V = $\beta_0 + \beta_1$ *COVID-19 Dis* + β_2 *Fam_Own* + β_3 *Fam_Lead* + β_4 Fam_Name + β_5 Fam_Cross + β_6 *Size* + β_7 *Lev* +β_8 *Aud_Type* + β_9 *B_Size* + β_{10} *Meet* + β_{11} *Non_Exc* + **ε**

4. Results and Discussion

4.1 Descriptive and Univariant Analysis

4.1.1 The Level of Disclosure of COVID-19 Pandemic related Information

129 (91.4%) listed Saudi Arabian non-financial firms disclosed information about the COVID-19 pandemic. Table 3 presents the descriptive analysis.

Table 3: Descriptive Analysis of COVID-19 Disclosure

Variable	Obs.	Mean	Min.	Max.	Percentiles			Std. Dev.
					25%	50%	75%	
COVID Dis								
T. Words	128	674.33	6	4601	206.75	371	853.5	767.801
T. Paragraphs	128	12.43	1	80	4	8	16.75	14.582
COVID-19 Words	128	11.20	1	143	3	6	12	16.518

Table 3 illustrates, also, that, in 2020, these firms disclosed, on average in their annual reports, 674.33 total words that were included in 12.43 paragraphs that contained 11.20 COVID-19 words and their variations. The highest number of total words was 4601 while the lowest was 6 words. Most of the sampled firms (75%) disclosed 853.5 total words related to the COVID-19 pandemic. Based on Table 3, it can be concluded that, in the Saudi Arabian environment, there is a high level of disclosure of information related to the COVID-19 pandemic disclosure. This suggests that the listed Saudi Arabian non-financial firms are highly aware of the importance to disclose information about the COVID-19 pandemic to their stakeholders.

Moreover, Table 4 indicates that the Saudi Arabian sectors disclose information related to the COVID-19 pandemic. It is noteworthy that the percentages of total words of the total paragraphs that included COVID-19 word are quite similar. This argues the symmetry of the three proxies in measuring the disclosure of COVID-19 pandemic and, hence, the accuracy of this measurement. In addition, Table 4 shows that the “material” sector discloses the highest percentage of COVID-19 information (approximately 22%). All the remaining sectors, which disclosed information related to the COVID-19 pandemic ranged from1% to 11%.

Table 4: Descriptive analysis of Saudi sectors that disclose COVID-19 related information

Sectors	Total firms	Total words		Total paragraphs		COVID-19 words	
		No.	%	No.	%	No.	%
Real Estate Manag. and Devel.	11	5607	6	141	8	76	5
Telecom. Services	4	4896	5	120	7	66	4
Pharma, Biotech & Life Science	1	1154	1	18	1	11	1
Diversified Financials	4	2180	2	42	2	38	2
Media and Entertainment	2	1009	1	11	1	10	1
Consumer services	10	7176	8	132	7	111	7
Commercial and Prof. Services	4	2557	3	35	2	41	3
Health Care Equp. &Svc	7	5857	6	112	6	89	6
Capital Goods	10	4160	5	76	4	61	4
Consumer Durables &Apparel	6	6079	6	117	6	99	6
Energy	4	6064	6	121	7	86	5
Utilities	4	1700	2	21	2	36	2
Materials	40	21238	22	419	23	341	22
Transportation	6	4141	4	68	4	195	12
Foods & Bev.	11	10455	11	216	12	159	10
Food and Staples Retailing	3	1356	2	17	1	14	1
Retailing	8	8028	8	90	5	115	7
Software & Services	3	1683	2	36	2	30	2
Total	128	95322	100	1792	100	1567	100

To determine the sections of the firms’ annual reports that presented the information about the COVID-19 pandemic, Table 5 summarises the total number of words, the total number of paragraphs and the total number of COVID-19 words included in each section. There are no specific sections in these firms' annual reports and, therefore, this study classifies these sections in terms of what is generally settled by most of these firms. The financial performance section followed by the institutional communication sections discloses the highest percentages of information related to the COVID-19 pandemic.

Table 5: Descriptive analysis of Saudi Firms annual reports' sections that included information about COVID-19 pandemic

Sections	Total words		Total paragraphs		COVID-19 words	
	No.	%	No.	%	No.	%
Chairman message	13077	14	230	11	151	10
CEO message	5850	6	136	6	88	6
Executive Summary	8300	9	162	7	129	8
About the Firm	4113	4	77	3.9	60	4
Main Activities and Investments	10157	11	251	12	150	9
Institutional Communication	15838	17	400	18	277	18
Financial Performance	17368	18	414	19	260	16
CG	6328	7	173	8	128	8
Risk	13383	13	323	15	195	12
Conclusion	908	1	13	.1	140	9
Total	95322	100	2179	100	1578	100

Based on the employed manual content analysis, the study extracted the main topics related to COVID-19 information in these firms' annual reports. Table 6 summarize these topics.

Table 6: Descriptive analysis of the disclosure topics of COVID-19

Topics related to COVID-19	Number of paragraphs mentioned	
	No.	%
Forward looking	61	2
Top line (Sales /Revenues)	214	6
Changes in Assets	66	2
Cash	33	1
Supply Chain	54	2
Debt	6	.02
Employees	178	5
Merge and Acquisition	5	.02
Losses	39	1
Guidance and precautions	293	9
Expenses	92	3
Bottom line (Income)	102	3
Online Meetings of Board	39	1
Paid Contribution	149	5
Risk management and control	74	2
The negative or positive impact	257	8
Online working Training	60	2
Dividend	13	.03
Customers	94	3
Production	79	2
Firm performance	168	5
Firm operations and activities	208	6
IT	31	1
Stock performance	12	.03
Local and global economy	137	4
Competitiveness	23	1
Export and Imports	20	1
Investor relationship	23	1
Board of directors and its committee Performance	34	1
Pricing	58	2
The demand on products	85	3
the plans and procedures for overcome Covid	175	5
E-Commerce	56	2
The impact on sector	74	2
Products	44	1
General	225	7
Total	3308	100

One paragraph may include more than one topic. In total, 3308 paragraphs discussed the various topics related to COVID-19. The most disclosed topic relates to the guidance and precautions followed by the listed Saudi Arabian non-financial firms in the COVID-19 era and next is the COVID-19 pandemic's impact on the firms.

With respect to the other variables, Table 7 presents their descriptive results. On average, there are three AC members among them, one is from outside the board, one has an accounting and financial experience, one hold accounting and financial qualifications and one is sit on more than one board. The AC members meet 6 times per year and the average natural log of their remuneration is 5.368. Only one AC chairman has accounting and financial experience. In terms of the control variables, on average, each firm's board has eight members and 43% of them are non-executive members., On average, the board holds five meetings per year. Further, most of the listed Saudi Arabian non-financial firms are large; have moderate risk and profitability; and are audited by one of the big 4 audit firms.

Table 7: Descriptive analysis of independent and control variables

Variables	Mean	Min.	Max.	Std. Dev.
Panel A: Independent and Control V.				
AC Size	3.48	3	5	0.676
AC Meet	5.76	3	14	1.830
AC Ind	0.433	0	1	0.240
AC EXP	0.628	0	1	0.759
AC Edu	1.076	0.021	0.946	0.237
AC Dir	0.708	0	1	0.255
AC Rem	5.368	4.230	8.530	0.492
ACC Ind	0.67	0	4	0.653
Size	9.393	7.602	11.686	0.692
Lev	0.495	0.022	0.946	0.234
ROA	0.015	-0.3571	0.251	.092
B_Size	8.29	4	11	1.527
Meet	5.37	2	15	2.148
Non-Exc	0.438	0.111	0.778	0.151
Panel B: Dummy Independent and Control V.	Frequency		%	
Aud_Type: Big4	66		51.6	
Non-Big4	62		48.4	

Table 8 presents the correlation matrix between the study's variables. There is a positive and significant correlation between the disclosure of COVID-19 pandemic related information and the listed Saudi Arabian non-financial firms' AC Meet, AC Edu, AC Dir, AC Rem, B Size. All the coefficients of the independent variables are less than 0.80 and this indicates that there is no serious multicollinearity problem (Gajarati, 2003, p.359).

Table 8: Pearson coefficient correlation matrix

	COVID-19 Dis	AC Size	AC Meet	AC Ind	AC Exp	AC Edu	AC Dir	AC Rem	ACC Exp	Size	Lev	ROA	Aud_ Type	BSize	Meet
AC Size	0.119														
AC Meet	0.225*	0.242**													
AC Ind	-0.034	-0.045	0.034												
AC Exp	0.126	-.035	0.098	0.164											
AC Edu	0.185*	0.022	0.039	0.179*	0.683*										
AC Dir	0.227**	-0.074	-.005	-0.106	0.165	0.176*									
AC Rem	0.323***	0.315**	0.103	0.091	0.067	0.121	0.180*								
ACC Exp	0.134	-0.012	-.054	-.068	0.608**	0.462**	0.182*	0.031							
Size	0.383***	0.385**	0.338**	0.038	0.105	0.208	0.068	0.485**	0.061						
Lev	0.069	.059	-.002	-0.176*	0.107	-0.012	-.084	-0.052	0.090	-.009					
ROA	0.008	0.146	0.040	0.114	0.100	0.171	0.074	0.158	0.089	0.194*	-0.304**				
Aud_ Type	0.331**	0.094	0.077	0.110	.048	0.169	0.077	0.252**	-.032	0.488**	-.0109	0.185*			
B Size	0.208*	0.352**	0.253**	-0.145	0.208*	0.110	0.119	0.396**	0.104	0.528**	0.080	0.056	0.194*		
Meet	0.132	0.267**	0.301**	-0.100	-.080	0.035	-0.135	0.000	-.059	0.203*	0.093	-0.103	0.130	0.107	
Non-Exc	0124	0.120	0.215*	-0.078	0.140	-0.013	-0.069	0.141	.087	0.369**	0.190*	0.161	0.252**	0.248**	-0.20

No serious multicollinearity among the independent variables; ***Significant at 1%; **Significant at 5%; * Significant at 10%

4.2 Multivariate Analysis

To test the main study’s hypotheses, the study ran two OLS multiple regression models. Table 9 presents the findings of the first model which tested the AC characteristics’ impact on the disclosure of COVID-19 pandemic related information.

The model is significant at $p < 0.0000$ and the adjusted R^2 is 19.3 %. Table 9 shows that four AC characteristics impact significantly on the disclosure of COVID-19 related information. At the 10% level, there is a positive association between the listed Saudi Arabian non-financial firms’ number of AC meetings and the disclosure of COVID-19 related information. This finding suggests that the increasing number of AC meetings between AC members supports their monitoring role because they have more time to discuss the critical issues, such as the disclosure of COVID-19 pandemic related information, and to provide the essential consultations and advice about the content of the COVID-19 related information disclosed to stakeholders. Signalling and stakeholder theories confirm this finding that firms with ACs, which meet frequently, deliver good signals to stakeholders who depend on the disclosure of COVID-19 related information when making their decisions. This finding is consistence with those of Li *et al.* (2012), Appuhami and Tashakor (2016), Agyei-Mensah (2019) and Buallay and Al-Ajmi (2020). Accordingly, hypothesis $\boldsymbol{H_2}$ is accepted.

Table 9: OLS First model findings'

	OLS Model	
	Coeff.	T Stat.
Constant	-0.278	-0.400
AC Size	-0.043	-0.453
AC Meet	**0.157**	**1.710***
AC Ind	-0.067	-0.747
AC Exp	**0.071**	**2.382****
AC Edu	0.131	1.095
AC Dir	**0.149**	**2.513****
AC Rem	**0.185**	**1.879***
ACC Exp	0.088	0.826
Size	**0.221**	**4.077*****
Lev	-0.096	-1.055
ROA	-0.097	-1.064
Aud_Type	**0.185**	**1.878***
BSize	-0.077	-0.744
Meet	0.028	0.308
Non-Exc	-0.027	-0.290
Other statistics		
F-Ratio (sig.)	**3.023*****	
Adjusted R2	0.193	
Max. VIF	2.805	
Min. Tolerance	0.357	

*****Significant at 1%; **Significant at 5%; * Significant at 10%; Tolerance values are more than 0.1 and VIF values are less than 5, which indicate non-existence of Multicollinearity problem**

In addition, at 10% level, the findings indicate a positive and significant association between AC expertise and the disclosure of COVID-19 related information. The increasing number of AC members, who have high accounting and financial experience, enhance the AC's effectiveness in understanding the need for firms to be updated on issues such as the importance of disclosing information about the COVID-19 pandemic. AC expertise can discuss efficiently with the firm's management and auditor the content of information related to COVID-19 and ask for some technical accounting and finance treatments that have a critical impact on the financial reporting. Accordingly, increasing the number of AC members, who have accounting and financial experience, increases the AC's effectiveness and the level of disclosure of COVID-19 related information. This finding is confirmed by institutional theory which postulates that firms have an ethical commitment to the society in which they work. One of these commitments is the disclosure of the true picture about the firm's situation in terms of the COVID-19 pandemic. As an ethical commitment, firms are required to update stakeholders with the crucial COVID-19 related information. Accounting and financial experts on the AC support the firm to achieve this commitment through ensuring the quality and adequacy of its disclosed COVID-19 related information. Many studies support this finding (e.g., Felo *et al.,* 2003; Sellami and Fendri, 2017; Agyei-Mensah, 2019). Consequently, hypothesis H_4 is accepted

According to hypothesis H_6, the findings demonstrate that at the 5% level, the higher the number of AC members who sit in more than one board, the higher the level of disclosure of COVID-19 pandemic related information. AC member, who are, also, directors, have additional experience and knowledge obtained from their being representatives on other firms' boards. This enable them to identify the various management techniques and procedures to be considered when disclosing information about unexpected events such as the COVID-19 pandemic. This finding is compatible with institutional theory which argues that as a requirement of their ethical commitment, the firms' need to disclose to stakeholders more information about the COVID-19 pandemic. Firms should respond proactively to the Covid -19 pandemic through their appointed AC members, who have multiple directorships, to benefit from their cumulative knowledge in motivating the management to increase the level disclosure of COVID-19 pandemic related information. Madi *et al.,* (2014) provide empirical evidence to support this finding. Therefore, hypothesis H_6 is accepted.

Last but not least, the findings illustrate the significant association between AC remuneration and the disclosure of COVID-19 related information at the 5% level. When AC members receive more remuneration, the level of COVID-19 disclosure increases respectively. AC members earn their remuneration due to their unique accounting and finance duties that require a lot of time and effort. Highly qualified and experienced members, who are selected as AC members, should be compensated with high remuneration. This finding is attributed to agency theory which assumes that there is an information asymmetry problem between management and stakeholders. One way to solve this problem is to increase the monitoring role of the AC members who are more motivated to perform this role effectively by the remuneration that they receive. AC members should ensure the quality of content of the disclosed information related to COVID-19 pandemic through increasing their monitoring of what the management has disclosed. This finding is consistent by that of Engle *et al.* (2010). Consequently, hypothesis $\boldsymbol{H_7}$ is accepted.

According to the other AC characteristics variables, the findings fail to provide any justification for their impact on the disclosure of COVID-19 pandemic related information. Accordingly, hypotheses $\boldsymbol{H_1}$**,** $\boldsymbol{H_3}$**,** $\boldsymbol{H_5}$**,** and $\boldsymbol{H_8}$ are rejected. Moreover, in terms of control variables, there is only a significant association between the disclosure of COVID-19 and firm size and auditor type. Many previous studies support this finding (Kelton and Yang, 2008; Al-shammari, 2007; Wang and Xing, 2020 a; Elmarzouky *et al.,* 2021b).

To investigate the economic consequences of the disclosure of COVID-19 related information, the study ran the second OLS multiple regression model. Table 10 summaries this model's findings.

The model is significant at $p < 0.0000$ and the adjusted R^2 is 3 %. The findings have demonstrated that at the 5% level, the disclosure of COVID-19 pandemic related information has a positive and significant impact on the listed Saudi Arabian non-final firms' value. This finding suggests that these Saudi Arabian firms have extended their level of disclosure of COVID-19 pandemic to provide their stakeholders with the necessary information to justify their investments. This has resulted in increasing the demand for the firms' shares and increasing the firms' share liquidity. Hence, these have increased firm value. Signalling theory explains this finding since the listed Saudi Arabian non-financial firms are motivated to distinguish themselves through increasing their levels of disclosure of COVID-19 pandemic related information to produce good signal to their stakeholders about their commitment to provide such information. This may lead to attracting investors to invest in these firms as a matter of reassurance about the future of these firms and, in turn, this has a positive impact on their firm value. Many previous studied confirm this finding (Baek *et al.,* 2004; Hassan et al., (2006)). Consequently, hypothesis H_9 is accepted.

Table 10: OLS Second model findings'

	OLS Model	
	Coeff.	T Stat.
Constant	-0.278	-0.400
COVID-19 Dis	**0.128**	**2.166****
AC Size	0.007	.067
AC Meet	-0.160	-1.574
AC Ind	**0.118**	**1.847***
AC Exp	-0.078	-0.663
AC Edu	-0.022	-0.166
AC Dir	**-0.149**	**-1.790***
AC Rem	-0.116	-1.061
ACC Exp	-0.078	-0.663
Size	**0.194**	**3.156*****
Lev	-0.129	-1.322
ROA	-0.030	-0.299
Aud_Type	**0.010**	**1.821***
BSize	0.056	0.493
Meet	0.049	0.490
Non-Exc	-0.044	-0.425
Other statistics		
F-Ratio (sig.)	**3.238*****	
Adjusted R2	0.029	
Max. VIF	2.781	
Min. Tolerance	0.360	

*****Significant at 1%; **Significant at 5%; * Significant at 10%; Tolerance values are more than 0.1 and VIF values are less than 5, which indicate non-existence of Multicollinearity problem**

5. Additional analysis

In this section, the study presents more sensitivity analysis to demonstrate the robustness of the obtained findings and to provide further evidence about the impact of AC characteristics on the disclosure of COVID-19 pandemic related information. First, this study calculates an aggregated score as a proxy of AC effectiveness comprised from the eight AC characteristics variables examined in the study. Following Bin-Ghanem and Ariff's (2016), for each firm, each AC variable take "1" if its actual value is equal to or higher than its median and takes "0" otherwise. Next, this study sums the values assigned to each AC variable for one firm (which range from 0 to seven) and calculates a ratio of the summing value assigned to the maximum score (seven) for each variable of that firm. The obtained ratio for each firm is bounded by (0-1) and represents a score for AC effectiveness. If there ia a high score, this indicates greater AC effectiveness and vice versa. The researcher ran the same first model again with an aggregate score of AC characteristics. Table 11 summarizes this model's findings.

Table 11: Additional analysis: Using AC effectiveness Score

	OLS Model	
	Coeff.	T Stat.
Constant	-0.278	-0.400
ACC effectiveness	**0.128**	**2.166****
Size	**0.194**	**3.156*****
Lev	-0.129	-1.322
ROA	-0.030	-0.299
Aud_Type	**0.010**	**1.821***
BSize	0.056	0.493
Meet	0.049	0.490
Non-Exc	-0.044	-0.425
<u>Other statistics</u>		
F-Ratio (sig.)	**3.238*****	
Adjusted R2	0.029	
Max. VIF	2.781	
Min. Tolerance	0.360	

*****Significant at 1%; **Significant at 5%; * Significant at 10%; Tolerance values are more than 0.1 and VIF values are less than 5, which indicate non-existence of Multicollinearity problem**

Table11 indicates that AC effectiveness has a positive and significant impact on the disclosure of COVID-19 pandemic related information at the 5% level. The use of combined scores of AC characteristics does not change the results obtained from model 1. These results support the study’s hypotheses in terms of the expected influence of AC effectiveness on the disclosure of COVID-19pandemic related information.

Second, following (Beretta and Bozzolan, 2004; Lajili and Zeghal, 2005; Linsley and Shrives, 2006; Amran et al. 2009; Elzahar and Hussainey 2012), the study employed the number of sentences as another proxy of the disclosure of COVID-19 pandemic related information. Table 12 presents the findings of using such a proxy.

Table 12: Additional analysis: Using The number of sentences as a proxy for COVID-19 Disclosure

	OLS Model	
	Coeff.	T Stat.
Constant	**-0.674**	**-3.917*****
AC Size	-0.031	-0.303
AC Meet	0.135	1.447
AC Ind	-0.056	-0.616
AC Exp	**0.080**	**1.925***
AC Edu	0.091	0.865
AC Dir	**0.085**	**2.510****
AC Rem	**0.238**	**2.372****
ACC Exp	0.031	0.289
Size	**0.269**	**2.177****
Lev	0.030	0.336
ROA	-0.089	-0.963
Aud_Type	0.108	1.082
BSize	-0.067	-0.632
Meet	0.030	0.326
Non-Exc	-0.016	-0.171
Other statistics		
F-Ratio (sig.)	**2.654*****	
Adjusted R2	0.163	
Max. VIF	2.774	
Min. Tolerance	0.361	

*****Significant at 1%; **Significant at 5%; * Significant at 10%; Tolerance values are more than 0.1 and VIF values are less than 5, which indicate non-existence of Multicollinearity problem**

When measuring the disclosure of COVID-19 related information by the number of paragraphs, the findings are relatively the same as those obtained from the main model. The model is significant at $p < 0.0000$ and the adjusted R^2 is 16 % which is comparable to the main model's adjusted R^2. Only AC meetings show a different and insignificant association with the disclosure of COVID-19 related information. This suggests that using both the number of paragraphs and the number of total words in the paragraphs as proxies for the disclosure of COVID-19 related information have the same findings.

6. Conclusion

Recently, the world has witnessed a massive pandemic, namely, the COVID-19 pandemic, which has had a major impact on all aspects of our daily lives aspects. Firms are required to respond to this unexpected event that has affected many activities and operations. In the meantime, firms should comply with their commitments to the society through disclosing the information related to COVID-19 pandemic to aid their stakeholders in making rational decisions about their future attitudes. Few studies have investigated the determinants of the level of disclosure of COVID-19 related information and the resultant economic consequences.

Therefore, this study had to achieve many objectives. First, in the Saudi Arabian context, it aimed to explore the listed non-financial Saudi Arabian firms' level of disclosure of COVID-19 pandemic related information in 2020. Second, this study investigated the association between the effectiveness of AC characteristics and the disclosure of COVID-19 pandemic in the Saudi Arabian environment. Third, this study examined the impact of the disclosure of COVID-19 pandemic related information on the listed Saudi Arabian non-financial firms' value.

The descriptive findings reveal that, in 2020, 91.4% of the listed Saudi non-financial firms disclosed information about the COVID-19 pandemic in their annual reports. On average, 674.33 total words were included in 12.43 paragraphs that contained 11.20 COVID-19 words. This finding suggests that there is a high level of COVID-19 pandemic disclosure in the Saudi Arabian environment. In addition, "Material" sector (about 22%) is one of the highest sectors that discloses information about the COVID-19 pandemic. Moreover, the financial performance sections in the listed Saudi Arabian non-financial firms' annual reports disclose the highest percentage (about 20%) of COVID-19 pandemic related information. This study's content analysis illustrates that in these annual reports there are 36 topics related to the COVID-19 pandemic. "Guidance and precautions" (about 9%), is the most disclosed topic.

In terms of the OLS multiple regression findings, the first model demonstrates that some AC characteristics have a significant impact on the disclosure of COVID-19 pandemic related information. More specifically, the number of AC meetings, the accounting and financial experts on the AC, the members of AC who sit on more than one board, and AC remuneration have positive and significant associations with the disclosure of COVID-19 related information in the Saudi Arabian environment. Firm size and audit type are the only two control variables that relate significantly to the COVID-19 pandemic disclosure. In addition, this study provides empirical evidence of the economic consequence of the disclosure of such information. The findings illustrates that the higher the level of disclosure of COVID-19 pandemic related information, the higher the listed Saudi Arabian non-financial firms' value. Further, the sensitivity analysis shows that there is a positive association between AC effectiveness and the disclosure of COVID-19 related information.

This study's findings have valuable implications. First to regulators, this study's findings reveal that most listed Saudi Arabian non-financial firms respond to the society in which they operate and that, in response to a request from the Saudi Arabian regulatory body, they have extended their disclosure's level of COVID-19 pandemic related information. This study's findings indicate that such firms comply with their commitments and, in responding to the Saudi Arabian regulatory body's requirements, this reflects their legitimacy. Second, to the stakeholders, the findings demonstrate the listed Saudi Arabian non-financial firms' behaviours when unexpected events occur. The disclosure of COVID-19 pandemic related information in their annual reports send a good signal to the stakeholders about their abilities to deal with the COVID-19 pandemic. These are appreciated by those stakeholders and reflected in the increasing investment levels in these firms. Third, to academic researchers, this study's findings open the door for more studies in the developing countries with the aim of investigating the key determinants of the level of disclosure of COVID-19 pandemic related information since, to a large extent, these have not been examined previously.

This study has some limitations. First, it concentrates mainly on one year, namely, 2020. Therefore, the researcher recommends that future research studies investigate the level of disclosure of Covid -19 pandemic information between two comparative periods, namely before 2020 and after 2020, to determine the variances in levels of disclosure. Second, this study measured the disclosure level by number of words proxy. Future research may depend on a checklist that contains determined items through which the level of COVID-19 disclosure is measured. Third, this study investigated the impact of AC characteristics on the level of disclosure of COVID-19 pandemic related information. Therefore, the study recommends that future research studies add to the model other CG variables, for example, some board of directors' variables such as: family members representative in the board; gender representation on the board and foreign members' representation on the board; and some ownership structure variables such as managerial, governmental, family and foreign ownership structures.

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