

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

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Abstract

This study extends the findings of previous studies that were concerned with voluntary financial disclosure through examining Saudi Arabian firms' adoption of Social Media (SM) networks in disclosing their financial information. This study aimed to achieve two main objectives. The first objective was to investigate the Saudi Arabian non-financial listed firms' level of financial disclosure via Twitter as one of the SM networks. The second objective was to explore the potential impact of family – related determinants on the Saudi Arabian non-financial listed family firms' level of financial disclosure via Twitter in 2020. To test the association between family determinants and financial tweets, this study used an Ordinary Least Square (OLS) multiple regression model.

The findings reveal the sampled Saudi Arabian firms' low level of financial tweets disclosed on their Twitter accounts. Further, three out of the five family variables have an impact on financial tweets. From this study's findings it can be concluded that, on the one hand, there is a negative association between the family member on the firm's board and the number of financial tweets. On the other hand, there is a positive association between family leadership and family cross-directorship and financial tweets. By examining the impact of

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family variables on financial disclosure via Twitter, this study contributes to the accounting studies and paves the way for more studies in this field.

Keywords – Social Media disclosure; Financial tweets; Saudi Arabia; Family firms

1. Introduction

The availability of the required information can be viewed from two sides. First, investors need a massive amount of information to aid them to make rational decisions. Second, there is the firm's desire to use different disclosure mediums to provide their interested parties with certain financial information (Boylan and Boylan, 2017). However, there are increased uncertainties about the current and future investment opportunities which have not enable market participants to possess the required information like the firm's management. This created information asymmetry problems (Albarrak *et al.*, 2020). In order to reduce such problems between informed investors and uninformed ones, and between management and market participants, firms disclose more information (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994; Leuz and Verrecchia, 2000; Albarrak *et al.*, 2020). It was agreed to increase the efficiency of the foreign financial market and to achieve equality between management and investors and among investors themselves. In turn, this resulted in reducing the information asymmetry problems (Basuony *et al.*, 2018).

As more disseminated information and better disclosure improves the investors' recognition of the firm's stocks in the market and, hence, lowers uncertainty about the investment decisions, this in turn, may reduce the cost of equity (Merton,

1987; Klapper and Love, 2004; Alvarez *et al.*, 2008; Fuertes-Callén *et al.*, 2014; Basuony *et al.*, 2018; Albarrak *et al.*, 2020). Consequently, when searching and retrieving and understanding such information, investors compromise between the required time to obtain value-relevant information regarding the firms and the costs that they are prepared to pay (Hong and Stein, 1999; Hirshleifer *et al.*, 2011; Hirshleifer and Teoh, 2003; Albarrak *et al.*, 2020).

As such, investors rely on different information intermediaries such as financial analysts, financial advisors, the business press papers and journals and credit ratings agencies to acquire this information (Bartov *et al.*, 2018). However, investors may find that not all these mediums are suitable to obtaining the required information. In addition, firms experience difficulties in ensuring that their information reaches a wide variety of investors (Blankespoor *et al.*, 2014; Albarrak *et al.*, 2020). Therefore, this may lead to firms searching for better dissemination strategies.

Communications with the various stakeholders give the firms more competitive advantages in the market and ensure at least they retain their existing investors. In addition, they may attract more investors in the future due to informing investors about the firms' financial performance, in turn, this is likely to increase the amount of information obtained by the investors and improved their decision making (Albarrak *et al.*, 2020). Consequently, firms search for complementary mediums with the aim of striking a balance between the desire to reduce information asymmetry (from the firms' side) and to enhance the acquisition of information (from the investors' side).

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SM platforms provide the firms with a proper solution to achieve this equilibrium. SM provides a Web 2.0 network that offers innovative tools to enable firms to enhance their disclosure policies through direct interactions with stakeholders that allow them to obtain not only the required information but, also, to produce information at the same time. (Bonson and Flores, 2011; Xiong *et al.*, 2015; Ramanandaand Atahau, 2020; Nuseir and Qasim, 2021). Stakeholders can post replies on disclosed information and interact directly either with the firms or with other stakeholders (Lee, *et al.*, 2015; Trinkle, *et al.*, 2015; Rennekamp and Witz, 2018; Teoh, 2018). Resulting from the wide spread of online disclosure, SM has stood out as a direct-access platform that “pushes” the information directly to stakeholders instead of their seeking to “pull” the information (Blankespoor *et al.*, 2014; Snow and Rasso, 2017; Crowley *et al.*, 2018; Lei *et al.*, 2019a), Therefore, SM eases the sharing of financial information and direct interactions with various stakeholders (Alexander and Gentry; 2014; Al-Sartawi, 2019).

Investors can view SM as the preferable source to obtain financial information and firms can view SM as the ideal platform to manage their relationships with investors (Antweiler and Frank 2004; Zhou *et al.*, 2014; Chen *et al.*, 2014; Nuseir and Qasim, 2021; Rennekamp and Witz, 2021). SM promotes a dynamic two-way exchange of user-generated content that bypasses traditional media and enables firms to disclose their required information to a large network of stakeholders (Kaplan and Haenlein, 2010, Lee *et al.*, 2015; Lardo *et al.*, 2017; Cade, 2018). Therefore, SM provides firms with additional communication channels that enable them to avoid the usage of information intermediaries. This means that

they can communicate directly with stakeholders and provide information in real time format to save time and costs while controlling the firm's information (Blankespoor *et al.*, 2014; Boylan and Boylan, 2017).

Consequently, firms use SM widely either to disclose financial information or to provide instant financial notifications to their stakeholders who are connected to their SM accounts. This enables the firms to share their financial information with interested parties (Blankespoor *et al.*, 2014; Zhou *et al.*, 2015; Elliott *et al.*, 2018), and, at the same time, investors depend on SM to obtain the required financial information (Elliott *et al.*, 2018). Firms' usage of SM to disclose financial information represents one of their critical decisions on disclosure strategies (Jung *et al.*, 2018). Consequently, nowadays, SM platforms have become more popular and represent a medium of disclosing financial information quickly to a wide range of stakeholders at lower costs (Khelifi, 2021).

Disclosure through SM has achieved its importance from the acknowledgement of both regulator bodies and researchers in the accounting field. Both regulators and academic researchers argue the usage of SM as a disclosure medium (Lardo *et al.*, 2017). In April 2013, The Securities and Exchange Commission (SEC) recognized the usage of SM platforms (e.g., Facebook and Twitter) as a medium to disseminate financial information and encouraged firms to use these platforms to communicate with their investors (Alexander and Gentry, 2014). In 2015, the SEC declared that firms could use Twitter to disclose information about their stock or debt offerings to investors (Securities & Exchange Commission (SEC), 2013a; Securities & Exchange Commission (SEC), 2013b; Lei *et al.*,

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2019). Further, the Canadian Investor Relations Institute (CIRI) recognized SM's increased role in disseminating financial information to investors (Al-Sartawi, 2019). Consequently, firms, which disregard SM as a medium for disseminating financial information, may be classified within the investors' community as firms with poor performance. Accordingly, such firms may become motivated to disclose financial information via SM (Alexander and Gentry, 2014; Elliott *et al.*, 2018).

With regard to the accounting field, many researchers argue that the recent changes in IT and SM have affected disclosure policies (Miller and Skinner, 2015). Recent literatures have discussed the importance of using SM as an effective platform that facilitates communications between firms and their stakeholders. This is because it allows firms to announce their intended message to large number of stakeholders and provide the interactions required to assure the creditability of disclosed information. In turn, this affects the disclosure implications and enables stakeholders through posting comments to discuss with the management about the disseminated information and helps the management to make their decisions (Lee *et al.*, 2015; Miller and Skinner, 2015, Elliot *et al.*, 2018 Al-Sartawi, 2019).

Further, SM platforms enable various stakeholders to communicate with each other. This increases the dissemination rate of the firm's financial information without incurring either additional costs or efforts. Hence, stakeholders rely on SM to obtain the required information and investment advice (Lardo *et al.*, 2017; Cade, 2018). Consequently, as part of their strategies to extend their level of disclosure, firms use SM platforms to achieve various purposes (such as create a recognized reputation; increase value; reduce information asymmetry;

enhance transparency; and reduce agency (Blankespoor *et al.*, 2014; Basouny *et al.*, 2018).

SM includes various platforms such as Facebook, Twitter, LinkedIn, YouTube, Instagram, Pinterest, and Google + (Zhou *et al.*, 2015). Launched in 2006, Twitter is one of the most common worldwide microblogging platforms and leading message networks (Amin *et al.*, 2020; Blankespoor *et al.*, 2014). Twitter emphasizes fast communication between users. This helps with the dissemination of critical financial (Sprnger *et al.*, 2014b, Xiong *et al.*, 2015). Firms can opt to use Twitter as a disclosure medium because of their abilities to have full control on what they disclose, the flexibility in the timing and frequency of disclosed information, and the possibility to reach a wide range of stakeholders (Albarrak *et al.*, 2020). Accordingly, by exploiting Twitter's unique features, firms can enhance their disclosure strategies.

On their official accounts, firms can post a financial brief text- message "tweet" to stakeholders who, in turn, can retweet this financial information to another group of stakeholders and even add their comments. This enables the firm's one tweet to reach a wide range of stakeholders (Xiong *et al.*, 2015). By posting a tweet that include 280 characters, firms can disclose more accurate and controlled financial information. In addition, tweets can include hyperlinks to either various intermediaries (Blankespoor *et al.*, 2014; Amin *et al.*, 2020; Albarrak *et al.*, 2020), or can include quotes to various financial indicators and performance or can use hashtags (#) or cashtags (\$) to enable rapid searching (Best and Caylor, 2019). All these features enable the required financial tweet to achieve widespread coverage.

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There are many reasons why the researcher chose Twitter as the SM platform for this study. (See also Crowley *et al.*, 2018). First, Twitter is one of the most widely used platforms for financial disclosure (Pizzani, 2010; Zang 2015; Xiong *et al.*, 2016; Yang and Liu, 2017; Jung *et al.*, 2018; Bartov *et al.*, 2018, Amin *et al.*, 2020). When compared to other SM platforms (e.g. Facebook), which require a pre-existed relationship, Twitter provides fast communications between firms and their stakeholders since it is far reaching and can be obtained easily by stakeholders. Further, when compared to other SM platforms, Twitter's messages are shorter, more concise and have more hyperlinks (Zhou *et al.*, 2015). Therefore, when disseminating information, Twitter is the first choice of professionals, involved in investor relationships management, (Alexander and Gentry, 2014; Blankespoor *et al.*, 2014), and firms' managers (Prokofieva, 2015; Elliott *et al.*, 2018; Lei *et al.*, 2019).

Second, when searching for the required financial information disclosed by firms, there is the ease of using Twitter's special features, such as the hashtags (#), and cashtags (\$). These features enable stakeholders to obtain the necessary information more quickly (Bartov *et al.*, 2018; Best and Caylor, 2019).

Third, when compared to other SM platforms, there are the arguments used in previous studies about Twitter's primacy use in disclosing financial information and that the empirical tests are more meaningful (Zhou *et al.*, 2015; Guggenmos and Bennett, 2017; Jung *et al.*, 2018; Elliott *et al.*, 2018).

Accordingly, SM has become an important aspect of disclosure literature due to its valuable characteristics that have increase its usage by a large cross section of society and that has allowed stakeholders to share their opinions about the financial information disseminated by firms (Miller and Skinner, 2015).

However, the argument in favor of using SM and, more specifically, Twitter as a disclosure medium to disseminate financial information is that there needs to be further research studies in this aspect of accounting research (Albarrak *et al.*, 2020; Nuseir and Qasim, 2021).

Recently, the academic literature has argued that Twitter has an importance role in capital markets (Antweiler and Frank, 2004; Chen *et al.*, 2014; Bartov *et al.*, 2018; Rennekamp and Witz, 2021). Many articles have illustrated the significance of many aspects of information being disclosed on Twitter, These are such as the reduction in information asymmetry (e.g., Blankespoor *et al.*, 2014; Lee *et al.*, 2015; Prokofieva, 2015; Jung *et al.*, 2018; Khlifi, 2021); the firm's stock market performance (e.g., Bollen *et al.*, 2011; Mao *et al.*, 2012; Yu *et al.*, 2013); the influence on the firm's stock price, returns, and liquidity (e.g., Blankespoor *et al.*, 2014; Lee *et al.*, 2015; Bartov *et al.*, 2018; Chen *et al.*, 2017; Blankespoor *et al.*, 2018; Ding *et al.*, 2019); the impact on investors' responses to earnings announcements (e.g., Curtis *et al.*, 2016); and the association with the firm's value (e.g., Luo *et al.*, 2013; Jung *et al.*, 2018).

Many academic studies have explored Twitter's general usage in business from many perspectives such as marketing, news distribution, promotions, customer services, managed

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product recalls and investors' perceptions (e.g., Case and King, 2011; Xiong and Mackenzie, 2015; Lee *et al.*, 2015, Trinkle, *et al.*, 2015). In addition, while, on the one hand, some studies were concerned with the usage of Twitter as a financial disclosure medium (e.g., Bollen *et al.*, 2012; Mao *et al.*, 2012; Blankespoore *et al.*, 2014; Zhou *et al.*, 2015; Lee *et al.*, 2015; Curtis *et al.*, 2016; Jung *et al.*, 2018) , on the other hand, few studies examined the determinants of financial disclosure through using Twitter (Basuony *et al.*, 2018; Amin *et al.*, 2019; Ayman *et al.*, 2019; Basuony *et al.*, 2020). This study responds to Miller and Skinner's (2015) call to explore SM platforms as a disclosure medium. Accordingly, this study's first objective is to explore the non-financial listed Saudi Arabian firms' levels of financial disclosure via Twitter.

This study's second objective is to investigate empirically in the context of Saudi Arabia the association between the firms' financial disclosure on Twitter and family determinants. Family-related determinants are those variables that are widespread in family firms and constitute the family dominance. Many such firms may have family members on their boards of directors either as executive or non-executive directors or may have members who hold significant stakes in the firms' ownership structure (Ali *et al.*, 2007; Chen *et al.*, 2008). Many accounting studies have explored the impact of family firms on different aspects of disclosure (e.g., Ali *et al.*, 2007; Prencipe *et al.*, 2008; Salvato and Moores, 2010; Cascino *et al.*, 2010; Songini *et al.*, 2013; Prencipe *et al.*, 2014; Campopiano and De Massis, 2015; Drago *et al.*, 2018). However, previous studies have not paid much attention to the

association between family determinants and financial disclosure via Twitter.

The motivation for this study within Saudi Arabia's environment is derived from the following points. First, Saudi Arabia has unique socio-economic settings since the Saudi Arabian capital market is one of the largest capital markets in the surrounding regions due to its application of an open economic philosophy. Further, the Saudi Arabian Government has performed various steps to reform and improve the structure of the Saudi Stock Exchange. Recently, these changes have attracted more foreign investments (Habtoor and Ahmed, 2017). Second, Saudi Arabia's non-financial listed firms have adopted Twitter to communicate with their stakeholders. Most Saudi Arabia's non-financial listed firms have Twitter accounts, and this has aided this study's empirical examination. Third, all Saudi Arabia's listed non-financial firms have high levels of corporate governance disclosure and this has helped this study to collect the required data of family determinants.

In terms of this study's objectives, this study's findings demonstrate that Saudi Arabia's non-financial listed firms produce low numbers of financial tweets. Therefore, this requires Saudi Arabia's regulators to pay more attention to motivate Saudi Arabia's non-financial listed firms to increase their financial tweets and communicate promptly with their stakeholders. Moreover, the findings reveal that some family variables have an impact on financial tweets. These findings support the achievement of this study's objectives.

This study contributes to the existing literature in several ways. First, it paves the way to explore further the usage of SM platforms in financial disclosure since there has been little

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previous examination of them in the context of developing countries. Second, few studies have investigated the association between family-related determinants and disclosure. However, the association between family -related determinants and financial disclosure via Twitter not examined widely in the previous studies. This study represents one of pioneer studies in this field through investigating the impact of family determinants on financial tweets for Saudi Arabia’s listed non-financial firms. Third, this study applies various theoretical frameworks to test the association between family determinants and financial tweets. There has been little exploration in accounting research of some of these theories such as resource dependence theory and the technology-organization-environment (TOE) framework. This study has formulated some hypotheses to test these theories and, accordingly, this has added more value to its findings.

The rest of this paper is organised as follows: Section 2 presents the background of the study. Section 3 reviews the previous studies in the field of SM disclosure. Section 4 discusses in brief the theoretical framework and the formulation of this study’s hypotheses. Section 5 presents the research methodology. Section 6 discusses the empirical findings. Finally, Section 7 presents the conclusions.

2. Background

Firms’ stakeholders place great importance on the availability of timely and value relevant information. Firms are required to provide useful information to uninformed investors to both improve their competitive advantages and reduce their information asymmetry problems through extending the level of

disclosure (Boylan and Boylan, 2017; Rosati *et al.*, 2019; Nuseir and Qasim, 2021). Accordingly, firm disclosure has attracted many researchers and, consequently, this has become one of the hot topics in the accounting field (Miller and Skinner, 2015; Amin *et al.*, 2020). On one hand, firms can rely on different third- party information intermediaries, such as financial analysts, financial advisors, news coverage, credit rating agencies, etc. (Bartov *et al.*, 2018). While, on the other hand, firms can use their own tools to disseminate the required information.

Noticeably, during the last 20 years, firms have used various channel to disclose various types of information to stakeholders (for example, written documents such as annual reports, financial reports and earnings press release, or verbal statements such as conference call and shareholders meetings or other channels such as firm website) (Best and Caylor, 2019). Firms rely mainly on their financial reporting to notify current and prospective stakeholders of their financial performance (Healy and Palepu, 2011; Xiong *et al.*, 2015; Xiong *et al.*, 2016).

Further, in the late 1990s, the world witnessed an IT revolution. One of the consequences of this revolution is the extended usage of the Internet which encourages firms to use their websites to disseminate various types of information (Ashbaugh *et al.*, 1999; Zhou *et al.*, 2015; Ayman *et al.*, 2019). In this regard, the FASB acknowledged firms' website to be a disclosure medium (Khelifi, 2021). However, the above-mentioned channels are questionable due to firms' uncertainty about the required information being disseminated to a broader set of investors who have a limited time and resources to use pull technology (Blankespoor *et al.*, 2014). Therefore, firms

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seek to improve the availability of information by targeting investor relation programs and by providing the required information through high technology channels such as their websites and, more specifically, SM which has become an essential source to disseminate financial information (Manika *et al.*, 2013; Zhou *et al.*, 2015; Agarwal *et al.*, 2016; Jung *et al.*, 2018).

Recently, SM has included a new channel that depends on mobile web-based technology and to provide useful features of information to stakeholders. These features are such as: sharing, discussing, modifying, and analyzing the various types of information through the interactive internet-based platforms (e.g., Facebook, Twitter, YouTube, LinkedIn, etc.) that enable investors to easily access to the required information (e.g. Kietzmann *et al.*, 2011; Ngai *et al.*, 2015; Shiau *et al.*, 2017).

Accordingly, SM complements the other disclosure mediums in disseminating financial and non-financial information (Blankespoor *et al.*, 2014; Akmese *et al.*, 2016; Ramananda and Atahau, 2020). Firms can use Twitter's new communication two-directional interactive SM platform, which is called the "pull approach" alongside the more traditional disclosure mediums (e.g. static websites) which represent the passive one-directional flow of information from firms to stakeholders which is called the "push approach" to disclose their financial information and gain from the uniqueness characteristics of such SM platforms (Lardo *et al.*, 2017; Al-Sartawi, 2019; Ramananda and Atahau, 2020). Basically, firms can combine the two mediums to achieve the ideal situation in disseminating information.

It is noteworthy that SM has implications on the way that firms disclose their information. These implications are because stakeholders increase their expectations regarding the ready access to the various types of required information. Accordingly, in the late of 2000s with the advent of SM, many firms began to create their official SM accounts to disclose governance information efficiently, disclose performance and financial information to reach new communities, which were not considered previously, and to fulfill the stakeholders' needs through the interactive real time communications with various stakeholders which enable firms to take corrective decisions (Kurinyepa, 2017 ; Lodhia and Stone, 2017; Jung *et al.*, 2018; Cade, 2018 ; Ayman *et al.*, 2019; Al-Sartawi, 2019; Xiao, 2019).

In this regard, Adams' (2015) findings point out that, rather than using a static website, communication interactions with stakeholders via Twitter can provide them with useful financial information. Further, Zhou *et al.*, (2015) argue that firms have used SM to disclose their annual reports and other financial information. However, the decision of using SM platforms as a disclosure medium depends on addressing some concerns such as "the firm's membership in the industry, running costs, financial efficiency, technical capability, mobile environment and organizational culture" (Bamber *et al.*, 2010; Jung *et al.*, 2018; Nuseir and Qasim, 2021).

SM is described as web-2 based direct- access information technologies using virtual platforms that facilitate the sharing and exchanging of a firm's various content (Kaplan and Haenlein, 2010; Blankespoor *et al.*, 2014; Lee *et al.*, 2015; Amin *et al.*, 2019). Therefore, real time SM platforms, which enable firms to interact widely with various users and to

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disseminate information more easily and quicker to a large online network of stakeholders; and provide more comprehensive cheaper means of doing so. Consequently, SM has shifted the method used by firms to disclose their (Lovejoy and Saxton, 2012; Blankespoor *et al.*, 2014; Miller and Skinner, 2015; Lee *et al.*, 2015; Jaing and Shen, 2017; Blankespoor, 2018; Lei *et al.*, 2019; Nuseir and Qasim, 2021).

SM should not be viewed as a replacement disclosure medium but instead as complementing traditional disclosure mediums (Rennekamp and Witz, 2021). However, SM is characterized by some features that for stakeholders make the style and content of disclosed information more unique than traditional disclosure media. Among these characteristics the ease of access to SM websites and platforms enables stakeholders to express their opinions about the various issues related to the firm's operations, performance, and stock price. In addition, SM provides two-way interactive communications between stakeholders which enable firms to share the required information and to obtain useful feedback. Further, since SM platforms are clearly defined and understood by various users, this eases their usage as a source of information. Moreover, the widespread coverage of SM platforms enables firms to reach a wide range of stakeholders who integrate and interact with each other on the public networks. In addition, this promotes firms to broadcast over time their intended messages directly to various stakeholders (Daft and Lengel, 1986; Debreceeny, 2015; Cade, 2018; Xiao, 2019; Nuseir and Qasim, 2021).

Among SM's many advantages is the possibility to quickly reach a wider range of stakeholders with real conversation and provides timely interactions at relatively low costs (Hearn *et al.*,

2009; Du and Jiang, 2014; Zhou *et al.*, 2015; Basuony *et al.*, 2018; Ayman *et al.*, 2019). Further, the direct interactions with stakeholders provide worldwide dialogue either between the firms and stakeholders or between the stakeholders themselves (Bonsón and Flores, 2011; Vernuccio, 2014; Alexander and Gentry, 2014; Broekemier *et al.*, 2015; Basuony *et al.*, 2018), and immediate notifications to interested stakeholders (Lei *et al.*, 2019b). Consequently, Miller and Skinner (2015) stated that SM represents one of the most important components of firms' disclosure that aids the dissemination and exchange of financial information to various stakeholders and enables direct interactivity with them.

To be more effective in disclosing financial information, firms should consider some points in terms of SM (Boylan and Boylan, 2017). First, there is the legislation of using SM platforms as a disclosure medium. Second, there is stakeholders' acceptance of SM platforms as a desired disclosure medium. Third, there is the firms' ability to control the disclosed information.

First, in terms of the legislation of using SM as a disclosure medium, this is achieved from the acknowledgment given by various regulatory bodies in different developed countries. For example, in April 2013, the SEC issued guidance about SM following its investigation about Netflix CEO, Reed Hasting, posting on his personal Facebook account in July 2012 that Netflix's monthly viewing had exceeded 1 billion hours. This information resulted in a significant increase in Netflix's share price. The SEC considered the post to be a violation of the Regulation Fair Disclosure (Reg.FD) and proceeded to investigate the firm since the post was not mentioned in its official channels. After clearing Netflix's CEO, the SEC

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approved the usage of SM as a medium to disclose financial information if investors were alerted. This ruling motivates firms to adopt SM for financial disclosure (Alexander and Gentry, 2014; Boylan and Boylan, 2017; Cade, 2018; Best and Caylor, 2019; Amin *et al.*, 2020).

Second, the acceptance is achieved through the widespread coverage of various SM platforms among the various users. This confers the general admission of SM platforms and underpins their usage. Further, the unique features, provided by these platforms, make them preferable for stakeholders to depend on them continuously.

Third, the control about what firms need to disclose increases the efficiency of SM platforms over the intermediary information parties since the firms can determine who receives the information; the amount of disclosed information; and the timing of disclosing the information (Schumaker and Chen, 2009; Boylan and Boylan, 2017). Firms' determination of the disclosed content enables them to control what is disclosed and to communicate effectively with their stakeholders.

Among the SM platforms that are widespread and used greatly, Twitter has emerged at the forefront. Twitter is a "microblogging service" that facilitates users to build their own online networks to share and disseminate information with up to 280 characters. These are the so-called "tweets" (Magro *et al.*, 2009; Saeed and Sinnappan, 2011; Sprenger *et al.*, 2014b; Xiong *et al.*, 2016). These tweets are published on the firms' websites either through their official accounts or through other third-party accounts. Investors can obtain the required information through either following the desired official

accounts or through searching for specific key words which provide real time information (Sprenger *et al.*, 2014b).

Moreover, Twitter enables direct two-way connections among various stakeholders and enables them to discuss and share financial information through posting tweets and obtaining feedback through comments which enhance the creditability of disclosed information (Li *et al.*, 2018; Albarrak *et al.*, 2020). In addition, Twitter allows stakeholders to retweet what they obtained and, in doing so, the disclosed financial information is spread widely.

Due to its unique features, Twitter can affect the firm's disclosure from many aspects (Blankespoor *et al.*, 2014; Li *et al.*, 2014; Xiong *et al.*, 2016; Boylan and Boylan, 2017; Jung *et al.*, 2018; Elliott *et al.*, 2018; Lei *et al.*, 2019a; Best and Caylor, 2019; Albarrak *et al.*, 2020; Rennekamp and Witz, 2021). First, there is the flexibility of using Twitter either in numbers of disclosed information or in the timing of the disclosure. Firms can use Twitter frequently to post many items of financial information without any restrictions. Further, firms can select the suitable time for disclosing financial information to stakeholders and to achieving the firm's objectives. By using Twitter, firms apply push technology which provides stakeholders with the intended financial information instead of their waiting to obtain this information through pull technology from the various information resources. Through following their official Twitter accounts, this push technology allows stakeholders to obtain all the financial information tweeted by the firms. The application of push technology provides timely financial information at low cost. Accordingly, this enriches the investors' attention to the disclosed information and improves

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their responses to firm financial disclosure (Xiong *et al.*, 2015; Teoh, 2018).

Second, Twitter determines the size of firm's use, and this may aid them to formulate their disclosure strategies. When compared to traditional disclosure mediums, the investors' responses of SM disclosures increase reasonably since investors can respond more efficiently to messages posted on Twitter (Elliott *et al.*, 2018; Rennekamp and Witz, 2021).

Third, firms can use Twitter to disclose precise and determined information to stakeholders instead of disseminating comprehensive information. This is due to the nature of Twitter messages that include 280 characters and, thus, enables firms to disclose their intended financial information.

Fourth, Twitter can use the retweet feature which enables financial information to reach a wide range of stakeholders and to increase the repetition of disclosed information. This results in improving the level of disclosure.

Fifth, stakeholders can widely recognize disclosed financial information through Twitter's special features such as hashtags (#) or cashtags (\$). These features allow firms to disclose financial information repeatedly and be assured that this information is spread widely.

Sixth, the ability to measure effectiveness of the disclosed financial information through considering the number of tweets or retweets. These indicate the reader's intensity and interests.

All these features encourage firms to adopt Twitter to widen the communications with their stakeholders and to overcome

their awareness of the traditional mediums (Blankespoor *et al.*, 2014, Jung *et al.*, 2018). Further, Twitter's flexibility allows firms to manage their relationships with stakeholders efficiently (Kaplan and Haenlein 2010; Etter 2013; Miller and Skinner, 2015; Lei *et al.*, 2019a). Accordingly, Twitter's use as a disclosure medium affects the level of the firms' disclosure and allow them to increase the amount of disclosed financial information. By doing so, this reduces information asymmetry and agency problems and increases the quality of disclosure. Recent literature has indicated the extended usage of Twitter as a medium for disclosing information and discussing the firms' main financial indicators (e.g., zhang *et al.*, 2010; Bollen *et al.*, 2011; Sprenger and Welp, 2011; Sprenger *et al.*, 2014a,b; Zhang, 2015).

Disclosure literature concentrates mainly on the use of firms' website to disclose financial information. This is called Web 1,0 technologies. However, there are a lack of literature that has explored the usage of SM as a disclosure medium. This is called Web 2,0 technologies (Bonson and Bednarova, 2015; Basuony *et al.*, 2020). Little attention has been paid to SM platforms' disclosure of voluntary information (Zhang, 2015). SM's advent as a disclosure medium has encouraged a trend in the research to examine the impact of SM on financial disclosure (Blankespoor *et al.*, 2014; Lee *et al.*, 2015; Chen *et al.*, 2017; Cade 2018; Elliott *et al.*, 2018; Rennekamp and Witz, 2021). Few studies have examined the role of SM platforms in disclosing financial information (e.g., Zhang, 2015; Zhou *et al.*, 2015; Trinkle *et al.*, 2015; Lardo *et al.*, 2017; Basuony *et al.*, 2018; Cade, 2018; Al-Sartawi, 2019). Accordingly, with their unique features, SM platforms have affected the optimal level of the firm's disclosure and represents a new trend in the

accounting field that has been expanded in the recent literature (Teoh, 2018).

3. Literature Review

The rapid growth in technology has led to dramatic changes in the capital markets and the media. This has resulted in a two-fold impact on firms' disclosure polices by which firms adopt SM as a medium of disclosed financial information in recognition of the legislation used by the regulatory bodies (Lardo *et al.*, 2017; Al-Sartawi, 2019).

The accounting literature on SM can be classified into three strands (Lei *et al.*, 2019b). The first strand indicates the main factors that have encouraged the firms to adopt Twitter as a disclosure medium. Many pieces of literatures have discussed these factors which are such as Corporate Social Responsibility (CSR) reporting, industry types, spending on advertising, CEO age, types of firm news, governance mechanisms, environmental performance, firm's size, market to book ratio, leverage ratio and analyst coverage.

In terms of CSR reporting, Lee *et al.*, (2013) have reported that firms with higher ratings of CSR reporting are more likely to adopt Twitter. As regards industry type, Zhou *et al.*'s (2015) findings show that the adoption of Twitter and Facebook is higher in the retail industries. For the spending on advertising, CEO age, and firm's news, Lee *et al.*'s (2015) findings indicate that firms with higher spending on advertising, younger CEOs, and bad news are more likely to engage in Twitter for the purpose of disseminating information. These findings are supported by Bhagwat and Burch (2016) and by Jung *et al.*, (2018) who show that firm's news, spending on advertising,

and a younger CEO are among the firms' determinants in adopting Twitter. Turning to governance mechanisms, Yang *et al.*'s (2017) findings illustrate that better governed firms are more likely to choose Twitter as a disclosure medium. Huang *et al.*'s (2016) findings demonstrate the impact of environment performance in adopting Twitter as a complementary disclosure medium. In terms of firm's size, market to book ratio, leverage ratio, and analyst coverage, Bhagwat and Burch's (2016) findings show that smaller firms with fewer analyst coverage and lower institutional ownership are more willing to adopt Twitter. However, Jung *et al.*'s (2018) findings demonstrate that the adoption of Twitter is related to large firms with high market to book ration, low amount of leverage and more analyst coverage.

The second strand indicates the characteristics of firm disclosure used in SM. These characteristics include the types of disclosed information on SM platforms and the benefits of disclosure. Blankespoor *et al.*, (2014) have provided empirical evidence of the impact of firms' tweets about earnings news on the stock's trading and investor attention. Using a sample of technology firms, they conclude that, when firm tweet information about earnings, the trading volume and depth as measures of liquidity are higher and, as a main measure of information asymmetry, bid ask spreads are lower. Further, their findings show that tweeting can only reduce information asymmetry for firms with low visibility. The increase in tweeting activity led to a reduction in information asymmetry for firms with larger share trading volumes.

Likewise, Prokofieva's (2015) findings demonstrate that firms use Twitter to publish information already available in other mediums. Further, her findings show that, when compared

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to highly visible large firms, low visibility firms post large numbers of tweets and these have more impact on reducing information asymmetry.

Lee *et al.*'s (2015) findings illustrate SM's role in mitigating the negative effects (such as loss of firm reputation, loss of future sale, and legal liability) resulting from product recall which can constitute a product crisis. They report that the usage of Twitter in disseminating product recall information to consumers mitigates the negative price reaction of recall announcements.

Xiong *et al.* (2015) examined 199 information related tweets from 14 ASX listed firms' Twitter accounts to determine the extent and nature of using Twitter as a disclosure medium for financial reporting information. Their findings show that earnings and operation performance are the most disclosed information on Twitter. Further, industry type is a determinant for the disclosure of financial reporting information on the sampled firms' Twitter accounts.

Moreover, Xiong *et al.*'s (2016) findings demonstrate that financial reporting on Twitter reduces the information asymmetry as reflected in the reduction of bid-ask spread and in the increase of share trading volume.

Jung *et al.*, (2018) examined Twitter's role in the strategic dissemination of firm-specific information. Their findings show that the dissemination of quarterly earnings announcements by Twitter, the sending of fewer earnings announcement tweets and "rehash" tweets are less likely to be used by firms when the news is bad. By using a machine learning approach, Crowley *et al.*'s (2018) findings indicate that firms disclose voluntarily

more financial information (e.g., earnings announcements, accounting filling and specific news events) on Twitter than disclosed already through conventional channels and contained media and links related to these types of information when these types of information are significantly good or bad.

Al-Sartawi's (2019) findings show that Gulf Corporation Countries' disclosure of financial information through various SM channels (including Twitter) of has a significant impact on these countries' firm values. Moreover, Albarrak et al.'s (2020) findings indicate that the amount of financial information disseminating to investors via Twitter reduces the cost of equity for non-financial firms listed on the US NASDAQ Stock Exchange.

Recently, Nuseir and Qasim (2021) reviewed the relevant academic papers, published on the Scopus and Google scholar databases during the period from 2000 to 2020, that explored the strategic usage of SM as a disclosure medium for investors. From the selected 16 articles, their findings show that some firms adopt SM to reduce information asymmetry between managers and investors. Accordingly, the findings show the strategic usage of SM for information disclosure and, more particularly, when firms are announcing positive news and disseminating voluntary information.

The third strand argues SM's impact of disclosure on the capital market. Many academic papers have discussed the relationship between the content of information disclosed on Twitter (including sentiments) and either the movement of the stock market or a firm's stock performance (Sprenger *et al.*, 2014b; Zhang, 2015; Xiong *et al.*, 2016; Teoh, 2018).

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For example, Zhang *et al.*'s (2010) findings illustrate the significant emotional influence of the level of tweets on the Dow Jones, NASDAQ, and S&P 500 indicators. Further, Bollen *et al.*'s (2011) findings demonstrate that the collective investor sentiment, resulting from the textual information disseminated on Twitter, predicts the changes in the Dow Jones Industrial Average (DJIA) closing values. Similarly, Springer *et al.*'s (2012) findings indicate the crucial role of the information published on Twitter (e.g., corporate governance information) on the firms' stock prices.

Through using sentiment analysis, Yu *et al.*, (2013) observed the powerful effect of different SM platforms (including Twitter) on firm financial performance. In the same vein, Luo *et al.*, (2013) have examined the association between SM and firm equity value. They report that, when compared to traditional media, SM has a higher meaningful prediction power on firm equity performance.

Moreover, by using a method of computational linguistics to analyze 250,000 S&P 500 stock-related Twitter messages, Sprenger *et al.*'s (2014b) findings show a significant association between tweets' features (e.g., sentiment, volume, and disagreement) and capital market indicators (i.e., stock returns, trading volume, and volatility). They argue that the greater the number of investors who receive above average investing advice, the higher the rate of retweeting and followers of those investors. This indicates the influence of Twitter features on capital market participants.

Further, Curtis *et al.*'s (2014) findings show that the higher the level of investor attention, as measured by investor activity

on Twitter, the greater the sensitivity of earnings announcement returns to earnings surprises. Boylan Boylan, (2017) examined whether shareholder value, as measured by the rises and falls in stock prices is enhanced through the financial institutions disclosing financial information via SM (both Facebook and Twitter). They depend on event study as a methodology to compare over multiple time periods the changes in financial institutions' stock price for. Their study provides evidence of the increase in share value in the three – day period following the disclosure of financial information.

In the UK, Yang and Liu (2017) investigated Twitter's impact on earnings disclosure of firm performance in respect of FTSE 100 firms that had applied management strategies. Their findings show that firms, when compared to firms with poor performance, firms with high performance are more likely to disclose earnings-related tweets to connect with their stakeholders.

In a related vein, Bartov et al.'s (2018) findings indicate that the predictions of individuals' aggregate opinions of tweeted just prior to a firm's earnings announcement with the upcoming firm earnings and earnings announcement returns through measuring sentiment opinions of tweets by using a machine learning method.

During the period from 2011 to 2014, Rosati *et al.*, (2019) used an event study methodology on a sample of American publicly traded firms to examine the impact of Twitter on stock prices during data breach crises. Their findings show that, during the period when the data breach was announced, Twitter's usage has a negative influence on the firm's stock price.

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Moreover, few studies have illustrated the impact of SM disclosure on investors' judgement. Cade, (2018) examined whether the investor perceptions were affected by the firms' attitudes towards the Twitter users' criticisms. He used multiple experiments to measure the non-professional investors' perceptions to the activities related to earnings announcement on Twitter. The results show that the greater the number of times the criticism is retweeted, the higher the numbers of perceptions received from the non-professional investors. Accordingly, the study provides an explanation on the usefulness of managing criticism about SM disclosure by communicating with investors to mitigate their perceptions instead of the abandonment of such disclosure.

Similarly, Renneekamp and Witz (2018) argued that investors are highly motivated to invest in the firms that use Twitter as a medium of disclosure. The investors' perceptions increased when the firms' managers used Twitter to disseminate positive news.

Further, Elliott *et al.*'s (2018) findings show that, after a negative earnings surprise, investors can increase their investments in a firm if the CEO tweets the firm's news in his personal Twitter account rather than publishing the news on either the firm's website or on the Investor Relations Twitter account. This finding suggests that managers can mitigate investors' loss of trust and negative perception, which followed the negative news, by responding quickly to such news and disseminating it on Twitter.

Based on the above literature, firms are increasingly adopting Twitter to disclose financial information. However, few studies

have examined the key determinants of financial disclosure on Twitter. For example, by using a cluster analysis, Zhang (2015) has investigated the voluntary disclosure of financial information on SM (including Twitter). The findings indicate the role of adopting a level of technology, such as Twitter, to explain the disclosure of financial information. The disclosure of voluntary information on Twitter can be explained by the determinants examined in the traditional disclosure medium such as firm performance, information asymmetry, and debt structure.

Ayman *et al.*, (2018) examined the relationship between the usage of Twitter as a disseminating platform for earnings announcements and both board gender diversity and board national diversity. In their study, they used four proxies for earnings announcements: i.e., disseminating earnings news at least once; disseminating earnings news quarterly; the number of earnings' tweets; and the age of the Twitter account. The findings demonstrate that both board diversity variables are associated positively with the first three proxies of earnings news announcements. In contrast, only board national diversity is related to the age of the Twitter account.

By constructing a social networks disclosure index (including Twitter among other five platforms) for the top listed FTSE 150 companies in the UK, Basuony *et al.*'s (2018) findings show that board composition is among the determinants of firm disclosure via SM. Their findings show that the higher the number of female board members, the greater the firm's disclosure via SM.

In the same vein, Amin *et al.*, (2019) explored for the top listed companies, which constituted the UK's FTSE 35 index,

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the influence of board characteristics on the extent of financial disclosure on Twitter. The findings show that only board independence, board tenure, and board age have a positive and significant influence on the extent to which Twitter is used as a financial disclosure platform. However, board tenure shows a negative association with that of financial disclosure.

Recently, Basuony *et al.*, (2020) have investigated the associated between firms' characteristics and SM's (including Twitter) impact on firm disclosure in four countries, namely, Australia, Canada, the UK and the USA. Their findings show that both firm size and leverage are among the variables that have the highest effect on firm disclosure via SM.

With regard to the Saudi Arabian environment, few studies have explored financial disclosure via SM. Khlifi (2021) has investigated SM platforms' impact in 2019 on the information asymmetry of the Saudi Arabian listed non-financial firms. Descriptive results demonstrate that Twitter, Facebook, and LinkedIn are the most common SM platforms adopted by Saudi listed firms to disclose financial information. Among the platforms examined, only Twitter as a channel for financial disclosure has a negative association with information asymmetry. Further, the findings reveal that disclosure of financial information via Twitter has a stronger impact on the reduction of information asymmetry by larger rather than smaller Saudi Arabian firms.

Family- related determinants explained many aspects of disclosure such as annual report readability, voluntary disclosure, CSR disclosure and corporate risk disclosure (e.g., Ali *et al.*, 2007; Prencipe *et al.*, 2008; Cascino *et al.*, 2010;

Mazzola *et al.*, 2013; Campopiano and De Massis, 2015; Haddad *et al.*, 2015; El-Ghoul *et al.*, 2016; Habtoor and Ahmed, 2017; Drago *et al.*, 2018). However, there has been little investigation of the relationship between family determinants and financial disclosure on Twitter. Therefore, in the context of Saudi Arabia, this study adds to the existing literature by investigating the impact of some family determinates on financial disclosure via Twitter.

4. Theoretical Framework and Development of the Hypotheses

Saudi Arabian firms are more willing to benefit from the various advantages of using SM. Therefore, they use Twitter as one of SM platforms to disclose various financial information to their stakeholders. Some of the listed Saudi Arabian non-financial firms are family-based firms which have either family representatives on their boards or have family members who hold stakes in their equity. Accordingly, this study investigates the impact of the listed Saudi Arabian non-financial firms' various family determinants on the disclosure of financial information via Twitter.

Many theories explain the association between the listed Saudi Arabian non-financial firms' family determinants and the disclosure of financial information via Twitter. Agency theory alleviates the information asymmetry problem between firms' management and stakeholders through the monitoring of family owners who have the power to mitigate the dominance of management. Family owners have the authority to access the disclosed information and, hence, by reducing the level of information asymmetry, lessen the level of conflict between management and stakeholders. Consequently, based on agency

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theory family firms disclose less financial information via Twitter (Chen *et al.*, 2008).

According to stakeholders theory, firms connect to the various stakeholders to respond to their various needs through disclosing the required information via Twitter (Gray *et al.*, 1995). Family firms are characterised by various features such as maintaining a high reputation, responding to the ethical values and strong communications with stakeholders. When compared to non-family firms, these features make them closer to stakeholders than by fulfilling their various needs (Dyer and Whetten, 2006; McGuire *et al.*, 2012; Cennamo *et al.*, 2012). Consequently, based on stakeholder theory, family firms are more trustworthy and more confident than non-family firms. Therefore, through increasing the level of financial disclosure via Twitter, this increases the family firms' commitment to maintain their reputations and support their communications with stakeholders.

In addition, institutional theory assumes that firms should respond to the society's regulations and value (DiMaggio and Powell, 1983; Scott, 2001; Campopiano and Massis 2015) and should meet the stakeholders' needs through performing the actions that achieve the society's values and seek to lessen the legitimacy gap to maintain the firms' continuity in the business environment (Gavana *et al.*, 2017). Therefore, family firms are required to act legitimately and to signal to the public that their goals are aligned with the society's values. In addition, they are required to provide better linkage with their stakeholders by increasing the level of disclosure of financial information via Twitter Gavana *et al.*, 2017; Nekhili *et al.*, 2017; Ntim *et al.*, 2017; Ayman *et al.*, 2019).

Moreover, resource dependence theory explains the board members' motivation to use different networks in order to secure their firm's resources and, more especially, when the board of directors has diversity in family lineage between their members (Carter *et al.*, 2003). Consequently, when board of directors include family members, this increases the level of disclosure of financial information to enable the firm to access better resources.

Finally, the Technology-Organization-Environment (TOE) framework can explain the disclosure of financial information through Twitter. TOE explains the motivation to use Twitter as a technological tool to disseminate financial information (e.g., Srivastava and Teo, 2009; Kuang-Wei and Yan, 2010; Picoto *et al.*, 2012; Basuony *et al.*, 2018). The TOE framework is an organization- level theory that justifies the family firms' use of Twitter within three main contexts. These are: technological context; the organizational context; and the environmental context. As an organization, a family firm can adopt Twitter to increase their level of disclosure of financial information to benefit from its technological features and to respond to the increased usage of Twitter in the environment that surrounds them.

Few studies have explored the determinates of financial disclosure via Twitter. However, academic research has not paid sufficient attention to family -related determinants. Consequently, this study aims to shed light on the impact of the listed Saudi Arabian non-financial firms' various family determinants on the disclosure of financial information via Twitter. Saudi firms, which have either family members on their boards or have members who hold shares, may adopt Twitter to disseminate financial information. Accordingly, they

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can benefit from the wide usage of Twitter as a social network to improve their social images among the various users and to present their good reputations achieved by disclosing timely financial information through the instant communications with interested parties. Accordingly, based on the institutional theory and TOE framework, the study formulated the following hypotheses for this study:

H1: There is a significant association between family members' representation on the boards and the disclosure of financial information via Twitter.

H2: There is a significant association between family ownership and the disclosure of financial information via Twitter.

Family members can have more power on the board when they are, also, the firm's CEO; this is referred to as family leadership. When a family member acts as the firm's CEO, he can enforce his power and influence to protect his interests and, hence, alleviate the management's dominance to reduce information asymmetry problems. Therefore, based on agency theory, the study formulated the following third hypothesis:

H3: There is a significant association between family leadership and the disclosure of financial information via Twitter.

A firm can derive its name from the family name. This represents an interaction between the firm's identity and the identity of its family members. Such an overlap enables family members to influence the firm's survival (Drago *et al.*, 2018). Further, when there is an overlap between the firm's name and that of the family, there is a greater responsibility on family

members to preserve the firm's image and its business reputation and to enhance the communications with various stakeholders through using Twitter as a widespread tool to disclose financial information. Consequently, based on institutional and resource dependence theories, we formulated the following fourth hypothesis:

H4: There is a significant association between family firms' names and their disclosure of financial information via Twitter.

One firm's family member can sit on another firm's board of directors. This is referred to as family cross-directorship. The multiple directorships enable family members to enhance their experiences and to transfer any technology from one firm to another. Haniffa and Cooke (2005) argue that members, who sit on more than one board, can share any strategic changes with multiple firms and influence their behaviors. Accordingly, based on the TOE framework, firms with cross-directorship family members are more motivated to benefit from Twitter as a technological medium to disclose and disseminate timely financial information to various stakeholders. Therefore, the study formulated the following fifth hypothesis:

H5: There is a significant association between family cross-directorship and the disclosure of financial information via Twitter.

5. Methodology

The paper follows the previous studies by examining the disclosure of financial information and excludes all the financial firms listed on The Saudi Arabian Stock Exchange (for example. banks and insurance firms). This is due to their

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unique characteristics and the various regulations imposed upon these firms to operate under different rules. Hence, when compared to the listed Saudi Arabian non-financial firms, there are significant differences in their disclosure practices (Khlifi, 2021). Consequently, this study concentrates mainly on the non-financial Saudi firms listed in 2020. The study applied some criteria to reach the final sample. First, the study excluded any firm that did not have an official Twitter account. Second, the study rejected, also, any firm that did have an official Twitter account but had made any financial tweets are. Third, the study excluded from the sample any firms with missing data. This resulted in 99 observations from 18 different Saudi Arabian sectors. The study's data are obtained from the firms' financial statements and extracted from the annual reports excreted from the web site of Tadawul. Table 1 summarise the final study's 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 official Twitter account | (31) |
| Less: Firms have not disclosed any financial information on their Twitter account | (23) |
| Final Size | 99 |

5.1 Research Design

5.1.1 Measurement of the Disclosure of Financial Information via Twitter

This study depends on the financial information disclosed mainly on the listed Saudi Arabian non-financial firms' official Twitter accounts. This contrasts with some studies that obtained the tweeted financial information from third party service providers' websites (Xiong *et al.*, 2015, 2016). The study included the firm only in the study's sample if it had an official Twitter account and disclosed financial information on this account. Otherwise, firm are excluded from the study sample.

Consequently, to measure the financial disclosure of the listed Arabian non-financial firms, The study applied many steps. First, the study identified such firms' websites to search for any Twitter logo/link either on their websites' web pages or on their site maps. In case of there being no Twitter logo or relevant links, the Google search engine are used to search for the Twitter account. Second, the study accessed the firm's official Twitter account to ensure that it worked and operated efficiently. Third, the study scanned each Twitter account manually to look for any financial tweets during 2020. If we found any, this account is added to this study's sample. Fourth, the study counted the number of financial tweets on each firm's Twitter account since these represented the proxy of financial disclosure via Twitter. Many previous studies have depended on the number of tweets as a proxy for disclosure via Twitter (e.g., Sprenger *et al.*, 2014a; Xiong *et al.*, 2015; Yang and Lin, 2017; Ayman *et al.*, 2019; Albarrak *et al.*, 2020; Amin *et al.*, 2020). Appendix 1 presents some of these financial tweets.

5.1.2 Measurement of Family -Related Attributes

To test the impact of family determinants on the disclosure of financial information via Twitter, we used five main variables to measure the listed Saudi Arabian non-financial firms. Based on the following studies (Klein *et al.*, 2005; Mazzola *et al.*, 2013; El-Ghoul *et al.*, 2016 ; Drago *et al.*, 2018, Ezat *et al.*, 2020), the study used three continuous proxies to measure three family determinants. These are: the existence of family members on the board (Fam BD) as measured by the number of family board's members; family ownership (Fam Own) which is proxied by the percentages of shares held by the family members on the board; and the family members' cross-directorship (Fam Cross) as measured by the number of family board's members who sit on the boards of other listed Saudi Arabian non-financial firms. In addition, the study used two dichotomous proxies to measure two family determinants, these proxies are: family leadership (Fam Lead) which takes "1" if the family member is the firm's CEO instantaneously or, otherwise, takes "0"; and family name (Fam Name) which takes "1" if the firm name is derived from the family name or, otherwise, takes "0". Table 2 summarises the proxies of family members' attributes.

5.1.3 Measurement of Control Variables

Based on the previous studies (Basuony *et al.*, 2018; Ayman *et al.*, 2019; Amin *et al.*, 2019; Basuony *et al.*, 2020; Khlifi, 2021), the study included seven control variables. These variables are: firm size (*size*); risk (*Lev*); Auditor type (*Aud_Type*); Industry type (*Type*), Board size (*BSize*); Non-

executive members (*Non Exc*); and Board meetings (*Meet*).
Table 2 presents the proxies of the control variables.

Table 2: The variable definitions and their proxies

| Variable | Acronym | Proxy |
|---|-----------|--|
| <u>(A) Dependent Variable:</u> | | |
| Financial disclosure via Twitter | FinTw | FinTw= The number of financial tweets disclosed by a firm <i>i</i> on 2020 |
| <u>(B) Independent variables</u> | | |
| Family members on the board | Fam_BD | Number of family members on the board of directors |
| Family ownership | Fam_Own | Percentage of shares held by family members |
| Family leadership | Fam_Lead | Dummy variable equal to 1 when the CEO is from the owning family, 0 otherwise |
| Family companies' name | Fam_Name | Dummy variable equal to 1 when the family's name is included in the firm's name, 0 otherwise |
| Family Cross-directorship | Fam_Cross | the number of family members who sit on the board of directors of other listed Saudi companies |
| <u>(C) Control variables:</u> | | |
| Company Size | size | Natural logarithm of total assets |
| Risk | Lev | Total liabilities deflated by total assets |
| Audit Type | Aud_Type | Dummy variable equal to 1 when the company is audited by big4 audit companies, 0 |

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| | | |
|-----------------------|---------|---|
| Board Size | B_Size | otherwise 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 |

5.2 Research Model

The study ran OLS multiple regression analysis to test the association between family members' determinants and the disclosure of financial information via Twitter. After controlling for industry type, the study's model is as follows:

$$\text{FinTw} = \beta_0 + \beta_1 \text{Fam_BD} + \beta_2 \text{Fam_Own} + \beta_3 \text{Fam_Lead} + \beta_4 \text{Fam_Name} + \beta_5 \text{Fam_Cross} + \beta_6 \text{Size} + \beta_7 \text{Lev} + \beta_8 \text{Aud_Type} + \beta_9 \text{B_Size} + \beta_{10} \text{Meet} + \beta_{11} \text{Non_Exc} + \varepsilon$$

6. Results and Discussion

6.1 Descriptive and Univariate Analysis

6.1.1 The Level of Disclosure of Financial Information via Twitter

There are 122 (79.74%) listed non-financial Saudi Arabian firms that have Twitter accounts and of these firms 99 (81.15%) disclose financial information via Twitter. Table 3 shows the descriptive analysis of the disclosure of financial information via Twitter.

Table 3: Descriptive Analysis of FinTW

| Variable | Obs. | Mean | Min. | Max. | Percentiles | | | Std. Dev. |
|----------|------|-------|------|------|-------------|-----|-----|-----------|
| | | | | | 25% | 50% | 75% | |
| FinTW | 99 | 15.76 | 1 | 55 | 7 | 13 | 22 | 11.943 |

Table 3 indicates that in 2020 listed non-financial Saudi Arabian firms disclosed, on average, 16 financial tweets. The highest number of financial tweets was 55 while the lowest was one tweet. About 75% of the sampled firms posted 22 tweets on financial information. The total number of financial tweets was 1560 (8.74%) and, for all the sampled firms, the total number of financial and other tweets was 17841. These numbers demonstrate the low level of financial disclosure via Twitter posted by listed Saudi Arabian non-financial firms. Therefore, rather than using Twitter as an advertising or advice tool, Saudi Arabian firms need to be motivated to benefit from the various advantages of Twitter in disclosing their financial information.

In addition, Table 4 presents the firms, which belong to each sector and have official Twitter accounts, and the number of firms that disclose financial information on their Twitter accounts. Further it shows the total number of financial tweets in each sector. Table 4 indicates that the “Software & Services” sector disclose the highest number of financial tweets (31.69%), followed by “Diversified Financials” sector (28.57%) and “Material” sector (24.91%). The range (between 2 and 16%) of other sectors’ tweets disclosing financial information confirmed the results shown in Table 3.

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Table 4: Descriptive analysis of number of firms in each sector that have Twitter account and disclose financial Tweets

| Sectors | Total firms | Firms have Twitter | | Firms disclose financial information on Twitter | | Financial tweets | |
|--------------------------------|-------------|--------------------|-------|---|-------|------------------|-------|
| | | No. | % | No. | % | No. | % |
| Real Estate Manag. and Devel. | 11 | 10 | 90 | 10 | 100 | 117 | 9.44 |
| Telecom. Services | 3 | 3 | 100 | 3 | 100 | 69 | 2.44 |
| Pharma, Biotech & Life Science | 1 | 1 | 100 | 1 | 100 | 36 | 15.25 |
| Diversified Financials | 4 | 1 | 25 | 1 | 100 | 8 | 28.57 |
| Media and Entertainment | 4 | 4 | 100 | 4 | 100 | 53 | 14.44 |
| Consumer services | 11 | 9 | 81.81 | 9 | 100 | 105 | 7.54 |
| Commercial and Prof. Services | 4 | 3 | 75 | 3 | 100 | 74 | 9.78 |
| Health Care Equip. &Svc | 8 | 8 | 100 | 6 | 75 | 69 | 4.99 |
| Capital Goods | 12 | 10 | 83.33 | 5 | 50 | 24 | 6.43 |
| Consumer Durables &Apparel | 7 | 5 | 71.43 | 3 | 60 | 41 | 13.76 |
| Energy | 5 | 3 | 60 | 3 | 100 | 79 | 14.44 |
| Utilities | 4 | 4 | 100 | 4 | 100 | 122 | 16.16 |
| Materials | 43 | 31 | 72.09 | 22 | 70.97 | 426 | 24.91 |
| Transportation | 6 | 5 | 83.33 | 5 | 100 | 86 | 7.03 |
| Foods & Bev. | 14 | 12 | 85.71 | 8 | 66.67 | 103 | 5.83 |
| Food and Staples Retailing | 5 | 3 | 60 | 3 | 100 | 31 | 3.98 |
| Retailing | 8 | 7 | 87.5 | 6 | 85.71 | 72 | 4.09 |
| Software & Services | 3 | 3 | 100 | 3 | 100 | 45 | 31.69 |
| Total | 153 | 122 | 79.74 | 99 | 81.15 | 1560 | 8.74 |

Turning to the other variables, Table 5 presents their descriptive results. 54 (35.29%) listed Saudi Arabian non-financial firms are family. On average, two members of the firm's board are family members and family members own 12

% of the firm. Further, on average, only one family member sits on another board. Only 13 % of the sampled firms have an overlap between their name and the family name. However, 53 % of the sampled firms have CEOs who are family members. On average, each firm's board number has eight members and 43% of them are non-executive. The listed Saudi Arabian non-financial firms held, on average, six board meetings per year. In terms of control variables, most of the sampled firms are large, have moderate risk and are audited by the big 4 audit firms.

Table 5: Descriptive analysis of independent and control variables

| Variables | Mean | Min. | Max. | Std. Dev. |
|--|---------------|-------------|--------|-----------|
| Panel A: Independent and Control V. | | | | |
| <i>Fam_BD</i> | 1.590 | 0 | 5 | 1.525 |
| <i>Fam_Own</i> | 0.115 | 0 | 0.967 | 0.196 |
| <i>Fam_Cross</i> | 1.45 | 0 | 5 | 1.430 |
| <i>Size</i> | 9.508 | 7.310 | 12.282 | 0.759 |
| <i>Lev</i> | 0.481 | 0.021 | 0.946 | 0.237 |
| <i>B_Size</i> | 8.39 | 4 | 11 | 1.609 |
| <i>Meet</i> | 5.68 | 2 | 25 | 3.053 |
| <i>Non-Exc</i> | 0.434 | 0.111 | 0.778 | 0.150 |
| Panel B: Dummy Independent and Control V. | | Frequency % | | |
| <i>Fam_Lead</i> : | Existence | 52 | | 52.5 |
| | Not Existence | 47 | | 47.5 |
| <i>Fam_Name</i> : | Existence | 13 | | 13.1 |
| | Not Existence | 86 | | 86.9 |
| <i>Aud_Type</i> : | Big4 | 55 | | 55.6 |
| | Non-Big4 | 44 | | 44.4 |

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Table 6 presents the correlation matrix between the study's variables. There is a significant negative correlation between Twitter- based financial disclosure and the family members on the boards of the listed Saudi Arabian non-financial firms, family name and leverage. While, there is a significant positive correlation between family leadership, family cross-directorship and board size and the disclosure of financial information via Twitter. Table 6 shows that there is no multicollinearity problem because the coefficient of the independent variables is less than 0.80 (Gajarati, 2003, p.359).

Table 6: Pearson coefficient correlation matrix

| | FinT W | Fam_ BD | Fam_ Own | Fam_Le ad | Fam_ Name | Fam_ Cross | Size | Le v | Aud_ Type | BSiz e | Mee t |
|-----------------------|-----------------|------------------|-------------|--------------|--------------|------------------|-------------|----------|--------------|-----------|----------|
| Fam _ BD | - 0.15* * | | | | | | | | | | |
| Fam _ Own | -0.17 | 0.52** * | | | | | | | | | |
| Fam _ Lead | 0.13 * | 0.76** * | 0.53** * | | | | | | | | |
| Fam _ Name | -0.03* * | 0.40** * | 0.37** * | 0.37*** | | | | | | | |
| Fam _ Cros s | 0.16 ** | 0.73** * | 0.45** * | 0.63*** | 0.43** * | | | | | | |
| Size | 0.16 | - 0.36** * | - 0.24** | -0.37*** | -0.10 | - 0.26** * | | | | | |
| Lev | - 0.24* * | 0.16 | 0.16 | 0.17 | 0.21** | 0.18 | 0.16 | | | | |
| Aud _ Type | -0.20 | -0.07 | 0.15 | 0.01 | 0.05 | 0.01 | 0.43** * | 0.1 3 | | | |
| BSiz e | 0.21* * | - 0.21** * | - 1*** | -0.21** | - 0.21** | -0.14 | 0.52** * | 0.0 1 | 0.18 | | |
| Meet | -0.04 | - 0.24** * | -0.13 | -0.25** | -0.08 | - 0.25** * | 0.18 | 0.1 3 | 0.04 | 0.15 | |

| | | | | | | | | | | | |
|---------|-------|-------|-------|-------|-------|-------|-------------|------|------------|------|------|
| Non-Exc | -0.16 | -0.19 | -0.14 | -0.15 | -0.09 | -0.16 | 0.28** * | 0.15 | 0.23* * | 0.15 | 0.11 |
|---------|-------|-------|-------|-------|-------|-------|-------------|------|------------|------|------|

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

6.2 Multivariate Analysis

To test this study's hypotheses, the study applied OLS multiple regression analysis. Table 7 indicates the results of this analysis.

Table 7: OLS model results'

| OLS Model | | |
|-------------------------|----------------|------------------|
| | Coeff. | T Stat. |
| Constant | 1.175 | 3.329*** |
| Fam_BD | -0.392 | -3.439*** |
| Fam_Own | -0.073 | 0.524 |
| Fam_Lead | 0.248 | 2.314** |
| Fam_Name | -0.047 | -0.712 |
| Fam_Cross | 0.194 | 1.748* |
| Size | 0.338 | 3.214*** |
| Lev | 0.104 | 0.930 |
| BSize | 0.249 | 1.804* |
| Meet | -0.013 | -0.088 |
| Aud_Type | -0.024 | -0.199 |
| <u>Other statistics</u> | | |
| F-Ratio (sig.) | 1.967** | |
| Adjusted R2 | 0.22 | |
| Max. VIF | 2.965 | |
| Min. Tolerance | 0.337 | |

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***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

The model is significant at $p < 0.0000$ and the adjusted R^2 is 22 %. The multivariate results demonstrate that family firms have a significant impact on the disclosure of financial information via Twitter. At the 1% level, there is a negative association between the existence of family members on the listed Saudi Arabian non-financial firms' boards of directors and the disclosure of financial information via Twitter. This result suggests that Saudi Arabian firms with large number of family members on their boards of directors post fewer tweets on their Twitter account relating to financial information. This result is confirmed by agency theory which indicates that family members can easily access the required information and they do not need any more information. Therefore, the information asymmetry problems between them and management can be controlled with minimal effort. Family members act in a way that increase their interests to the detriment of the stakeholders' needs. This result is consistence with (Ho and Wong, 2001; Chau and Gray, 2002; Haniffa and Cooke, 2002; Ghazali and Weetman, 2006). Consequently, hypothesis H_1 is accepted.

Moreover, the results demonstrate that, at the 10% level, there is a positive and significant association between family leadership and financial tweets. When the firm's CEO is a family member, the family power is increased. In addition, by extending the level of disclosure of financial information to cover a wide range of their stakeholders, family members are highly motivated to present a good image for their firm and

their high -performance financial disclosure. Therefore, they choose to disseminate their firms' financial information via Twitter which is characterized with its wide usage and coverage. This result is confirmed by stakeholder theory which postulates that family-based firms seek to build strong communication links with their stakeholders to maintain their reputation and provide them with the required financial information quickly. This is achieved via Twitter. Consequently, hypothesis H_3 is accepted.

In addition, the findings reveal that the greater the number of family member on the firm's board, who sit on other firms' boards, the greater the level of the disclosure of financial information on Twitter. Family cross-directorship increases the family members' experience and knowledge, and this results in increasing the level of financial disclosure via Twitter. TOE can explain the motivation of family members who sit on other firms' boards to encourage the adoption of Twitter as financial disclosure medium. Family members who sit on more than one firm's board can justify the strategic changes in favor of using Twitter as a technological medium for the disclosure of information. This result is consistent with Haniffa and Cooke's (2005). Consequently, hypothesis H_5 is accepted.

According to the other family variables, the results conclude that these have no impact on financial tweets. Consequently, hypotheses H_2 and H_4 are rejected. Further, among the control variables only firm size and board of director size have significant relationships with such tweets, this finding is consistent with those of many studies (Ezat and El-Masry, 2008; Laksmana, 2008; Amin *et al.*, 2019).

7. Conclusion

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The changes in information technology have provided new disclosure mediums that are characterized by unique features. These mediums have motivated firms to exploit these features to extend their communication links with stakeholders and to disseminate various information types. Despite the general increased adoption of SM and, more specifically, Twitter for the purpose of disseminating information, few previous studies have examined the determinants of the disclosure of financial information via Twitter. Further, few previous studies examined, to any large extent, the impact of family determinants on financial tweets. Therefore, this study aimed firstly to explore in 2020 how the listed Saudi Arabian non-financial firms had adopted Twitter as a medium to disclose their financial information. Second, in the context of Saudi Arabia, the study examined the impact of family determinants on firms' financial tweets.

The descriptive findings illustrate that 81% of the sampled firms disseminate financial information on their Twitter accounts. However, the listed Saudi Arabian non-financial firms disclose little financial information via Twitter. 16 is the average number of such financial tweets. The “Software & Services” sector posts the highest number of financial tweets (approximately 32%).

In terms of the multivariate results, this study provides empirical evidence of the impact of some family attributes on the disclosure of financial information via Twitter. On the one hand, there is a positive association between both family leadership and family cross-directorship and the disclosure of financial information via Twitter. On the other hand, there is a negative association between family members on the firm's

board and the financial tweets. There is no evidence to support the impact of family ownership and family name on the disclosure of financial information via Twitter. Further, as control variables, both firm size and board of director's size have a positive and significant impact on financial tweets.

This study's findings have important implications. First, for regulators, the study's findings indicate that listed Saudi Arabian non-financial firms seek to exploit the great benefits of using Twitter as a SM network in disseminating financial information even although this dissemination is at a low level. This requires Saudi Arabia's regulators to respond to this attitude and, as in Western countries, organise the usage of SM in the firms' disclosure of financial information. In addition, this study's findings set out the impact of family determinants on the disclosure of financial information via Twitter. Therefore, Saudi Arabia's regulatory bodies should pay attention to this result when examining the role of Saudi Arabian family firms. Second, for Saudi firms, the increasing usage of Twitter as a disclosure medium in many Saudi sectors should motivate them to increase the level of disclosure of financial information via Twitter. Also, they should organise this disclosure in the best way that enables stakeholders to easily obtain the required information. Further, Saudi Arabian firms should recognise the important control role of family members on their boards and the possible effects of such a role in making strategic decisions. Finally, for academic researchers, the study extends the previous studies that explored the use of SM in disclosing information. This study's findings shed light on the listed Saudi Arabian non-financial firms' usage of SM and, more specifically, Twitter in disclosing financial information. After carrying out an empirical study to test this

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study's hypotheses, the findings found that family determinants impacted upon financial tweets. Previous studies had not paid enough attention to family attributes. Accordingly, this study paves the way to examine further the association between more family determinants and firms' disclosure of financial information via Twitter.

This study has some limitations. First, the study's period was one year, namely, 2020. Future studies can extend the period of study to more than one year and make comparisons between the financial tweets posted in each year. Second, this study examined the impact of family determinants on the disclosure of financial information via Twitter. Future studies can add more variables such as ownership structures variables and explore, also, their potential impact on financial tweets. Third, the study's sample was the listed Saudi Arabian non-financial firms. Consequently, Future studies can include Saudi Arabia's financial firms. Further, Future studies can extend the sample to include other Gulf countries and make comparisons between them in terms of their firms' financial tweets. Finally, as one of the SM networks, this study concentrated on the usage of Twitter to examine firms' disclosure of financial information. Future studies may extend this examination to other networks such as Facebook and YouTube.

References

- Adams, C.A. (2015). The international integrated reporting council: a call to action. *Critical Perspectives on Accounting*, 27, 23-28.
- Agarwal, V., Taffler, R.J., Bellotti, X. & Nash, E.A. (2016). Investor relations, information asymmetry and market value. *Accounting and Business Research*, 46 (1), 31-50.
- Akmese, H., Aras, S. & Akmese, K. (2016). Financial performance and social media: a research on tourism enterprises quoted in Istanbul stock exchange (BIST). *3rd Global Conference on Business, Economics, Management and Tourism Procedia Economics and Finance 39 in Rome, Italy*, Elsevier, Amsterdam, 705-710.
- Albarrak, M.S., Elnahass, M., Papagiannidis, S. & Salama, A. (2020). The effect of twitter dissemination on cost of equity: A big data approach. *International Journal of Information Management*, 50, 1-16.
- Alexander, R.M. & Gentry, J.K. (2014). Using social media to report financial results. *Business Horizons*, 57 (2), 161-167.
- Ali A., Chen, T. Y. & Radhakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics*, 44, 238-286.
- Alsartawi, A.M.M. (2019). Assessing the relationship between information transparency through social media disclosure and firm value. *Management & Accounting Review (MAR)*, 18 (2), 1-20.
- Álvarez, I.G., Sanchez, I.M.G. & Dominguez, L.R. (2008). Voluntary and compulsory information disclosed online: The effect of industry concentration and other explanatory factors. *Online Information Review*, 32 (5), 596-622.
- Amin, M.H., Mohamed, E.K. & Elragal, A. (2020). Corporate disclosure via social media: a data science approach. *Online Information Review*, 44 (1), 278-298.
- Antweiler, W. & Frank, M.Z. (2004). Is all that talk just noise? The information content of internet stock message boards. *The Journal of finance*, 59 (3), 1259-1294.
- Ashbaugh, H., Johnstone, K.M. & Warfield, T.D. (1999). Corporate reporting on the Internet. *Accounting horizons*, 13 (3), 241-257.

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

- Ayman, A., El-Helaly, M. & Shehata, N. (2019). Board diversity and earnings news dissemination on Twitter in the UK. *Journal of Management and Governance*, 23 (3), 715-734.
- Bamber, L.S., Jiang, J. & Wang, I.Y. (2010). What's my style? The influence of top managers on voluntary corporate financial disclosure. *The accounting review*, 85(4), 1131-1162.
- Bartov, E., Faurel, L. & Mohanram, P.S. (2018). Can Twitter help predict firm-level earnings and stock returns?. *The Accounting Review*, 93(3), 25-57.
- Basuony, M.A., Mohamed, E.K. & Samaha, K. (2018). Board structure and corporate disclosure via social media: an empirical study in the UK. *Online Information Review*, 42(5), 595-614.
- Basuony, M.A., Mohamed, E.K., Elragal, A. & Hussainey, K. (2020). Big data analytics of corporate internet disclosures. *Accounting Research Journal*, 35(1), 4-20.
- Best, E. & Caylor, M.L. (2019). Risks and rewards of financial disclosure on Twitter: What CPAs and management should know. *The CPA Journal*, 89(6), 42-47.
- Bhagwat, V. & Burch, T.R. (2016). Pump it up? Tweeting to manage investor attention to earnings news. *Working paper*, George Washington University and University of Miami.
- Blankespoor, E., Miller, G.S. & White, H.D. (2014). The role of dissemination in market liquidity: Evidence from firms' use of Twitter. *The accounting review*, 89(1), 79-112.
- Blankespoor, E. (2018). Firm communication and investor response: A framework and discussion integrating social media. *Accounting, Organizations and Society*, 68, 80-87.
- Bollen, J., Mao, H. & Zeng, X. (2011). Twitter mood predicts the stock market. *Journal of computational science*, 2(1), 1-8.
- Bonsón, E. & Bednárová, M. (2015). YouTube sustainability reporting: empirical evidence from Eurozone-listed companies. *Journal of Information Systems*, 29(3), 35-50.
- Bonsón, E. & Flores, F. (2011). Social media and corporate dialogue: the response of global financial institutions. *Online information review*, 35(1), 34-49.

- Boylan, D.H. & Boylan, C.L. (2017). Technology in accounting: social media as effective platform for financial disclosures. *The International Journal Digital Accounting Research*, 17(23), 93-109.
- Broekemier, G., Chau, N. & Seshadri, S. (2015). Social media practices among small business-to-business enterprises. *Small Business Institute Journal*, 11(1), 37-48.
- Cade, N.L. (2018). Corporate social media: How two-way disclosure channels influence investors. *Accounting, Organizations and Society*, 68, 63-79.
- Campopiano, G. & De Massis, A. (2015). Corporate social responsibility reporting: A content analysis in family and non-family firms. *Journal of Business Ethics*, 129(3), 511-534.
- Carter, D.A., Simkins, B.J. & Simpson, W.G. (2003). Corporate governance, board diversity, and firm value. *Financial review*, 38(1), 33-53.
- Cascino, S., Pugliese, A., Mussolino, D. & Sansone, C. (2010). The influence of family ownership on the quality of accounting information. *Family Business Review*, 23(3), 246-265.
- Case, C.J. & King, D.L. (2011). Twitter usage in the Fortune 50: A marketing opportunity?. *Journal of marketing development and competitiveness*, 5(3), 94-103.
- Cennamo, C., Berrone, P., Cruz, C. & Gomez-Mejia, L.R. (2012). Socioemotional wealth and proactive stakeholder engagement: Why family-controlled firms care more about their stakeholders. *Entrepreneurship theory and practice*, 36(6), 1153-1173.
- Chau, G.K. & Gray, S.J. (2002). Ownership structure and corporate voluntary disclosure in Hong Kong and Singapore. *The International journal of accounting*, 37(2), 247-265.
- Chen, S., Chen, X.I.A. & Cheng, Q. (2008). Do family firms provide more or less voluntary disclosure?. *Journal of accounting research*, 46(3), 499-536.
- Chen, H., De, P., Hu, Y.J. & Hwang, B.H. (2014). Wisdom of crowds: The value of stock opinions transmitted through social media. *The Review of Financial Studies*, 27(5), 1367-1403.

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

- Chen, H., Hwang, B.H. & Liu, B. (2017). Economic consequences of social media adoption by CEOs and CFOs. *Unpublished working paper*, Cornell University, Ithaca, NY.
- Crowley, R., Huang, W. & Lu, H. (2018). Discretionary disclosure on Twitter”, Rotman School of Management, *Working Paper*, 3105847.
- Curtis, A., Richardson, V.J. & Schmardebeck, R. (2014). Investor attention and the pricing of earnings news. *Handbook of Sentiment Analysis in Finance (chapter 8)*, 212-232.
- Daft, R.L. & Lengel, R.H. (1986). Organizational information requirements, media richness and structural design. *Management science*, 32(5), 554-571.
- Debreceeny, R.S. (2015). Social media, social networks, and accounting. *Journal of Information Systems*, 29(2), 1-4.
- Diamond, D.W. & Verrecchia, R.E. (1991). Disclosure, liquidity, and the cost of capital. *The journal of Finance*, 46(4), 1325-1359.
- DiMaggio, P.J. & Powell, W.W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review*, pp.147-160.
- Ding, R., Zhou, H. & Li, Y. (2020). Social media, financial reporting opacity, and return comovement: Evidence from Seeking Alpha. *Journal of Financial Markets*, 50, 100511.
- Drago, C., Ginesti, G., Pongelli, C. & Sciascia, S. (2018). Reporting strategies: What makes family firms beat around the bush? Family-related antecedents of annual report readability. *Journal of Family Business Strategy*, 9(2), 142-150.
- Du, H. & Jiang, W. (2014). Do social media matter? Initial empirical evidence. *Journal of Information Systems*, 29(2), 51-70.
- Dyer Jr, W.G. & Whetten, D.A. (2006). Family firms and social responsibility: Preliminary evidence from the S&P 500. *Entrepreneurship Theory and Practice*, 30(6), 785-802.
- El Ghoul, S., Guedhami, O., Wang, H. & Kwok, C.C. (2016). Family control and corporate social responsibility. *Journal of Banking & Finance*, 73, 131-146.

- Elliott, W.B., Grant, S.M. & Hodge, F.D. (2018). Negative news and investor trust: The role of \$ Firm and# CEO Twitter use. *Journal of Accounting Research*, 56(5), 1483-1519.
- Etter, M. (2013). Reasons for low levels of interactivity:(Non-) interactive CSR communication in Twitter. *Public relations review*, 39(5), 606-608.
- Ezat, A. & El-Masry, A. (2008). The impact of corporate governance on the timeliness of corporate internet reporting by Egyptian listed companies. *Managerial finance*, 34(12), 848-867.
- Ezat, A.N., Bekheet, M.N., Hendaoui, A.A. & Faramawi, F.A.A. (2020). Family-related Antecedents and Corporate Social Responsibility (CSR): Evidence from Saudi Arabia. *Academy of Accounting and Financial Studies Journal*, 24(3), 1-24.
- Fuertes-Callen, Y., Cuellar-Fernandez, B. & Pelayo-Velazquez, M. (2014). Determinants of online corporate reporting in three Latin American markets: The role of web presence development. *Online Information Review*, 38(6), 806-831.
- Gavana, G., Gottardo, P. & Moisello, A.M. (2017). Earnings management and CSR disclosure. Family vs. non-family firms. *Sustainability*, 9(12), 1-21.
- Ghazali, N.A.M. & Weetman, P. (2006), Perpetuating traditional influences: Voluntary disclosure in Malaysia following the economic crisis. *Journal of International Accounting, Auditing and Taxation*, 15(2), 226-248.
- Gray, R., Kouhy, R. & Lavers, S. (1995). Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal*, 8(2), 47-77.
- Gujarati, D. N. (2003). *Basic econometrics*. 4th ed., McGraw Hill, Singapore
- Guggenmos, R.D. & Bennett, G.B. (2021). The effects of company image and communication platform alignment on investor information processing. *Journal of Financial Reporting*, 6(2), 89-109.
- Habtoor, O.S. & Ahmad, N. (2017). The influence of royal board of directors and other board characteristics on corporate risk disclosure practices. *Corporate Ownership & Control*, 14(2), 326-337.

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

- Haddad, A.E., AlShattarat, W.K., AbuGhazaleh, N.M. & Nobanee, H. (2015). The impact of ownership structure and family board domination on voluntary disclosure for Jordanian listed companies. *Eurasian Business Review*, 5(2), 203-234.
- Haniffa, R.M. & Cooke, T.E. (2002). Culture, corporate governance and disclosure in Malaysian corporations. *Abacus*, 38(3), 317-349.
- Haniffa, R.M. & Cooke, T.E. (2005). The impact of culture and governance on corporate social reporting. *Journal of accounting and public policy*, 24(5), 391-430.
- Healy, P.M. & Palepu, K.G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, 31(1-3), 405-440.
- Hearn, G., Foth, M. & Gray, H. (2009). Applications and implementations of new media in corporate communications: an action research approach. *Corporate Communications*, 14(1), 49-61.
- Hirshleifer, D. & Teoh, S.H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of accounting and economics*, 36(1-3), 337-386.
- Hirshleifer, D., Lim, S.S. & Teoh, S.H. (2011). Limited investor attention and stock market misreactions to accounting information. *The Review of Asset Pricing Studies*, 1(1), 35-73.
- Ho, S.S. & Wong, K.S. (2001). A study of the relationship between corporate governance structures and the extent of voluntary disclosure. *Journal of International Accounting, Auditing and Taxation*, 10(2), 139-156.
- Hong, H. & Stein, J.C. (1999). A unified theory of underreaction, momentum trading, and overreaction in asset markets. *The Journal of finance*, 54(6), 2143-2184.
- Huang, W., Lu, H. & Su, B. (2016). Green disclosures? Social media and prosocial behavior. *Working paper*, University of Toronto.
- Jiang, J.X. & Shen, M. (2017). Traditional media, twitter and business scandals. SSRN, *working paper*, 2959419.
- Jung, M.J., Naughton, J.P., Tahoun, A. & Wang, C. (2018). Do firms strategically disseminate? Evidence from corporate use of social media. *The Accounting Review*, 93(4), 225-252.

- Kaplan, A.M. & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons*, 53(1), 59-68.
- Khelifi, F. (2021). Web-based financial reporting, social media and information asymmetry: the case of Saudi Arabia. *Journal of Financial Reporting and Accounting*, In process.
- Kietzmann, J.H., Hermkens, K., McCarthy, I.P. & Silvestre, B.S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business horizons*, 54(3), 241-251.
- Kim, O. & Verrecchia, R.E. (1994). Market liquidity and volume around earnings announcements. *Journal of accounting and economics*, 17(1-2), 41-67.
- Klapper, L.F. & Love, I. (2004). Corporate governance, investor protection, and performance in emerging markets. *Journal of corporate Finance*, 10(5), pp.703-728.
- Klein, S.B., Astrachan, J.H. & Smyrnios, K.X. (2005). The F-PEC scale of family influence: Construction, validation, and further implication for theory. *Entrepreneurship theory and practice*, 29(3), 321-339.
- Kuang-Wei, W. & Yan, C. (2010). E-business value creation in small and medium enterprises: a US study using the TOE framework. *International Journal of Electronic Business*, 8(1), 80-100.
- Kurinyepa, E. (2017). The Impact of Wide Social Media Dissemination of Disclosures on Information Asymmetry: A New Zealand Context. *Doctoral dissertation*, Auckland University of Technology.
- Laksmana, I. (2008). Corporate board governance and voluntary disclosure of executive compensation practices. *Contemporary accounting research*, 25(4), 1147-1182.
- Lardo, A., Dumay, J., Trequattrini, R. & Russo, G. (2017). Social media networks as drivers for intellectual capital disclosure: Evidence from professional football clubs. *Journal of Intellectual Capital*, 18(1), 63-80.
- Lee, K., Oh, W.Y. & Kim, N. (2013). Social media for socially responsible firms: Analysis of Fortune 500's Twitter profiles and their CSR/CSIR ratings. *Journal of business ethics*, 118(4), 791-806.

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

- Lee, L.F., Hutton, A.P. & Shu, S. (2015). The role of social media in the capital market: Evidence from consumer product recalls. *Journal of Accounting Research*, 53(2), 367-404.
- Lei, L.G., Li, Y. & Luo, Y. (2019a). Production and dissemination of corporate information in social media: A review. *Journal of Accounting Literature*, 42, 29-43.
- Lei, L. G., Li, Y. & Luo, Y. (2019b). Social media and voluntary nonfinancial disclosure: Evidence from Twitter presence and corporate political disclosure. *Journal of Information Systems*, 33(2), 99-128.
- Leuz, C. & Verrecchia, R.E. (2000). The economic consequences of increased disclosure. *Journal of accounting research*, 38, 91-124.
- Li, X., Xie, H., Chen, L., Wang, J. & Deng, X. (2014). News impact on stock price return via sentiment analysis. *Knowledge-Based Systems*, 69, 14-23.
- Li, X., Xie, Q., Jiang, J., Zhou, Y. & Huang, L. (2019). Identifying and monitoring the development trends of emerging technologies using patent analysis and Twitter data mining: The case of perovskite solar cell technology. *Technological Forecasting and Social Change*, 146, 687-705.
- Lodhia, S. & Stone, G. (2017). Integrated reporting in an internet and social media communication environment: conceptual insights. *Australian Accounting Review*, 27(1), 17-33.
- Lovejoy, K. & Saxton, G.D. (2012). Information, community, and action: How nonprofit organizations use social media. *Journal of computer-mediated communication*, 17(3), 337-353.
- Luo, X., Zhang, J. & Duan, W. (2013). Social media and firm equity value. *Information Systems Research*, 24(1), 146-163.
- Magro, M.J., Ryan, S.D., Sharp, J.H. & Ryan, K.A. (2009). Using social networking for educational and cultural adaptation: An exploratory study. *Paper presented at the AMCIS 2009*, San Francisco, CA, p.528.
- Manika, D., Papagiannidis, S. & Bourlakis, M. (2013). The effects of a CEO's YouTube apology for service failure on customer's behavioural intentions. *Paper presented at the British Academy of Management Conference*, Newcastle University.

- Mao, Y., Wei, W., Wang, B. & Liu, B. (2012). Correlating S&P 500 stocks with Twitter data”, *In Proceedings of the first ACM international workshop on hot topics on interdisciplinary social networks research*, 69-72.
- Mazzola P., Sciascia S. & Kellermanns F. W. (2013). Non-linear effects of family sources of power on performance. *Journal of Business Research*, 66(4), 568-574.
- McGuire, J., Dow, S. & Ibrahim, B. (2012). All in the family? Social performance and corporate governance in the family firm. *Journal of Business Research*, 65(11), 1643-1650.
- Merton, R.C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, 42(3), 483-510.
- Miller, G.S. & Skinner, D.J. (2015). The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of Accounting Research*, 53(2), 221-239.
- Nekhili, M., Nagati, H., Chtioui, T. & Rebolledo, C. (2017). Corporate social responsibility disclosure and market value: Family versus nonfamily firms. *Journal of Business Research*, 77, 41-52.
- Ngai, E.W., Tao, S.S. & Moon, K.K. (2015). Social media research: Theories, constructs, and conceptual frameworks. *International journal of information management*, 35(1), 33-44.
- Ntim, C.G. & Soobaroyen, T. (2013). Black economic empowerment disclosures by South African listed corporations: The influence of ownership and board characteristics. *Journal of business ethics*, 116(1), 121-138.
- Nuseir, M. & Qasim, A. (2021). Investor relations in the era of social media: systematic literature review of social media as a strategic corporate disclosure tool. *Journal of Financial Reporting and Accounting*, 19(5), 819-838.
- Picoto, W., Belanger, F. & Palma-dos-Reis, A. (2012). Leveraging on mobile business to enhance firm performance: an organizational level study. *paper presented at the European Conference of Information Systems*, Barcelona, June, 10-13.
- Pizzani, L. (2010). Social media and public companies. *CPA Magazine*, 38-39.

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

- Prencipe, A., Markarian, G. & Pozza, L. (2008). Earnings management in family firms: Evidence from R&D cost capitalization in Italy. *Family Business Review*, 21(1), 71-88.
- Prencipe, A., Bar-Yosef, S. & Dekker, H.C. (2014). Accounting research in family firms: Theoretical and empirical challenges. *European Accounting Review*, 23(3), 361-385.
- Prokofieva, M. (2015). Twitter-based dissemination of corporate disclosure and the intervening effects of firms' visibility: Evidence from Australian-listed companies. *Journal of Information Systems*, 29(2), 107-136.
- Ramananda, D. & Atahau, A.D.R. (2020). Corporate social disclosure through social media: an exploratory study. *Journal of Applied Accounting Research*, 21(2), 265-281.
- Rennekamp, K.M. & Witz, P.D. (2021). Linguistic Formality and Audience Engagement: Investors' Reactions to Characteristics of Social Media Disclosures. *Contemporary Accounting Research*, 38(3), 1748-1781.
- Rosati, P., Deeney, P., Cummins, M., Van der Werff, L. & Lynn, T. (2019). Social media and stock price reaction to data breach announcements: Evidence from US listed companies. *Research in International Business and Finance*, 47, 458-469.
- Saeed, N. & Sinnappan, S. (2011). Adoption of Twitter in higher education—a pilot study, Changing Demands, Changing Directions. *Working Paper*, Hobart, Australia, 1115-1120.
- Salvato, C. & Moores, K. (2010). Research on accounting in family firms: Past accomplishments and future challenges. *Family Business Review*, 23(3), 193-215.
- Schumaker, R.P. & Chen, H. (2009). Textual analysis of stock market prediction using breaking financial news: The AZFin text system. *ACM Transactions on Information Systems (TOIS)*, 27(2), 1-19.
- Scott, W. R. (2001). *Institutions and organizations*. (2nd ed.). Thousand Oaks, CA: Sage.
- Shiau, W.L., Dwivedi, Y.K. & Yang, H.S. (2017). Co-citation and cluster analyses of extant literature on social networks. *International Journal of Information Management*, 37(5), 390-399.

- Snow, N.M. & Rasso, J. (2017). If the tweet fits: How investors process financial information received via social media. SSRN. *working paper*, 2945554.
- Songini, L., Gnan, L. & Malmi, T. (2013). The role and impact of accounting in family business. *Journal of Family Business Strategy*, 4(2), 71-83.
- Sprenger, T.O. & Welpel, I.M. (2011). Tweets and peers: defining industry groups and strategic peers based on investor perceptions of stocks on Twitter. *Algorithmic Finance*, 1(1), 57-76.
- Sprenger, T.O., Sandner, P.G., Tumasjan, A. & Welpel, I.M. (2014a). News or noise? Using Twitter to identify and understand company-specific news flow. *Journal of Business Finance & Accounting*, 41(7-8), 791-830.
- Sprenger, T.O., Tumasjan, A., Sandner, P.G. & Welpel, I.M. (2014b). Tweets and trades: The information content of stock microblogs. *European Financial Management*, 20(5), 926-957.
- Srivastava, S. & Teo, T. (2009). E-government, E-business and national economic performance. *Communication of AIS*, 26, 267-286.
- Teoh, S.H. (2018). The promise and challenges of new datasets for accounting research. *Accounting, Organizations and Society*, 68, 109-117.
- Trinkle, B.S., Crossler, R.E. & Bélanger, F. (2015). Voluntary disclosures via social media and the role of comments. *Journal of Information Systems*, 29(3), 101-121.
- Vernuccio, M. (2014). Communicating corporate brands through social media: an exploratory study. *International Journal of Business Communication*, 51(3), 211-233.
- Xiao, F. (2019). The Effect of Social Media Disclosure on Investors and Employees. *Unpublished PhD dissertation*, Washington State University.
- Xiong, F. & MacKenzie, K. (2015). The business use of Twitter by Australian listed companies. *The Journal of Developing Areas*, 49(6), 421-428.
- Xiong, F., Prasad, A. & Chapple, E. (2015). The nature and extent of use of Twitter for financial reporting by ASX listed companies: An exploratory study. In *Proceedings of the 2015 Accounting and Finance Association of Australia and New Zealand (AFAANZ)*

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- Conference* , Accounting and Finance Association of Australia and New Zealand (AFAANZ), 1-26.
- Xiong, F., Prasad, A. & Chapple, E. (2016). The economic consequences of corporate financial reporting on twitter”, *In Conference on Financial Markets and Corporate Governance* No. 50344, 1-11.
- Yang, J.H. & Liu, S. (2017). Accounting narratives and impression management on social media. *Accounting and Business Research*, 47(6), 673-694.
- Yu, Y., Duan, W. & Cao, Q. (2013). The impact of social and conventional media on firm equity value: a sentiment analysis approach. *Decision Support Systems*, 55(4), 919-926.
- Zhang, X., Fuehres, H. & Gloor, P.A. (2011). Predicting stock market indicators through twitter “I hope it is not as bad as I fear. *Procedia-Social and Behavioral Sciences*, 26, 55-62.
- Zhang, J. (2015). Voluntary information disclosure on social media”, *Decision Support Systems*, 73, 28-36.
- Zhou, M., Lei, L., Wang, J., Fan, W. & Wang, A.G. (2015). Social media adoption and corporate disclosure. *Journal of Information Systems*, 29(2), 23-50.

Appendix

SACC | التمويل @CateringSaudia · Nov 4, 2020

إعلان شركة الخطوط #السعودية للتمويل عن النتائج المالية الأولية للفترة المنتهية في ٢٠-٠٩-٢٠٢٠م (تسعة أشهر)

Saudi Airlines Catering Co. announces its interim financial results for the Period Ending on 30-09-2020 (Nine Months)

#SACC

| Statement Line | Current Period | Year Ended For |
|------------------|----------------|----------------|
| Revenue | 1,212,000,000 | 1,212,000,000 |
| Operating Profit | 150,000,000 | 150,000,000 |
| Net Profit | 100,000,000 | 100,000,000 |

Jabal Omar | جبل عمر @Jabal_Omar_SA · Jun 22, 2020

#JabalOmar Development Company announces its interim financial results for the period ending on 31/3/2020 (Three months).

To review the results, please visit the link below

bit.ly/3fDR52y

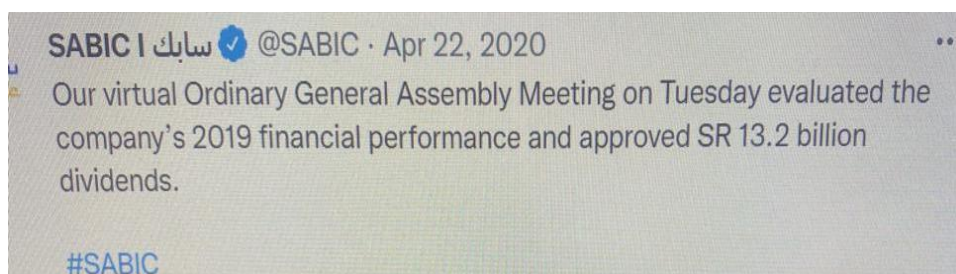
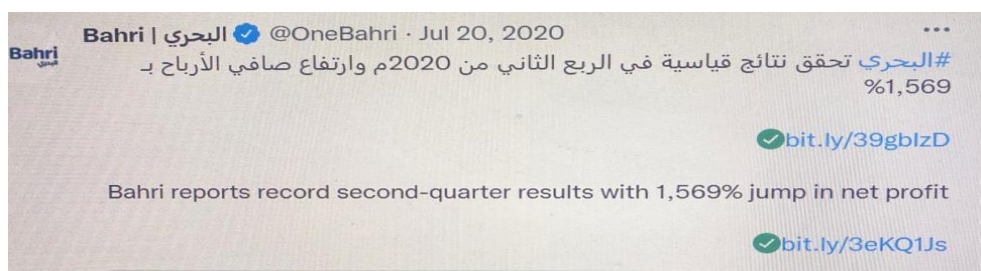
Kingdom Holding Company acquires a stake in Dallah Hospitals (Dallah Health Company) by exchanging its shares in Kingdom Hospital, Consulting Clinics @khccgroup1 and its pharmacies.

@Kingdom_KHC · Nov 16, 2020

In line with the strategy to expand its investments in the health care sector,

22 12 47

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سبكيم سبكيم @sipchem · May 18, 2020
سبكيم تعلن عن النتائج المالية الأولية للفترة المنتهية في 31 مارس 2020م (ثلاثة أشهر)
Sipchem announces its Interim Financial Results for the Period Ending on 31 March 2020 (Three Months)
[sipchem.com/ar/news-media-...](https://www.sipchem.com/ar/news-media-...)

الزامل للصناعة @Zamilindustrial · Mar 22, 2020
تعلن شركة #الزامل للاستثمار الصناعي عن نتائجها المالية السنوية المنتهية في 31 ديسمبر 2019 - bit.ly/2Wv6Suh
1 4
الزامل للصناعة @Zamilindustrial · Mar 22, 2020
Zamil Industrial Investment Company Announces Its Annual Consolidated Financial Results for the Year Ended on 31 December 2019 - bit.ly/39d8Zp4
2

Advanced | المتقدمة @Advanced_Petro · Feb 27, 2020
#ADVANCED_PETROCHEMICAL_COMPANY ANNOUNCES ITS ANNUAL FINANCIAL RESULTS FOR THE PERIOD ENDED ON 31-12-2019
tadawul.com.sa/wps/poc?uri=li...

فيبيكو @fipcoksa · Mar 2, 2020
Filling & Packing Materials MFG. Co. (FIPCO) announces the signing of Acquisition agreement to acquire the full minority shareholding at its subsidiary (FPC Industries Co.)
bit.ly/3aghvET
1 1
فيبيكو @fipcoksa · Mar 2, 2020
تعلن شركة تصنيع مواد التعبئة والتغليف (فيبيكو) عن توقيع اتفاقية للاستحواذ على كامل حصص الأقلية في شركتها التابعة (شركة فبك للصناعة)
bit.ly/2I7I4A0
1 1

Family- related Determinants and Financial Disclosure via Twitter: Evidence form the Saudi Firms

