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Information Overload and Individual Investors' Perceptions of Investment Risk: Evidence from Saudi Arabia

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ABSTRACT

This study explores investors' perceptions of investment risk under information overload. We depended on a survey of 133 individual investors in the Kingdom of Saudi Arabia (KSA), and to test our hypotheses, we used descriptive statistics and the sample t-test. We found that information overload in lengthy annual reports decreases investors' confidence in the financial statements and reduces their ability to understand the firm's business and financial performance. Investors confirmed that information overload reduces their ability to access relevant information for making investment decisions and to predict future performance, and increases uncertainty about the firms' future performance. Consequently, information overload increases investors' perceptions of firms' investment risk, reduces their confidence to invest in firms with long and difficult-to-read annual reports, and increases their perceptions of the likelihood that these reports are being exploited by the managers to hide the poor performance or earnings manipulation, and consequently, they prefer avoiding investment in these firms. In addition, the results indicated that disclosure complexity along with information overload exacerbates investors' negative perceptions about the firm's investment risk and its performance. Our results provide insights for investors in emerging markets such as the Saudi market to understand the negative implications of information overload, which can enlighten their investment-related decisions.

Key Words: Information Overload, Investment Risk, Annual Report Complexity, Earnings Manipulation, KSA

INTRODUCTION

Information overload occurs when annual reports contain a large amount of information that confuses users, rather than helping them understand a firm's financial situation (Pomeranz, 2000). Lengthy annual reports contain extensive news and information that should be followed and processed by investors who, thus, become cognitively overloaded (Bernales et al., 2021). Following the Enron and WorldCom scandals in 2002, regulators in the United States expanded the mandatory disclosure requirements, which led to an increase in the size or length of annual reports (Deloitte, 2010)—that is, after issuing the Sarbanes-Oxley Act (SOX), the information overload problem has begun to appear (Paredes, 2003). Despite the increased disclosure, the time horizon available to process information by users has not increased. Rather, this time is arguably shrinking. To preserve an information advantage, investors need to make their decisions promptly. Moreover, analysts become under significant pressure to provide fresh insights and reports about the firms to help clients act quickly. Thus, market participants become overloaded by large amounts of information that need to be processed in shorter periods, which ultimately deteriorates decision-making quality (Chapman et al., 2019).

The previous research confirms the negative effects of information overload on the value relevance of accounting information, the trading volume, and the certainty of future cash flow, which ultimately can increase the firm's cost of capital (You and Zhang, 2009; DeFranco et al., 2015; Boubakri and Mishra, 2017). On the contrary, the CFA Institute (2013) noted that investors around the world do not consider the increasing disclosure volume as a major concern. Similarly, Li (2019) indicated that repetitive disclosures increase their usefulness to investors and financial analysts by emphasizing firm-specific events and improving the transparency of financial information. Supporting this view, Muslu et al. (2015) emphasized that the higher disclosure level for future information in the board of directors' report contributes to improving the market reaction and stock returns. Likewise, some studies noted that increasing disclosure volume contributes to reducing information asymmetry, and improving market liquidity and trade volume, which can ultimately decrease the cost of capital (Kristandl and Bontis, 2007; Eaton et al., 2007; Chung et al., 2016, 2019).

However, the literature is focusing on developed markets, especially the U.S., with very few studies addressing emerging markets. Emerging markets have unique institutional characteristics that can influence the disclosure environment. In particular, emerging markets are suffering from poor investor protection, weak governance systems, and low transparency (Ebaid, 2016). Consequently, firms in this kind of markets are more likely to exploit lengthy disclosure in the annual reports to hide poor financial performance or earnings manipulation (Li, 2008; Lo et al., 2017; Hoberg and Lewis, 2017; Alm El-Din et al., 2022). Additionally, the lack of clarity concerning individual investors' perceptions of the implications of information overload in emerging markets, investors' perceptions of investment risk in the firms, especially when information overload is concurrent with disclosure complexity and poor presentation, encourages us to conduct this study in Saudi Arabia, one of the largest emerging markets in the Middle East and North Africa (MENA) region. Saudi Arabia Thus, this study explores investors' perceptions of investment risk under information overload by bringing a new evidence from a rarely examined context—Saudi Arabia.

To test our hypotheses, we surveyed 133 individual investors in Saudi Arabia. The results indicated that information overload decreases investors' confidence in the financial reports and increases investors' perceptions of firms' investment risk. Further, disclosure complexity and poor presentation are found to exacerbate investors' perceptions of firms' investment risk. Our results are useful for firms and investors by guiding firms toward the best ways to address the negative implications of information overload in the current disclosure model. Improving the business disclosure and information environment, in turn, can help enlighten investors' investment-related decisions.

The remainder of this research proceeds as follows. Section 1 provides a background of the study. Section 2 discusses the previous research on information overload and investment decisions and develops the study hypotheses. Section 3 outlines the research design. Finally, sections 4 and 5 present the research results and conclude the paper, respectively.

1. BACKGROUND

Saudi Arabia is one of the fastest-growing markets in the MENA region. The gross domestic product (GDP) growth rate in Saudi Arabia averaged 70 percent from 2010 until 2021 (Trading economics, 2021). This is primarily due to being of the largest oil producers in OPEC (Habbash & Alghamdi, 2017). Shipments of oil in the Saudi market account for 87 percent of total exports and 46 percent of GDP. However, lately, the Saudi government sought to diversify its economy by investing in various business fields like telecommunications, petrochemicals, natural gas exploitation, and power generation (Trading economics, 2021).

Regarding the financial reporting environment, in 1992, the Saudi Organization for Certified Public Accountants (SOCPA) was developed under Royal Decree No. M/12 to support the accounting and auditing professions. SOCPA required all listed forms to apply IFRS from 2017 and non-listed firms from 2018 (IFRS Foundation, 2017). However, it is noted that the accounting profession in Saudi Arabia is less developed compared to the situation in Western countries (World Bank, 2009). For instance, although SOCPA has a committee that investigate irregularities related to the accounting profession, its decisions and procedures are not disclosed to the public (Al-Sehali and Spear, 2004). Thus, it is anticipated that this institutional context would have implications for the financial information environment and its consequences, which we try to examine in this study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Information overload defined

Information overload is a situation that combines the availability of more information and the limited ability to process, or use information in decision-making—that is, when the length of the annual reports constitutes a burden on the users of those reports (Schick et al., 1990; Johnson, 1992). Hence, the presence of an information overload impedes a decision-maker ability to process and benefit from that information in light of the time constraints imposed when making a decision (Chan, 2001; Morunga and Bradbury, 2012; Ormin and Musa, 2016).

Consequently, information overload arises not only because of the expansion in disclosure level but also because of the limited ability of investors to access and operate appropriate information to make decisions promptly (Chapman et al. 2018), which decreases the quality of investment decisions (Beerbaum, 2016; Möllers and Kernchen, 2010). Accordingly, information overload can be defined as a situation when a firm increases the disclosure level in its annual report to the extent that causes significant disruption and dispersion in the users' ability to access appropriate information and use that information to make a good decision at the right time.

2.2 The causes of information overload

Information overload might arise due to the expansion of the mandatory disclosure requirements that fulfill legal and regulatory requirements. The lack of agreement on the extent of disclosure that meets the users' expected needs from financial reports as well as the conflict of interests between the internal and external parties induce the regulatory agencies to regulate disclosure requirements to ensure that an adequate and appropriate amount of information is provided to users of financial reports (DeMedeiros and Quinteiro, 2005; Hassan and Marston, 2010). Hence, concerns about shareholders' litigation or regulators' interference may prompt firms to expand disclosure so as not to be accused of hiding information from investors or regulators to reinforce legitimacy or simply because everyone else does (Cazier and Pfeiffer 2016; Athanasakou et al. 2020).

The empirical research noted an increase in the length of financial reports since 2002— especially, after financial meltdowns and scandals occurred in the United States and the concomitant issuance of the SOX Act—compared to the past periods in developed and developing economies alike (Morunga and Bradbury, 2012; Chung et al., 2016; Ormin and Musa, 2016; Boubakri and Mishra, 2017). Although the regulatory changes may help provide meaningful information for various stakeholders, it may also provide a channel to intentionally obfuscate a poor underlying economic reality. Hence, the regulatory requirements might impede firms from reaching optimal disclosure levels, entering an overload tunnel (Athanasakou et al., 2020).

Additionally, the expansion of voluntary disclosure is considered necessary to mitigate information asymmetry. The literature ensures that non-financial indicators can strengthen the ability to predict future firms' performance (Ittner et al., 1998; Luft and Shields, 2002). Thus, since the beginning of the 21st century, various stakeholders showed higher concern with non-financial indicators, intellectual capital, the environmental and social responsibility disclosures (Oloveira et al., 2013; White, 2013; Chapman et al., 2019). However, the recent literature indicated that the expansion of voluntary disclosure deteriorates its readability (Zhou et al., 2017; Alm El-Din et al., 2022). Moreover, some studies revealed that managers may intentionally increase disclosure volume and complexity to obfuscate information in the annual reports, hide poor performance (Athanasakou et al., 2020) or conceal earnings manipulation (Lo et al., 2017; Hoberg and Lewis, 2017).

2.3 The regulators' effort to mitigate the information overload

Standard setters and regulators around the world have recognized the information overload problem in the financial reports (e.g., FASB, 2012; FRC, 2012; IASB 2013; 2016). Despite the existence of some suggested solutions for this problem, it is difficult to verify the feasibility of these solutions before being implemented. As a remedy to this problem, the FASB has recently reconsidered the concept of materiality, where information becomes material only if there is a reasonable expectation that its misrepresentation or omission may affect the decisions of the primary users of the financial statements. However, under the old definition of materiality, the information is considered to be material if its misrepresentation or omission may affect the economic decisions taken by users who depend on the financial statements. The new definition has stipulated a reasonable expectation of the important information that is disclosed to primary users but not to all users, which may reduce unnecessary disclosures and information overload (Morgenson, 2016; Levy, 2018).

The SEC has also recognized the need to reconsider the current disclosure model and switch from the rule-based conceptual framework into the principles-based conceptual framework. It has also ensured the need for providing information in a coordinated manner to facilitate its usage and provide more information in the form of summary-type information or multi-level reports that allow users to read the information at their preferred level of detail (White, 2016; Chapman et al., 2018). In October 2017, the SEC suggested a set of amendments to the mandatory disclosure requirements under the title FAST Act Modernization and Simplification of Regulation S-K. These requirements were considered important for modernizing and simplifying disclosures by encouraging users meet the mandatory requirements without excessive redundancy through the extensive use of technology (Levy 2018).

Besides, the Financial Reporting Council (FRC) issued a set of guidelines for making the annual reports more relevant and less complex by removing unnecessary text (FRC, 2009). Likewise, CPA Canada (2015) indicated that financial reports' presentation should be improved by writing financial reports in a language that is readable and understandable, constraining the use of accounting or economic terms, avoiding abbreviations as much as possible, improving formatting and presentation, and finally, depending on internal hyperlinks as much as possible.

2.4 Information overload and investment decisions

In light of the above, information overload might confuse the decision maker and affect his ability to determine his priorities, and diminish his ability to remember information (Schick et al., 1990). In this regard, Paredes (2003) revealed that an information overload problem exists even if the information disclosed is material and relevant to decision-makers, as they become stressed and confused. Hence, it is anticipated that the effectiveness of mandatory disclosure regimes would be improved if the disclosure requirements are reduced (Paredes 2003). Accordingly, the quality of investment decisions does not improve concurrently with the increasing amount of information due to the limited abilities of users to receive, understand, and process information. Rather, the recipient may suffer from an information overload, i.e., from adding more information is counterproductive (Möllers and Kernchen, 2010; Zhou et al., 2017).

This view is consistent with the reported decrease in the accuracy of financial analysts' forecasts and the high uncertainty in future earnings' expectations for firms that produce lengthy and complex financial reports (De Franco et al., 2015; Asay et al., 2017). Thus, the increasing level and complexity of disclosure pose a dilemma, especially for small investors who may make poor decisions due to their inability to absorb this huge amount of information (KPMG, 2011). In this study, we examine if and how information overload and disclosure complexity influence investors' confidence in the financial statements and perceptions of investment risk, as discussed below.

2.5 Hypotheses development

The literature indicates that accounting disclosure reduces information asymmetry between internal and external parties or between all external parties. Hence, an increased disclosure level can reduce the estimation risk and information risk and increase market liquidity, which ultimately can decrease the cost of capital (Coles et al. 1995; Baiman and Verrecchia, 1996; Easley and O'Hara, 2004). However, these theoretical expectations were not fully supported by the empirical research (see e.g., Hail and Leuz, 2006; Kristandl and Bontis, 2007; Lambert et al., 2007; Dhaliwal et al., 2011; Kamel and Shahwan, 2014). Therefore, examining the determinants of the effectiveness of accounting disclosure and its ability to achieve the desired goals has become a crucial issue in accounting research. Thus, recently, some questions were raised regarding the effects of information overload on the effectiveness of accounting disclosure, where some researchers and accounting professionals called for reconsidering the current disclosure requirements (Paredes, 2003; Miller, 2010; KPMG, 2011; White, 2013).

In particular, several researchers, mostly using U.S.-based evidence, examined the implications of information overload for investment decisions and stock markets. Using U.S. data, Li (2008) found that a higher Fog Index of 10-Ks and lengthy annual reports are correlated with lower future earnings. The results suggested that managers increase the complexity of their annual reports to hide poor future performance. In the same context, You and Zhang (2009) found a negative relationship between annual reports' length and trading volume, and positive relationships between annual reports' length and return volatility. Similarly, Miller (2010) revealed that long and difficult-to-read annual reports are associated with lower overall trading. Lawrence (2013) found that individual investors invest more in firms with clear and concise disclosure. De Franco et al. (2015) indicated a positive association between annual reports' complexity (i.e., long and difficult-to-read reports) and analysts' reports complexity, which negatively influenced the trading volume. Nagarajan et al. (2017) highlighted that longer and less readable financial reports are associated with higher cost of equity capital. This is also consistent with Boubakri and Mishra (2017), who reported a positive relationship between information overload and US firms' cost of equity capital. Bernales et al. (2021) revealed that information overload increases information and estimation risk and deteriorates investors' decision accuracy.

On the contrary, other studies reported positive implications of information overload. For instance, a global survey conducted by the CFA Institute in 2012, depending on a sample of chartered financial analysts worldwide, reported that 80% of the respondents did not perceive the disclosure volume as a source of great concern when making investment decisions, rejecting the idea of reducing the current disclosure volume as it contains appropriate information to make decisions (CFA, 2013). Focusing on Canadian firms, Chung et al. (2016) found that longer and larger annual reports are associated with lower information asymmetry, lower the cost of immediacy, and higher trading activity. Using U.S. data, Li (2019) found that repetitive disclosures in MD&A are informative to investors. In the same context, Chung et al. (2019) indicated that disclosure quantity is associated with an overall improvement in the efficiency of information price discovery. Moreover, in the UK context, Athanasakou et al. (2020) argued that firms should achieve the optimum level of disclosure, as there is a U-Shaped relationship between the disclosure level and the cost of equity capital. In particular, they reported a negative relationship at lower levels of disclosure, and a positive relationship at higher levels of disclosure. This is consistent with Impink et al. (2021) who found that the higher information available in the U.S. firms' annual reports is correlated with lower analysts' accuracy and higher dispersion of earnings forecast. They also showed an inverted-U curve, where the analysts' decision quality initially increases concurrent with an increase in the disclosure level. However, at a certain level, the increase in disclosures negatively affects the analyst's decision quality.

In light of the above discussion, considering the present mixed evidence as well as the overwhelming focus on the U.S. developed market in the literature and the ignorance of emerging markets, the present study seeks to fill the gap in the literature by surveying investors in Saudi Arabia as one of the most important emerging markets in the MENA region. Emerging markets are worthy of special investigation because they are suffering from poor investor protection, weak governance system, and low transparency (Ebaid 2016). These institutional features might increase the likelihood of exploiting lengthy disclosure in the annual reports to hide poor firms' performance or earnings manipulation (e.g., Li, 2008; Lo et al., 2017; Alm El-Din et al., 2022). Many emerging markets are suffering from lower transparency and lower demand for information, compared to developed markets, which may have different influences on the information overload problem its negative effects (see Gerding, 2016). To explore the perceptions of investors towards the information overload in the annual reports, and how they consider this problem and its effect on their perceptions of investment risk, we set our hypotheses as follow:

H1: Information overload in lengthy annual reports decreases investors' confidence in the financial statements.

H2: Information overload in lengthy annual reports increases investors' perceptions of the firms' investment risk.

H3: Disclosure complexity and poor presentation in annual reports increase investors' perceptions of the firms' investment risk.

3. RESEARCH DESIGN

A survey has been developed to test the study hypotheses regarding information overload and investors' perceptions of investment risk in Saudi Arabia. We tested the validity of our survey through six academics who are interested in information overload in emerging economies. Surveys were distributed online to 400 individual investors in Saudi Arabia, where 133 were collected, with a response rate of 33.25%. Descriptive statistics and the sample t-test are used to test the study hypotheses. Table 1 shows the demographic characteristics of the respondents.

Table 1. Characteristics of participants

		No.	%
Age (years)	< 30	84	63.20%
	30-39	31	23.30%
	40-50	11	8.30%
	> 50	7	5.30%
		133	100%
Gender	Male	104	78.20%
	Female	29	21.80%
Qualifications	Bachelor	115	86.50%
	MSc	18	13.50%
		133	100%
Experience as individual investors	< 5	109	82.00%
	5-10	15	11.30%
	11-15	3	2.30%
	16-20	4	3.00%
	> 20	2	1.50%
		133	100%
Work and experience			
	Accountant	18	13.53%
	Auditors	15	11.28%
	Teachers	5	3.76%
	Postgraduate	43	32.33%
	Administrative employee	25	18.80%
	CEO	5	3.76%
	Others	22	16.54%
		133	100%

4. RESEARCH RESULTS

4.1 Reliability test

We tested the reliability of survey depending on the Alpha Cronbach score. Table 2 shows that Alpha Cronbach scores are 0.763, 0.768, and 0.721, and Alpha's square roots are 87.3%, 87.6%, and 84.9% for H1, H2, and H3, respectively. Alpha Cronbach's score for all questions in our survey is 0.843, and the square root is 91.80%. The accepted coefficient of Cronbach's alpha is greater than 70%, which indicates the generalizability of our results and reflects the high reliability of our survey (Sekaran and Bougie, 2016). The main questions used in the survey are included in Appendix A, where the first four questions relate to H1, the second four questions relate to H2, and the last four questions related to H3.

Table 2. Reliability Test

Questions	Alpha Cronbach score	Alpha's square root
Q1-Q4	0.763	0.873
Q5-Q8	0.768	0.876
Q9-Q12	0.721	0.849
Overall surveys	0.843	0.918

4.2 Descriptive analysis

Table 3 presents descriptive analysis for the survey questions. Regarding H1 (questions 1-4), for question 1, the mean is 3.699, standard deviation (Std.) is 1.065, and the mode is 4, which indicates that the majority of the sample respondents agrees that "Information overload reduces their understanding of the firm's business and its financial performance". For question 2, the mean is 3.443, Std. is 1.089, and the mode is 4, which reveals that the majority of the respondents agrees that "Information overload reduces their ability to predict firms' future performance and increases uncertainty about future performance". For question 3, the mean is 3.090, Std. is 1.124, and the mode is 3, which indicates that the majority of the respondents are neutral about whether "Information overload reduces their reliance on financial statements". For question 4, the mean is 3.323, Std. is 1.203, and the mode is 4, which shows that the majority of the respondents agrees that "Information overload increases the difficulty of accessing relevant information to make decisions". Thus, the results are partially confirming H1.

Regarding H2 (questions 5-8), for question 5, the mean is 3.248, Std. is 1.202, and the mode is 4, which indicates that the majority of the respondents agrees that "Information overload reduces their confidence to invest in the firm". For question 6, the mean is 3.315, Std. is 1.137, and the mode is 4, which reveals that the majority of the respondents agrees that "Information overload increases their assessment of the firm's investment risk". For question 7, the mean is 3.421, Std. is 1.142, and the mode is 3, which shows that the majority of the respondents are neutral concerning whether "Information overload increases the likelihood of exploiting information by the managers to hide poor performance or earnings manipulation". For question 8, the mean is 3.263, Std. is 1.242, and the mode is 4, which indicates that the majority of the respondents "do not prefer investing in firms that provide a larger amount of information and longer financial reports because they cannot reach a good understanding of firms' investment risk". These results are partially confirming H2.

Regarding H3 (questions 9-12), the mean is 3.533, Std. is 1.118, and the mode is 4, which indicates that the majority of the respondents agrees that "Complex terminologies concurrent with lengthy annual reports increase their estimation of the firm's investment risk". For question10, the mean is 3.864, Std. is 1.172, and the mode is 4, which reveals that the majority of the respondents agrees that "Poor organizing and presenting of information concurrently with information overload in financial reports increases their estimation of the firm's investment risk". For question 11, the mean is 3.819, Std. is 1.028, and the mode is 4, which shows that the majority of the respondents agrees that "Depending on complex terminologies concurrent with lengthy annual reports increase their suspicion regarding managerial attempts to hide poor performance or earnings manipulation". Finally, for question 12, the mean is 4.045, Std. is 0.944, and the mode is 4, which means that the majority of the respondents agrees that "Poor organizing and presenting of information concurrently with information overload in financial reports increases their suspicion regarding the managerial attempts to hide poor performance or earnings manipulation", these results are confirming our H3.

Table 3. Descriptive analysis

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
N	133	133	133	133	133	133	133	133	133	133	133	133	133
	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.699	3.443	3.090	3.323	3.248	3.315	3.421	3.263	3.533	3.864	3.819	4.045
Median		4	4	3	3	3	3	3	3	4	4	4	4
Mode		4	4	3	4	4	4	3	4	4	4	4	4
Std. Deviation		1.065	1.089	1.124	1.203	1.202	1.137	1.142	1.242	1.118	1.172	1.028	0.944
Minimum		1	1	1	1	1	1	1	1	1	1	1	1
Maximum		5	5	5	5	5	5	5	5	5	5	5	5

4.3 T-test analysis

To test our hypotheses, we depended on one sample t-test to analyze the survey statements, and explore whether the answers of individual investors differ significantly from the neutral ones. The neutral point (Midpoint) in our scale is 3 (Daugherty et al., 2012). By testing the first hypothesis, as shown in Table 4, for question 1, the mean is 3.699, which is different from the neutral point by 0.699, and the result is significant at 99%, indicating that information overload in lengthy annual reports decreases investors' confidence in the financial statements. Respondents indicated that information overload reduces their understanding of the firm's business and its financial performance. For questions 2, the mean is 3.443, which is different from the neutral point by 0.443, and the result is significant at 99%investors, indicating that information overload reduces investors' ability to predict future firms' performance and increases uncertainty about future performance. For question 3, the mean is 3.090, which is different from the neutral point by 0.090, and the result is insignificant, indicating that investors are indifferent regarding whether information overload is reducing their reliance on financial statements. Finally, for question 4, the mean is 3.323, which is different from the neutral point by 0.323, and the result is significant at 99%, indicating that investors see that information overload increases the difficulty of accessing the relevant information to make decisions. Accordingly, our first hypothesis is partially accepted.

Table 4. Information overload in lengthy annual reports decrease investors' confidence in the financial statements (H1)

No.	Statement	Mean (SD)	Diff. From Neutral1[1]	t-statistic[2]
1	Information overload reduces our understanding of the firm's business and its financial performance.	3.699 (1.065)	0.699	7.566***
2	Information overload reduces our ability to predict future firms' performance and increases uncertainty about future performance.	3.443 (1.089)	0.443	4.694***
3	Information overload reduces our reliance on financial statements.	3.090 (1.124)	0.090	0.925
4	Information overload increases the difficulty of accessing relevant information to make decisions.	3.323 (1.203)	0.323	3.099***

1- The neutral point "midpoint" of our scale is 3.

2- t-test explore whether information overload in lengthy annual reports increases investors' confidence in financial report is significantly different from the midpoint on our scale (Midpoint "3").,**,*** represent significance at 0.10, 0.05, 0.01,respectively.*

By testing the second hypothesis, as shown in Table 5, for question 5, the mean is 3.248, which is different from the neutral by 0.248, and the result is significant at 95%, indicating that information overload in lengthy annual reports increases investors' perceptions of the investment risk in the firms. That is, respondents showed that information overload reduces their confidence to invest in the firm. For question 6, the mean is 3.315, which is different from the neutral point by 0.315, and the result is significant at 99%, indicating that information overload increases the investors' assessment of the firm's investment risk. For question 7,), the mean is 3.421, which is different from the neutral point by 0.421, and the result is significant at 99%, indicating that investors confirm that information overload increases the likelihood of exploiting information by managers to hide poor performance or earnings manipulation. Finally, for question 8, the mean is 3.263, which is different from the neutral point by 0.263, and the result is significant at 95%, indicating that investors do not prefer investing in firms that provide a larger amount of information and longer financial reports because they cannot reach a good understanding of firms' investment risk. Accordingly, our second hypothesis is fully accepted.

Table 5. Information overload in lengthy annual reports increase investors' perceptions of investment risk in the firms (H2)

No.	Statement	Mean (SD)	Diff. From Neutral1[1]	t-statistic[2]
5	Information overload reduces our confidence to invest in the firm.	3.248 (1.202)	0.248	2.380**
6	Information overload increases our assessment of the firm's investment risk.	3.315 (1.137)	0.315	3.202***
7	Information overload increases the likelihood of exploiting information by the managers to hide poor performance or earnings manipulation.	3.421 (1.142)	0.421	4.249***
8	I do not prefer investing in firms that provide a larger amount of information and longer financial reports because I cannot reach a good understanding of firms' investment risk.	3.263 (1.242)	0.263	2.443**

1- The neutral point "midpoint" of our scale is 3.

2- t-test explore whether information overload in lengthy annual reports increases investors' confidence in financial report is significantly different from the midpoint on our scale (Midpoint "3").,**,*** represent significance at 0.10, 0.05, 0.01, respectively.*

To test the last hypothesis, as shown in Table 6, for question 9, the mean is 3.533, which is different from the neutral point by 0.533, and the result is significant at 99%, indicating that disclosure complexity and poor presentation of accounting information increase the investors' perceptions of firms' investment risk. This finding reveals that complex terminologies concurrent with lengthy annual reports increase investors' estimation of the firm's investment risk. For question 10, the mean is 3.864, which is different from the neutral point by 0.864, and the result is significant at 99%, indicating that investors see that poor organization and presentation of information concurrently with lengthy annual reports increase investors' estimation of the firm's investment risk. For question 11, the mean is 3.819, which is different from the neutral point by 0.819, and the result is significant at 99%, indicating that investors see that depending on complex terminologies concurrent with lengthy annual reports increase their suspicion regarding attempts to hide poor performance or earnings manipulation. Finally, the mean is 4.045, which is different from the neutral point by 0.045, and the result is significant at 99%, indicating that investors see that poor organization and presentation of information concurrent with lengthy annual reports increase their suspicion regarding the managerial attempts to hide poor performance or earnings manipulation. Accordingly, our third hypothesis is fully accepted.

Table 6. Disclosure complexity and poor presentation in annual reports increase investors' perceptions of firms' investment risk (H3)

No.	Statement	Mean (SD)	Diff. From Neutral1[1]	t-statistic[2]
9	Complex terminologies concurrent with lengthy annual reports increase our estimation of the firm's investment risk.	3.533 (1.118)	0.533	5.505***
10	Poor organizing and presenting of information concurrently with information overload in financial reports increase our estimation of the firm's investment risk.	3.864 (1.172)	0.864	8.502***
11	Depending on complex terminologies concurrent with lengthy annual reports increase our suspicions regarding attempts to hide poor performance or earnings manipulation.	3.819 (1.028)	0.819	9.188***
12	Poor organizing and presenting of information concurrently with information overload in financial reports increase our suspicions regarding the managerial attempts to hide poor performance or earnings manipulation.	4.045 (0.944)	1.045	12.762***

1- The neutral point "midpoint" of our scale is 3.
2- t-test explore whether information overload in lengthy annual reports increases investors' confidence in financial report is significantly different from the midpoint on our scale (Midpoint "3").,**,*** represent significance at 0.10, 0.05, and 0.01, respectively.*

5. DISCUSSION AND CONCLUSION

Recently, information overload has become one of the most important research problems in accounting around the world after indicating its negative implications in previous research (Paredes, 2003), which, in turn, motivated regulators to reconsider the current accounting disclosure model to mitigate this problem (FRC, 2009, 2012; IASB, 2013, 2016; FASB, 2014). The mixed evidence reported in the literature suggests the need for more research. Besides, the focus of the literature on developed markets, especially the U.S. context, indicates the need for further evidence from emerging markets. Consequently, in this study, we explore investors' perceptions of investment risk under information overload, depending on a survey of individual investors in Saudi Arabia, one of the largest markets in the MENA region.

Our results indicated that information overload decreases investors' confidence in the financial reports, and also increases investors' perceptions of firm's investment risk. Further, we found that complex disclosures and poor presentation increase investors' perceptions of firm's investment risk. These findings are different from the previous studies reporting that investors do not consider the higher disclosure volume as a major concern (CFA, 2013;

Muslu et al., 2015; Li, 2019). However, our findings support the view that investors are likely to invest in firms with clear disclosures—that is, information overload and complex disclosures are associated with higher investment risk (e.g., Lawrence, 2013; De Franco et al., 2015; Nagarajan et al., 2017).

Our results are useful for firms and investors by guiding firms toward the best ways to address the negative implications of information overload in the current disclosure model. We recommend that business firms can work on a set of axes to avoid the negative effects of information overload. The disclosure should be reorganized in a way that enables the decision-makers to access the relevant information easily and conveniently. Reports should be written in a language that is easy to read and understand, the language used should be short, information should not be repeated, and the use of accounting or economic terminologies should be limited, i.e., they should be used only when it's necessary to depend on them, and terminologies should be known in advance. It is also important to avoid static financial reporting processes, which are based merely on updating information, rather than improving disclosure from a period to another. Improving the business disclosure and information environment, in turn, can help enlighten investors' investment-related decisions.

Finally, considering the dependence on this study on surveys of individual investors, future research may depend on experimental studies to test the hypotheses. Moreover, future research can draw upon other research methods such as investigating a sample of firms listed on the Saudi Exchange to get a fuller understanding of the information overload problem in the Saudi emerging market and its implications for financial reporting quality and investment-related decisions.

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Appendix A. The survey statements

No.	Statements
1	Information overload reduces our understanding of the firm's business and its financial performance.
2	Information overload reduces our ability to predict future firms' performance and increases uncertainty about future performance.
3	Information overload reduces our reliance on financial statements.
4	Information overload increases the difficulty of accessing relevant information to make decisions.
5	Information overload reduces our confidence to invest in the firm.
6	Information overload increases our assessment of the firm's investment risk.
7	Information overload increases the likelihood of exploiting information by the managers to hide poor performance or earnings manipulation.
8	I do not prefer investing in firms that provide a larger amount of information and longer financial reports because I cannot reach a good understanding of firms' investment risk.
9	Complex terminologies concurrent with lengthy annual reports increase our estimation of the firm's investment risk.
10	Poor organizing and presenting of information concurrently with information overload in financial reports increases our estimation of the firm's investment risk.
11	Depending on complex terminologies concurrent with lengthy annual reports increase our suspicions regarding attempts to hide poor performance or earnings manipulation.
12	Poor organizing and presenting of information concurrently with information overload in financial reports increases our suspicions regarding the managerial attempts to hide poor performance or earnings manipulation.

Source: The authors