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Three Studies Examining Nonprofessional Investors' Decision Making

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THREE STUDIES EXAMINING NONPROFESSIONAL INVESTORS' DECISION

MAKING

by

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ABSTRACT

This dissertation consists of three studies exploring nonprofessional investors' decision making. Technological advancements witnessed by the capital markets in recent years have caused significant changes to the dissemination and use of information, particularly by nonprofessional investors. Among these developments is the growth of social media that allows anyone to post information upon which others may rely and the availability of DAs that assist decision makers in evaluating the quality of information reported by an organization. The purpose of this dissertation is to investigate the benefits of using DAs that are capable assessing the quality of information reported to capital market participants and to investigate the effect of information retrieved from social media on nonprofessional investors' decisions.

Study 1 highlights concerns over the ease of spreading video disclosures via social media outlets. Recent evidence from practice and research suggests that the trend of issuing video disclosures is growing and that investors are exposed to the risk of including deceptive information contained in those videos in their decision making process. The theoretical model introduced in this study suggests that investors can use deception detection DAs to identify deceptive behavior in video disclosures, and that the use of such DAs affects their perceptions of disclosure credibility. This study posits that management's pre-existing reputation affects investors' perceptions of disclosure credibility, and that the negative output of a deception detection DA can dilute the effect of management's pre-existing reputation on investors' perceptions of disclosure

credibility. Using data from 376 nonprofessional investors, the findings support the proposed theoretical model and suggest that deception detection dilutes the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility. The effect of management's pre-existing reputation on investors' perceptions of disclosure credibility is significantly weaker when the output of deception detection DA detects deception than when it fails to detect deception. Supplemental analyses suggest that the effect of deception detection is not limited to investors' perceptions of disclosure credibility, but also affects investors' willingness to invest. Deception detection dilutes the effect of management's pre-existing reputation on willingness to invest as well. These findings suggest that investors can mitigate the risks associated with video disclosures and improve their decisions by using deception detection DAs.

Study 2 highlights concerns over the spread of linguistic manipulations in corporate disclosures. Recent evidence from the accounting literature suggests that managers strategically use linguistic manipulations and that investors unintentionally include the effect of these linguistic manipulations in their decisions. This study builds on the existing literature on linguistic manipulations and argues that providing investors with a DA that is capable of detecting linguistic manipulations can assist them in making investment decisions. The theoretical model introduced Study 2 suggests that the detection of linguistic manipulations (the occurrence of an expectation violation) moderates the effect of managers' incentives on investors' willingness to invest through disclosure credibility such that the effect of managers' incentive on investors' willingness to invest is expected to be weaker when the DA detects linguistic manipulations than

when the DA fails to detect linguistic manipulations. Using data from 472 nonprofessional investors, the findings do not support the proposed theoretical model and suggest the effect of management incentive on investors' willingness to invest through disclosure credibility is not moderated by the detection of linguistic manipulations. These findings show that detecting linguistic manipulation has the same effect on managers with incentive to manipulate the language used corporate reports as those with no incentive to manipulate the language used in corporate reports.

Study 3 highlights concerns over social media outlets that have enabled investors to communicate between themselves at an unprecedented rate. This study highlights the risk of using information retrieved from social media outlets and argues that investors are exposed to the risk of including erroneous information in their information set. This study uses the "Social Identification of the De-individuation Effect" model (SIDE) to argue that visual anonymity has an effect on investors' willingness to invest through their perceptions of disclosure credibility and that this effect depends on whether investors' have low or high social identification with the group of forum users. Using data from 401 nonprofessional investors, the findings do not support the proposed theoretical model. Nevertheless, findings from this study suggest that investors' social identification has an effect on their perceptions of disclosure credibility, and that social identification and visual anonymity have a joint effect on investors' willingness to invest. More precisely, investors with low social identification are more influenced by forum comments when they read the forum comments via text than when they view the forum comments via video; and, investors with high social identification are more influenced by forum

comments when they view the forum comments than when they read the forum

comments. While findings from this study provide support for the moderating role of

social identification advanced in SIDE, the moderating role of social identification is in

the opposite direction. Thus, this study fails to provide support for SIDE.

I dedicate this dissertation to my parents and to my wife. Thank you for your support and
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GENERAL INTRODUCTION

This dissertation responds to Mercer's (2004) call for more research on investors' perceptions of disclosure credibility by investigating the effect of certain factors on nonprofessional investors' perceptions of disclosure credibility. In her study, Mercer highlighted the importance of disclosure credibility and identified four factors that can have an impact on investors' perceptions of disclosure credibility. Mercer argued that unless credible, management disclosure is not included in investors' decision making. She defines disclosure credibility as "…investors' perceptions of the believability of a particular disclosure" (p.186). She highlights that investors' perceptions of disclosure credibility is different and independent from the objective credibility of disclosure. In other words, disclosure that is objectively credible can be perceived as non-credible disclosure and vice-versa. The fact that disclosure credibility is a perception and not an objective measure creates several concerns. For example, managers can use certain techniques to orient investors' perceptions of disclosure credibility toward a certain direction and these techniques can lead investors to making poor investment decisions.

While Mercer (2004) limits her definition of disclosure credibility to "believability", this dissertation adapts a measure of disclosure credibility from the message credibility literature (Chesney and Su, 2010; Flanagin and Metzger, 2007, 2003, 2000). In this literature, believability constitutes only one of five criteria of credible information. The operationalization of disclosure credibility in this dissertation uses all of the factors identified by the message credibility literature. More precisely, management

disclosure is credible if it is believable, accurate, trustworthy, unbiased, and complete (Chesney and Su, 2010; Flanagin and Metzger, 2007, 2003, 2000).

This dissertation also concentrates on a specific category of investors, nonprofessional investors. The literature uses different terminologies for this specific group of investors such as less sophisticated investors (e.g., Rennekamp, 2012), individual investors (e.g., Farkas and Murthy, 2014), retail investors (e.g., Cohen et al., 2011), small investors (e.g., Miller, 2010), less experienced investors (e.g., Hodge and Pronk, 2006), or investors (e.g., Pinsker, 2007). All of these terminologies are used to describe investors who do not have the expertise and training of professional investors. Nonprofessional investors are a significant constituent of capital markets and, relatively to professional investors, are at a disadvantage. Evidence from the literature suggests that nonprofessional investors lack the necessary knowledge and expertise to analyze financial statement (Maines and McDaniel, 2000; Frederickson and Miller, 2004; Pitre, 2012), focus on explicitly stated rather than implicitly stated information (Frederickson and Miller, 2004; Krische, 2005; Han and Tan, 2007), prefer to use qualitative information over quantitative information (Hofstedt, 1972; Lee and Tweeedie, 1975; Rowbotton and Lymer, 2009; Arnold et al., 2010), employ a directive search strategy (Hodge et al., 2004; Arnold et al., 2012), suffer from an earning fixation problem (Hewitt, 2009), react unintentionally to certain stimulus (Fredrickson and Miller, 2004; Krische, 2005; Rennekamp, 2012; Elliott, 2006), and make conservative investment decisions (Sharma, 2006).

Nonprofessional investors' behavioral characteristics expose them to a high risk of misinterpreting information released in capital markets. Their misinterpretation of information could have an impact on their actual investment decisions or on factors affecting their investment decisions such as disclosure credibility. This dissertation attempts to investigate the behavioral implication of introducing a DA and recommendations from social media on investors' perceptions of disclosure credibility.

<u>Study 1</u>
<u>The Moderating Effect of Deception Detection on Nonprofessional Investors'
Perceptions of Management Credibility and Disclosure Credibility</u>

The purpose of this study is to investigate the effect of introducing the output of a deception detection DA into nonprofessional investors' decision making model. Major corporate scandals such as Enron and WorldCom consist of evidence that deception is not uncommon in the business arena. Investors were intentionally mislead and manipulated to make poor investment decisions. Investors' failure to detect deception at an early stage is due to the difficulty and complexity of detecting deception. Unless they receive deception detection training, investors are unlikely to detect deception. While there are several disclosure outlets that can include deception, the first study of this dissertation focuses on deception in video disclosures.

Technological advancements have eased the process of creating videos and disseminating them to a large audience. Evidence from practice suggests that CEOs take advantage of these technological changes and use this technology to communicate information to capital market participants. Since investors are not necessarily capable of

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detecting deception from this type of disclosure, their investment decisions become dependent on the accuracy of these disclosures.

Investors use several clues to build perceptions about disclosure credibility. Among these clues is management pre-existing reputation; disclosure from managers with good pre-existing reputation is deemed to be more credible than disclosure from managers with lower pre-existing reputation. However, managers' pre-existing reputation can be misleading. Investors have limited access to information and managers can establish a good pre-existing reputation by obfuscating negative information that may create a bad pre-existing reputation. As a result, investors may include deceptive information in their information set. On the other hand, investors may mistakenly exclude valuable information from their information set when managers have a bad pre-existing reputation. In either case, investors may build inaccurate perceptions of disclosure credibility. The theoretical framework advanced in this study suggests that providing participants with the output of a deception detection DA may help investors to appropriately assess disclosure credibility. More precisely, this study suggests that the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility depends on whether the DA detects deception.

Expectation Violation Theory (EVT) is used to predict the effect of management's pre-existing reputation and detecting deception on investors' perceptions of disclosure credibility. The theoretical model advanced in this study suggests management's pre-existing reputation affects investors' perceptions of disclosure credibility such that managers with good pre-existing reputation are perceived to be more

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credible than managers with bad pre-existing reputation. Based on Mercer (2004), management credibility is also theorized to mediate the effect of management's pre-existing reputation on disclosure credibility. In other words, the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility flows through management credibility.

Deception detection is also theorized to moderate the effect of management's pre-existing reputation on investors' perceptions of management credibility such that the effect of management pre-existing reputation on management credibility is conditional on whether the DA detects deception. More precisely, the theoretical model advanced in this study argues that management pre-existing reputation has a stronger effect on management credibility when the DA fails to detect deception than when the DA detects deception. Since management credibility mediates the effect of management pre-existing reputation on investors' perceptions of disclosure credibility, this effect is theorized to be conditional on whether the DA detects deception as well such that the effect of management's pre-existing reputation on investors' perceptions of management credibility is also conditional on whether the DA detects deception. In other words, the theoretical argument made in study suggests that the indirect effect of management pre-existing reputation is stronger when the DA fails to detect deception than when the DA detects deception.

The theoretical model was tested using a 2X2 factorial design with management's preexisting reputation (bad vs. good) and deception detection (deception detected vs. deception not detected) as the independent variables. Management's pre-existing

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reputation was manipulated by providing participants with a business journal article that described the CEO favorably in the good pre-existing reputation condition and unfavorably in the bad pre-existing reputation condition. Deception detection was manipulated by providing participants with the output of a deception detection DA. In the deception detected condition, participants were told that there is 90% likelihood that the CEO is being deceptive; in the deception not detected condition, participants were told that there is a 10% likelihood that the CEO is being deceptive. A total of 376 useable responses were collected from nonprofessional investors to test the hypotheses.

Findings from this study provide support for EVT and suggest that deception detection dilutes the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility such that the direct and indirect effect of management's pre-existing reputation on investors' perceptions of disclosure credibility are weaker when the output from the DA detects deception than when it fails to detect deception.

Study 2
Getting Caught "Sugar Coating": The Behavioral Implications of Detecting Linguistic Manipulations on Nonprofessional Investors' Decisions

Recent findings from studies on narratives within corporate reports indicate that managers are strategically changing the language in these narratives to "sugar coat" the information they are communicating to investors. For example, Cho et al. (2010) reported that the tone used in the MD&A section of annual report depends on the company's environmental performance. Another stream of research investigates whether changes in

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the language used in the narratives within corporate reports impact investors' judgments. Findings from this stream of research suggest that changes in language within corporate reports are significantly associated with changes in investors' judgment and decision making (Henry, 2008; Feldman et al., 2010; Hales et al., 2011; Rennekamp, 2012; Miller, 2010; Riley et al., 2014). Combining findings from these two streams of research indicate that managers are using corporate narratives to manipulate investors and that this strategy is effectively impacting investors' decision making. Therefore, investors are exposed to the risk of making poor investment decision. Several studies have created discrimination models that are capable of discriminating between narratives that include language manipulations from narratives that are free from language manipulations. The purpose of this study is to investigate whether providing investors with the output of a DA that is capable of discriminating between narratives with language manipulations and narratives with no language manipulations impacts investors' decision making.

Similar to Study 1, EVT is used to explore the effect of introducing the output of a DA that is capable of detecting linguistic manipulations into nonprofessional investors' decision making. The theoretical model advanced in this study suggests that managerial reporting incentives have an effect on investors' willingness to invest through their perceptions of disclosure credibility and that this effect depends on whether the output of the DA detects linguistic manipulations. More precisely, managerial incentives have a weaker effect on investors' willingness to invest when the DA detects linguistic manipulation than when the DA fails to detect linguistic manipulations.

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The theoretical model was examined using a 2X2 factorial design with managers' incentives (incentive vs. no incentive) and the output of the DA (linguistic manipulation detected vs. linguistic manipulation not detected) as the independent variables. Managers' incentive was manipulated by providing participants with a business journal article that described the company as a bad environmental performer in the incentive condition and described the company as a good environmental performer in the no incentive condition. The result of the DA was manipulated by providing participants with the output of the DA analysis. In the detected linguistic manipulation condition, participants were told that the analyzed narrative is not free from tone manipulations; in the linguistic manipulation not detected condition, participants were told that the analyzed narrative is free from tone manipulations. Useable responses from 472 nonprofessional investors were used to test the hypotheses.

The results from testing the theoretical model indicate that investors' perceptions of disclosure credibility mediates the relationship between managerial incentives and investors' willingness to invest and that detecting linguistic manipulations in narratives does not moderate this relationship. The results show that detecting linguistic manipulation impacts investors' decisions regardless of whether managers have incentive to manipulate the information in corporate reports. These results suggest that these DAs can impact investors' decisions and that this effect is not sensitive to managerial incentives.

The Impact of Social Media on Nonprofessional Investors' Decision Making

Because of the significant growth of technology, information can spread via the internet at an unprecedented rate. Changes to the communication process between individuals create new challenges for the capital market. While technology has facilitated access to information and enhanced the communication flow between participants of capital markets, it may also enhance the spread of rumors and misleading information. The purpose of this study is to investigate whether information from social media has an influence on investors' decision making and how this information influences their decision making.

This study uses the "Social Identification of the De-individuation Effect" model (SIDE) to investigate the effect of information retrieved from social media on investors' judgment and decision making. More precisely, this study investigates the effect of comments in unregulated forums on investors' perceptions of disclosure credibility and their willingness to invest. The theoretical model advanced in this study suggests that visual anonymity in social media has an impact in investors' willingness to invest through their perceptions of disclosure credibility, and that this effect depends on the extent of their social identification with members of the forum.

The theoretical model was tested using a 2X2 factorial design with visual anonymity (text comments vs. video comments) and social identification (low social identification vs. high social identification) as the independent variables. Visual anonymity was manipulated by providing participants with text comments vs. video comments. Social identification was manipulated through membership in an investment

forum. In the high social identification condition, participants were told that they were active members of the forum. In the low social identification condition, participants were told that they were not members of the forum. Useable responses from 401 nonprofessional investors were used to test the hypotheses.

Results from testing the theoretical model suggest that social identification has an effect on investors' perceptions of disclosure credibility, and that social identification and visual anonymity have a joint effect on investors' willingness to invest. The results fail to provide support for SIDE and suggest that individuals with low social identification were more influenced by the group norm when they read text comments from the forum than when they viewed video comments, and that individuals with high social identification with a forum group were more influenced by the group norm when they viewed video comments than when they read text comments.

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STUDY 1
THE MODERATING EFFECT OF DECEPTION DETECTION ON INVESTORS' PERCEPTIONS OF MANAGEMENT CREDIBILITY AND DISCLOSURE CREDIBILITY

Introduction

Major accounting collapses such as Enron and WorldCom have shown that managers do not always act in the best interest of investors and are subject to engaging in deceptive behavior. On multiple occasions, CEOs have deceived their audience and have communicated erroneous information to capital market participants (e.g., Beasley et al., 2010). The rapid expansion of social media and related technological advances has created new disclosure channels that companies may use to communicate information to investors. Most of the information disseminated through these new disclosure channels is not subject to audit or other forms of assurance. Video disclosures are one type of these new disclosure channels. Evidence from practice suggests that CEOs currently use video disclosures for several purposes such as apologizing (Seward, 2011) , reading shareholder's letters (Jones, 2011), building investors' confidence (Smith, 2013), promoting a new product (Swallow, 2010), explaining merger decisions (Rayburn, 2009), announcing earnings (Feintzeig and Silverman, 2013), responding to investors' questions in Question & Answer (Q&A) sessions, and announcing earnings' restatement (Elliott et al. 2012). Despite the fact that these videos allow investors to access more information, they may include less than accurate information and may be used by management to deceive investors.

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Deception in corporate disclosures is problematic as investors rely on those disclosures to make investment decisions. Unless they are able to detect deceptive information, investors risk making bad investment decisions. Investors may be able to detect deceptive behavior if they can identify behavioral cues that are associated with deceptive behavior. Investors can examine some of these clues to assess whether the information reported to them is free from deception. Nevertheless, some clues are not necessarily associated with deceptive behavior. For example, when investors use management reputation to determine the credibility of information communicated to them (Mercer, 2004), they may believe that managers who have built a good reputation are less likely to include deceptive information in their communications. However, reputation is not a reliable mechanism for deciding whether management is being forthcoming in their disclosures. Managers can build a good reputation by providing information to investors that may contain deceptive information. For example, Enron management built their good reputation while consistently deceiving the public (McLean and Elkind, 2003). Their reputation was not diminished or doubted until their deceptive behaviors were discovered. Alternatively, managers with bad pre-existing reputation may be perceived to be deceptive when they are telling the truth. A negative management reputation, by itself, does not necessarily increase investors' likelihood of detecting deceptive information.

The likelihood of an investor detecting deception is very low. Without training or assistance, an individual's ability to detect deception is no better than chance (Jensen et al., 2005; Jensen et al., 2010; Jensen et al., 2011). According to the Wall Street Journal

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(2010), some professional analysts are receiving training in deception detection techniques, some institutional investors are hiring deception detection experts, and Wall Street firms are hiring deception detection consultants to analyze individuals. "…[I]nvestors are turning to behavioral specialists, looking to find things in faces and phrases that may not be revealed in financial statements" (Stock, 2009). Nonprofessional investors on the other hand may not have the resources that professional investors have to train themselves. While training on deception detection may not be an option for most nonprofessional investors, a DA that detects deceptive behavior may be a solution to help investors evaluate the truthfulness of disclosures.

There are several DAs that have been developed to help individuals detect deception in videos. For example, the "Behavioral Analysis Prototype" (BAP) is a DA that is capable of analyzing linguistic and kinetic cues from video recordings and reporting whether there are signs of deception (Jensen et al., 2010). Similarly, a deception detection DA has been tested and used by customs officials to detect lies at the U.S. boarders (Biscobing and Gilger, 2013). Such a DA may be useful to investors by allowing them to detect deception in video disclosures. To be beneficial, these DAs have to have an effect on investors' perceptions of disclosure credibility and management credibility. The availability of the DA does not necessarily mean that investors will include its recommendation in their decision making. Investors have access to many other competing resources such as analysts' forecast, management reputation, social media, etc. As a result, investors' may not always benefit from a deception detection DA. The purpose of this study is to investigate whether investors can benefit from the use of the

output from a deception detection DA. More precisely, this study aims to explore the effect of the output of a deception detection DA on investors' perceptions of management credibility and disclosure credibility.

Burgoon and Hale (1988) and Burgoon (1993)'s Expectation Violation Theory (EVT), and research on reputation and disclosure credibility are used to predict the behavioral consequences of investors using deception detection DAs. The theoretical framework of this study suggests that management's pre-existing reputation affects investors' perceptions of management credibility and disclosure credibility, and that the effect of management's pre-existing reputation is conditional on whether the deception detection DA detects deception. More precisely, management's pre-existing reputation should have a weaker (stronger) effect on investors' perceptions of management credibility and disclosure credibility when the deception detection DA detects (fails to detect) deception. Moreover, management credibility is predicted to affect disclosure credibility. Therefore, the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility is predicted to flow through management credibility, and this effect is also conditional on whether the DA detects deception such that deception detection will dilute the effect of management's pre-existing reputation on disclosure credibility.

In order to test this model, 376 usable responses were collected from nonprofessional investors. The results provide support for the theoretical model and suggest that deception detection dilutes the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility. The effect of management's

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pre-existing reputation on investors' perceptions of management credibility and disclosure credibility is significantly weaker when the deception detection DA detects deception than when the deception detection DA fails to detect deception. Findings from supplemental analyses suggest that deception detection also influences investors' willingness to invest by diluting the effect of management's pre-existing reputation.

This study provides valuable insights for research and practice. Contrary to the previously reported findings on the endurance of management reputation (Cianci and Kaplan, 2010), findings from this study suggest that detection of deception by a DA can dilute the positive effect of management's pre-existing reputation on investors' judgment and decision making. Based on EVT, management's pre-existing reputation establishes expectations about disclosure quality and these expectations are used as a baseline to assess disclosure credibility. The violation of these expectations affects the communication outcomes between managers and investors, and ultimately affects investors' perceptions of disclosure credibility. Findings from this study provide support for EVT's predictions and suggest that EVT can provide valuable insight on how investors' assess disclosure credibility.

This study also contributes to practice by addressing some of the concerns about the dissemination of erroneous information in capital markets via new channels of disclosure. Findings from this study suggest that investors can mitigate the risks associated with video disclosure by using deception detection DAs. From the investors' perspective, investors will be able to detect deception at an early stage and improve their decisions. From the manager's perspective, once these DAs become widely accepted,

managers may avoid making deceptive statements when making video disclosures. Managers may not engage in deceptive techniques knowing that investors are capable of detecting their deception (Rogers and Stocken, 2005).

<u>Background</u>

The rapid expansion of social media and recent technological advances has changed the flow and nature of information in capital markets. Investors can now quickly access a significant amount of information with much less effort. Corporations are also able to reach a significantly higher number of current or potential investors. Social media is becoming a communication tool that corporate management and investors are using to communicate with each other (Blankespoor et al., 2014). The benefits and drawbacks from enhanced communication through social media are still unclear. For example, while social media and technological advances increase the communication between managers and investors, managers can use these new communication media to manipulate or control investors' impressions. Video disclosure is one of these new communication media that managers can use opportunistically to reach investors.

Managers are now able to broadcast a video at any time to communicate directly with investors. For example, when Nokia announced its alliance with Microsoft as part of its new strategy, the market reacted negatively. Stephen Elop, CEO of Nokia at the time, scheduled two meetings (one with specialist journalists and the other with financial analysts) in an attempt to "change the market's mind". Both of these meeting were

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broadcast live and were publically available (for more details, see Whittington and Yakis-Douglas, 2012).

Recent evidence show that investors react differently to this new form of disclosure in comparison to traditional disclosure methods. Investors make different decisions when disclosures are communicated via video rather than text (Elliott et al., 2012). Managers can behave opportunistically and use these video disclosures to influence investors' decisions to their advantage. For example, when an error occurs and managers take responsibility for the error, they can gain more trust from their investors through video disclosure rather than text disclosure (Elliott et al., 2012).

In an effort to adjust to technological changes and regulate corporate disclosure in social media, the SEC has recently allowed corporations to post their corporate disclosures on social media web sites such as Facebook and Twitter as long as investors are informed in advance of the types of media that will be used. However, informing investors about the location of information does not protect them from the content of the information. The current regulatory model does not protect investors from the new risks that have emerged from social media and technological advances.

While research in video disclosure is in its infancy, recent evidence from Larcker and Zakolyukina (2012) and Mayew and Venkatachalam (2012) suggests that the content of video disclosure is not free from deceptive statements and that managers can use video disclosure to deceive investors. This literature also suggests that deception can be extracted from CEOs disclosure. For example, linguistic features in conference calls can be used to detect whether managers are deceitful or truthful during these conference calls

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(Larcker and Zakolyukina, 2012). Similarly, the voice of managers, when answering analysts' questions in Q&A sessions on conference calls, can be analyzed to infer managers' affective state (Mayew and Venkatachalam, 2012)[1] or to predict the likelihood of financial misreporting (Hobson et al., 2012).

Due to technological advances, new tools are available that investors can use to improve their decision making model such as voice analysis and facial expression software. For example, voice analysis software such as Layered Voice Analysis (LVA) can be used to extract deception from vocal cues. However, several studies that have employed voice analysis software reported that these DAs are no better than random guesses to detect deception (for a discussion, see Mayew and Venkatachalam, 2012). Deception detection DAs that focus on facial expressions represent a more powerful approach to detect deception. "… [T]echnological advances have increased the availability of video in addition to audio. Exploring facial expressions as yet another channel of non-verbal managerial communication in the context of financial markets would be a fruitful avenue for future research" (Mayew and Venkatachalam, 2012, pg. 38).

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[1] Negative affect occurs when managers experience cognitive dissonance when answering analysts' questions. While not necessarily deceptive, cognitive dissonance when answering analysts' questions (negative state) is a sign that managers may be hiding information from investors. "If the manager has private information that is inconsistent with her own beliefs regarding her competence, an uncomfortable emotional state will arise from this dissonance" (Mayew and Venkatachalam, 2012, pg. 7).

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Hypothesis Development and Theoretical Framework

There are many reasons why individuals are not able to see through deceptive behavior. First, most people suffer from a "truth bias", a tendency to assume that what they are told is true. Second, deceivers do not exhibit one single behavioral clue upon which individuals can focus. People are unable to process all indicators of deceptive behavior at once (Jensen et al., 2008). Differences between truth tellers and deceivers can be detected through nonverbal cues (e.g., gestures, eye contact, head movements), verbal cues (e.g., linguistics), and physiological changes (e.g., heart rate, brain activity). These clues are transitory (Jenson et al., 2005) and occur simultaneously. The complexity of decoding the deception cues renders deception detection a cognitively challenging task, even for deception detection experts.

Contrary to humans, DAs do not suffer from cognitive limitation. DAs can be programmed to combine behavioral clues to capture deception and assess whether an individual is being deceptive or not. For example, a deception detection DA can conduct linguistic and kinesics analyses simultaneously and generate a score for each (Jenson et al., 2010).

Deception detection DAs look for behavioral differences between deceivers and non-deceivers, which can be either verbal or non-verbal. Non-verbal cues are a more powerful tool to detect deception because they are less likely to be rehearsed and they represent "…unconsciously 'leaked' gestures…" (Meyer, 2010; pg. 75). Even in cases when the deceiver is an expert in deception and rehearses his/her gesture to avoid gestural

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leakages, some leakages are very difficult to control such as the eye's orbiting muscle or pupil dilation (Meyer, 2010).

Several prototypes and existing deception recognition DAs are available such as polygraphs (measures pulse and breathing), electroencephalograms (measures brain activity), thermal scanners (measures the blood flow), sniffer test (measure the level of stress hormones), pupilometer (measure pupil dilatation), eye trackers (measures eye movements), and Magnetic Resonance Imaging. Some of these tools cannot reasonably be used to detect managers' deception. For example, injecting managers with a solution and placing electrodes on their bodies would be considered unreasonable. Nevertheless, recent technological advances in deception detection techniques are not as invasive. Some deception detection DAs are capable of detecting deception without the deceiver's awareness of their presence (Jenson et al., 2010). These DAs can capture changes in behavior through a camera's lenses. By just videotaping someone, DAs can capture clues of deception. Jenson et al. (2010) built a prototype called BAP that is capable of detecting deception through linguistic and kinesics analysis. Evidence from their study shows that experts' and novices' ability to detect deception increased by using BAP. Such a deception detection DA can be useful to capital market participants if they incorporate the information from the DA into their decisions.

Figure 1 presents the theoretical model regarding the effect of a deception detection DA and management's pre-existing reputation on investors' perceptions of disclosure credibility. As will be discussed below, DA output and management's pre-existing reputation are hypothesized to affect investors' perceptions of disclosure

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credibility through management credibility. Also, the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility through management credibility is conditional on whether the deception detection DA detects deception.
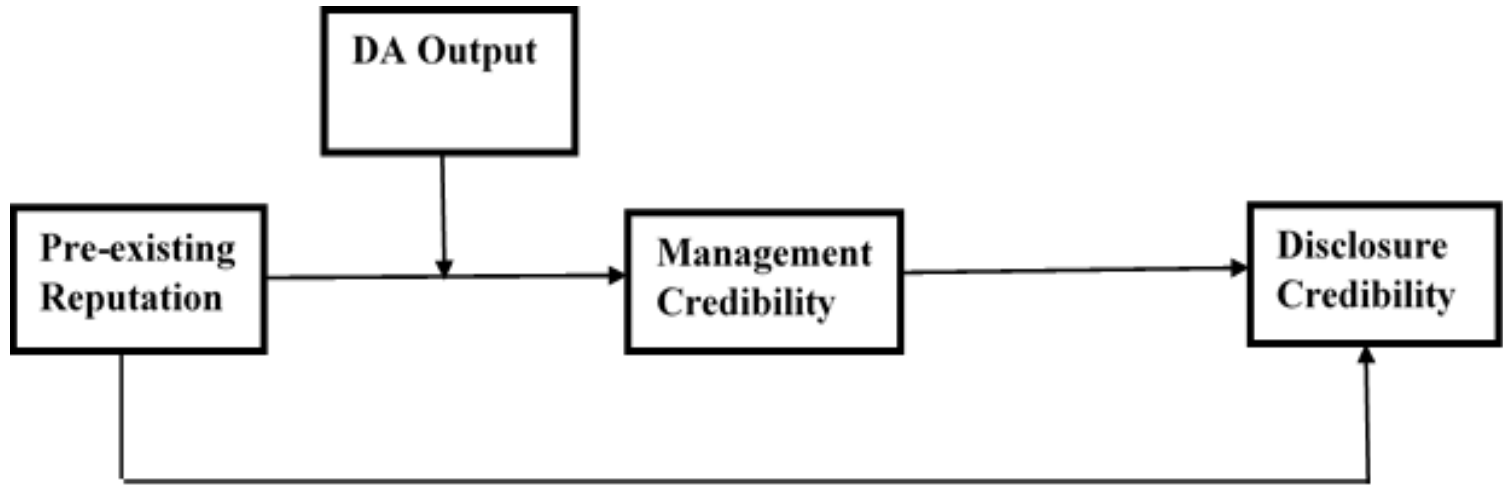
Figure 1: Theoretical Model

Expectation Violation Theory (EVT) sets forth theory regarding individuals' behavioral reactions to expectancy violations (Burgoon and Hale, 1988; Burgoon, 1993). The theory proposes that, in a communication process, receivers have certain expectancies about the communicator's behavior. These expectancies can be formed from (1) social norms or (2) known idiosyncrasies of the communicator (Burgoon and Hale, 1988). When individuals do not have information about the communicators' characteristics, they form their expectancies based on societal norms alone (Burgoon and Hale, 1988). These norms define how an individual is expected to behave. The communicator's behavior can either confirm or disconfirm these expectations. When a communicator disconfirms these expectancies, an expectancy violation occurs. The violation causes the receiver to assign a positive or negative valence to the violation. When the communicator's actual behavior is better than expected, the violation is positive; when the communicator's actual behavior is worse than expected, that violation is negative. The valence of the violation determines whether the communication between the receiver and the communicator will have a negative or positive outcome (Burgoon and Hale, 1988; Burgoon, 1993). These outcomes include receivers' impressions about the communicator (Burgoon, 1993).

Managers communicate information to investors and investors determine whether management's communications deviate from expectancies set by social norms. When investors do not have access to information about management, most investors have an *a priori* expectation, from the social norm, that management will behave in an ethical manner and communicate information truthfully (e.g., Koonce et al., 2010). If investors

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have access to a deception detection DA, the DA may provide information that confirms or disconfirms their expectation regarding the truthfulness of the communication and affects their assessment of management credibility. If the deception detection DA does not detect deception, investors' expectancies will be confirmed and no expectancy violation occurs. However, when the deception detection DA detects deceptive behavior, an expectancy violation occurs. The sign of the violation is negative because management does not meet the standards set by social norms. The negative violation will have negative consequences on the communication outcome, including management credibility.

Investors' expectations about managers' behavior is not always based on social norm alone. Investors may have access to information about management's pre-existing reputation (e.g., Cianci and Kaplan, 2010). Management reputation is built through time and can be good or bad. When investors have access to this type of information about management, their expectations about managers' behavior is based on social norm and on whether managers have a good or bad pre-existing reputation (Burgoon and Hale, 1988).

Since investors may have access to management's pre-existing reputation, this information becomes critical to understanding investors' perceptions of management credibility. Investors' expectancy violation becomes dependent, not only on the expectation set by the social norm, but also on expectations built from management's pre-existing reputation (Burgoon and Hale, 1988). Based on expectations formed from accessing information about management pre-existing reputation alone, investors do not

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expect (do expect) managers with a good (bad) pre-existing reputation to exhibit deceptive behavior.

When investors' expectations are formed from both social norm and management pre-existing reputation, managers are not expected to exhibit deceptive behavior. Additionally, expectations for managers with a good pre-existing reputation are higher than expectations for managers with a bad pre-existing reputation. Expectation violations occur only when a deception detection DA detects deceptive behavior. The magnitude of the violation depends on whether managers have a good or bad pre-existing reputation (Burgoon and Hale, 1988). When deception is detected for managers with a good (bad) pre-existing reputation, the expectations from the social norm and management reputation are both violated (only the expectations from the social norm are violated). Therefore, the magnitude of the violation should be stronger when managers have a good pre-existing reputation than when managers have a bad pre-existing reputation and deception is detected.

Based on EVT, investors' perceptions of management credibility are a function of management's pre-existing reputation. Managers with a good (bad) pre-existing reputation have higher (lower) management credibility than managers with a bad (good) pre-existing reputation (Burgoon and Hale, 1988; Burgoon, 1993). Whether managers have a good or bad pre-existing reputation, deception detection should reduce investors' perceptions of management credibility. Nevertheless, deception detection should cause a stronger expectation violation for managers with a good pre-existing reputation than for managers with a bad pre-existing reputation. Therefore, deception detection should dilute

the effect of management pre-existing reputation on management credibility. In other words, the effect of management's pre-existing reputation on investors' perceptions of management credibility is conditional on whether the DA detects deception such that management pre-existing reputation will have a weaker effect on management credibility when the DA detects deception than when the DA fails to detect deception.

> *H1:* *Management's pre-existing reputation will have a weaker effect on management credibility when the DA detects deception than when the DA fails to detect deception.*

Mercer (2004) argues that management credibility and disclosure credibility are two separate constructs. She states that "…management credibility is one factor, but not the only factor that affects a disclosure's credibility" (pg. 186). She argues that management credibility has a direct effect on disclosure credibility. Investors are more likely to believe disclosures from managers with higher management credibility than from managers with lower management credibility.

Evidence from the broader source credibility literature provides support for the effect of source credibility on message persuasiveness such that highly credible sources are more persuasive than sources with lower credibility (for a literature review, see Pornpitakpan, 2004). Recipients of messages can build a resistance against messages received from low credibility sources because they are forewarned that the message may be unreliable (Greenberg and Miller, 1966). Evidence from the source credibility literature suggests that the effect of management credibility on disclosure credibility may be more prevalent in video disclosure contexts due to media richness effects (Andreoli

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and Worchel, 1987; Wu and Shaffer, 1987). The effectiveness of source trustworthiness (a component of management credibility) on message persuasiveness is not consistent across different communication medium. Andreoli and Worchel (1987) reported that trustworthy communicators were most persuasive through television (more than radio or print)[2]. Also, Wu and Shaffer (1987) reported that the effect of source credibility on message persuasiveness depended on whether the audience has a direct or indirect experience with the object (the subject of discussion). When individuals have an indirect experience about the object (they read about it, rather than directly interacting with it), source credibility has an effect on message persuasion. However, when individuals have a direct experience with the object, source credibility does not have such an effect on persuasion[3]. These findings suggest that management credibility has a positive effect on disclosure credibility. This relationship is also supported by EVT. According to EVT, receivers use communicators' characteristics such as management credibility to determine whether the communication message is credible (Burgoon and Hale, 1988; Burgoon, 1993). Therefore, management credibility is predicted to have a positive effect on disclosure credibility.

> *H2:   Management credibility will have a positive effect on disclosure*
> *credibility.*

As discussed above, management's pre-existing reputation creates behavioral expectancies such that managers with a good pre-existing reputation are expected to

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[2] However, television is a double-edged sword; if the communicator is untrustworthy; television becomes the least effective medium of persuasion.

[3] In a financial disclosure setting, nonprofessional investors do not have direct experience with the object of the disclosure. Managers have unique access to private information.

communicate information credibly to investors. As EVT suggests, investors' expectations about the credibility of information communicated by managers are a function of the expectations set by their knowledge of management's pre-existing reputation. Therefore, management's pre-existing reputation has an effect on investors' perceptions of disclosure credibility as well.

Since management's pre-existing reputation impacts investors' perceptions of disclosure credibility and management credibility, and management credibility impacts investors' perceptions of disclosure credibility, the effect of management's pre-existing reputation on disclosure credibility should flow through management credibility. In other words, management credibility should mediate the relationship between management's pre-existing reputation and disclosure credibility.

As theorized in H1, the strength of the effect of management's pre-existing reputation on investors' perceptions of management credibility is conditional on whether the deception detection DA detects deception. More precisely, deception detection weakens the effect of management's pre-existing reputation on management credibility. Since the relationship between management's pre-existing reputation and management credibility is moderated by whether the deception detection DA detects deception, the strength of the effect of management's pre-existing reputation on investors' perceptions of disclosure credibility, through management credibility, is also influenced by whether the deception detection DA detects deception. The effect of management's pre-existing reputation on investors' perceptions of disclosure credibility through management credibility is weaker (stronger) when the deception detection DA detects (fails to detect)

deception. In other words, deception detection dilutes the effect of management's pre-existing reputation, through management credibility, on disclosure credibility.

> *H3: The effect of management's pre-existing reputation on investors' perceptions of disclosure credibility through management credibility will be weaker when the DA detects deception than when it fails to detect deception.*

Methods

Design

To test the theoretical model advanced in this study, a 2X2 between-participants experiment was conducted. The results of a deception detection DA and management's pre-existing reputation were the manipulated variables. The deception detection DA was manipulated by varying whether the output of the DA assessed a 10 percent vs. 90 percent likelihood that the information in the video disclosure was deceptive. Management's pre-existing reputation was varied as either good or bad. In the good pre-existing reputation condition, the CEO's reputation was described favorably. In the bad pre-existing reputation, the CEO's reputation was described unfavorably. Participants were randomly assigned to one of the four treatment groups.

Procedures

Across all experimental conditions, participants were told that they had accumulated $50,000 of personal savings and that they have decided to invest $10,000

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dollars of their savings by purchasing a company's stock. Then, participants were provided with experimental materials that described Armano and its CEO[4]. Armano was described as an international confectionery manufacturer and retail operator led by Chief Executive Officer, Dan Athens. Participants were provided with a brief news article published by *The Business Journal,* which provided either a favorable or unfavorable description of the CEO.

After providing the participants with a description of the CEO's reputation, they were provided information regarding Armano's performance, including analysts' consensus forecast, business news about Armano's accomplishments, and summary financial performance. Participants were then told that the CEO had announced an earnings' restatement. They were provided with a video of the CEO's explanation for the earnings' restatement. In the video, the CEO stated that earnings were misstated because the company relied on an external lease accounting expert when preparing the financial statements.

After watching the video, participants were told that they have access to the output of a deception detection DA that is capable of analyzing the video made by Dan Athens and assessing the likelihood that the statement made by Dan Athens is deceptive. The output of the DA's analysis were manipulated across experimental conditions as either a 10 percent or 90 percent likelihood that the CEO is being deceptive in his

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[4] The experimental materials for this study were adapted from Elliott et al. (2012) and Cianci and Kaplan (2010). Several modifications were made to align the experimental materials with the purpose of this study.

explanation for the restatement. Then, participants were provided with a set of questions to measure their perceptions of management credibility and disclosure credibility.

Measured Variables

Participants' perceptions of management credibility were measured using questions adapted from Mercer (2005). Mercer (2005) measures the latent construct of management credibility using three questions for competence and three questions for trust. Four additional questions were developed; two questions for competence and two for trust, resulting in a total of ten items. Each of these questions was anchored on a seven point likert scale ranging from "strongly disagree" to "strongly agree".

To measure participants' perceptions of disclosure credibility, five questions were adapted from the message credibility literature. Disclosure credibility was measured by asking participants whether the message was believable, accurate, trustworthy, unbiased, and complete (Chesney and Su, 2010; Flanagin and Metzger, 2007, 2003, 2000). These items were also measured on a seven point likert scale anchored from "strongly disagree" to "strongly agree".

Control Variables

Findings from previous studies suggest that investors' financial literacy and DA reliance should be accounted for when investigating the moderating effect of DA output on judgment and decision making. Financial literacy consists of individuals' financial knowledge and their understanding of basic financial concepts. Several studies report that individuals' financial literacy has a significant effect on their financial decisions (Hilgert

www.manaraa.com

et al., 2003; Lusardi, 2008; Lusardi and Mitchell, 2008; Hung et al., 2009; Lusardi and Mitchell, 2011; Van Rooij et al., 2011). In the context of this study, financially literate individuals may have a higher level of skepticism about disclosure credibility than individuals who are less financially literate. Also, financial literacy may outweigh the effect of management's pre-existing reputation and DA output on management credibility and disclosure credibility. Moreover, research on financial literacy suggests that individuals with lower financial literacy rely more on external advice than individuals with higher financial literacy (Van Rooij et al., 2011). Financially literate individuals may be less willing to rely on information received from DAs. To measure financial literacy, five questions used by the Financial Industry Regulation Authority (FINRA) in their national survey to assess investors' financial literacy were adapted (FINRA, 2009a; FINRA, 2009b; FINRA, 2012). Values in this measure range from "zero" (when participants fail all financial literacy questions) to "five" (when participants answer all financial literacy questions correctly).

Evidence from the literature on the effect of DAs on individuals' decisions suggests reliance on a DA impacts their decisions (e.g., Whitecotton, 1996; Arnold and Sutton, 1998; Masselli et al., 2002; Hageman, 2010). Reliance is "…the degree to which the user of a DA applies the aid and incorporates the recommendations of the aid during judgment formulation…" (Arnold and Sutton, 1998 pg. 180). In extreme cases, where reliance is null, the DA cannot have an effect on users' decision making because the output is not included in the decision making process. Therefore, reliance on a deception detection DA should be accounted for when investigating the DAs impact on decision

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making. To measure DA reliance, participants were provided with a slightly modified version of the reliance measure used by Hampton (2005). Participants were provided with a seven-item measure anchored from strongly disagree to strongly agree.

Participants

Similar to Rennekamp (2012) Amazon Mechanical Turk (MTurk) was used to collect 376[5] usable responses from nonprofessional investors[6]. Using MTurk participants offers several advantages over using student participants. MTurk participants' investment experience is not limited to educational experience, come from all 50 states (Buhrmester et al., 2011), are intrinsically motivated to participate in research studies without requiring high monetary compensation to perform a task (Buhrmester et al., 2011, Farrell et al. 2014), and provide an inexpensive way of reaching externally valid research participants (Brandon et al., 2014). Several studies have compared MTurk participants' decisions to decisions made by students. Findings from these studies suggest

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[5] Initial data collection resulted in 448 observations. Forty-two responses were deleted because they had duplicate IP addresses indicating that some participants participated more than once. Nine responses had missing data and were excluded. Also, 9 participants who spent an inordinately short amount of time reading the experimental materials were excluded. In order to obtain equal cell sizes for the ANOVA analysis, 12 observations were also excluded. Similarly to Lyubimov et al. (2013), a random number generator was used to randomly exclude the required number of observations from each cell (running the analyses without excluding the 12 observations to reach equal cell sizes does not change the results of this study).

[6] MTurk provides selection criteria to filter participants. Only US residents were able to take part in this study. MTurk also provides statistics about the participants' approval rate and the number of approved hits. These statistics indicate the reputation and productivity of the participants. Evidence from the literature suggests that participants with an approval rate above 95% have a high reputation and are, therefore, less likely to fail attention check questions and to provide socially desirable answers than participants with lower reputation. Similarly, participants who have more than 500 approved hits are highly productive and provide higher quality data than participants with lower approved hits (Peer et al., 2013). Therefore, only participants who have 500 approved hits or more and an approval rate above 95% were allowed to participate in the experiment.

that MTurk participants perform similarly to students (Paolacci et al., 2010; Horton et al., 2011; Berinsky et al., 2012; Farrell et al., 2014) and to nonprofessional investors obtained from survey firms (Farkas and Murthy 2014).

To ensure that all of the participants have investment experience, potential participants who accessed the experiment were screened using the following questions:

1. Have you ever made personal investments in the common stock of a company?

2. Approximately, how many years of personal investment experience do you have?

3. Approximately, how many times have you purchased common stock of a company as a personal investment?

Participants who had never made personal investments or had less than one year of investment experience were directed away from the experiment. Participants who passed the screening questions were allowed to proceed to the experiment.

On average, participants spent 20.31 minutes completing the experiment, and were paid the equivalent of an hourly wage of $8.86. Demographics of the participants are shown in Table 1. Of the participants, 65.2% are male, 34.8% are female, 88.0% have used financial statements to evaluate a company's performance, 73.4% have prior business work experience, 17.0% have prior work experience in financial analysis, and 91.2% plan to invest in the common stock of a company at some time in the future. On average, participants have 7.14 years of investing experience, have purchased common stock 18.14 times, have taken 2.29 accounting classes, and have taken 1.99 finance

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classes. Results from the financial literacy measure indicate that 43.9% of participants

answered all of the questions correctly and the average score was 4.23 out of 5.00.

Table 1: Demographic Information

	Mean	Standard Deviation
Average number of years of investing experience	7.14	6.63
Average number of times making purchases of common stock	18.14	26.13
Average number of accounting classes taken	2.29	3.19
Average number of finance classes taken	1.99	2.73
	Number	**Percent**
Gender		
Male	245	65.2%
Female	131	34.8%
Age		
< 30 years	122	32.4%
30-39 years	142	37.8%
40-49 years	63	16.8%
50-59 years	37	9.8%
60-69 years	10	2.7%
>69 years	2	0.5%
Ethnicity		
Asian	19	5.1%
African American	24	6.4%
Hispanic	14	3.7%
Native American	3	0.8%
Caucasian	314	83.5%
Others	2	0.5%
Education		
High School/ GED	35	9.3%
Some College	82	21.8%
2-year college degree	42	11.2%
Undergraduate degree	167	44.4%
Master degree	45	12.0%
Doctoral degree	5	1.3%
Used Financial Statements to Evaluate Company Performance		
Yes	331	88.0%
No	45	12.0%

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	Number	Percent
Prior Business Work Experience (Average is 11.08 years)		
Yes	276	73.4%
No	100	26.6%
Prior Work Experience in financial analysis (Average is 5.22 years)		
Yes	64	17.0%
No	312	83.0%
Plan to Invest in Common Stock in Future		
Yes	343	91.2%
No	33	8.8%
Financial Literacy Scores (Average is 4.23)		
Participants who had five correct answers	165	43.9%
Participants who had four correct answers	153	40.7%
Participants who had three correct answers	41	10.9%
Participants who had two correct answers	14	3.7%
Participants who had one correct answers	3	0.8%
Participants who had no correct answers	0	0.0%

At the end of the experiment, participants were asked whether "there was a 90% (or 10%) likelihood that the person in the downloaded video is being deceptive". Participants in the deception detected (deception not detected) condition should answer yes (no) to this question. Participants who did not answer this question correctly were directed away from the experiment. Participants were also asked, on a seven point likert scale ranging from "Very Bad" to "Very Good", whether *The Business Journal* suggested that Dan Athens (the CEO) had a good or bad reputation. Participants in the good pre-existing reputation condition believed that management reputation was higher (mean = 6.33; SD = 1.00) than participants in the bad pre-existing reputation condition (mean = 3.57; SD = 1.22). The difference between the two groups of participants is statistically significant ($p < 0.001$).

Before testing the theoretical model, a principal component analysis with a Promax rotation was conducted on the measures for DA reliance, management credibility and disclosure credibility. Results from the principal component analysis suggest that participants did not distinguish between disclosure credibility and the trust component of management credibility. Items used to measure disclosure credibility and the trust component of management credibility loaded strongly on one factor. As a result, the measure of management credibility was limited to the competence component[7]. After, deleting the trust component of management credibility, one item from disclosure credibility and one item from management credibility loaded strongly on more than one component. These items were deleted to eliminate strong cross loadings across the components. Also, one reliance item was eliminated from the analysis because it did not load on the reliance component. These results indicate that four items measure the competence components of management credibility, four items measure disclosure credibility, and six items measure DA reliance. Results from the principal component analysis are reported in Table 2 Panel A.

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[7] To mitigate some of the content validity issues that are raised from collapsing the trust component of management credibility, additional analyses were conducted with an alternative measure of management credibility. Barton and Mercer (2005) measured management credibility by using analyst's average response on a one item measure for competence and a one item measure for trust. Similarly, responses on whether investors believed that the manager is competent and whether the manager is trustworthy were used to create an alternative measure for management credibility. Untabulated results of this analysis suggest that conducting the analysis with an alternative measure of management credibility does not have an impact on the results and provide assurance with regard to content validity issues.

Table 2: Measurement Validation

Panel A: Principal Component Analysis (with Promax Rotation)

	Components		
	1	2	3
DA Reliance (1): I agree with the results of the deception detection software.	**.824**	-.125	-.034
DA Reliance (2): I have confidence in the results of the deception detection software.	**.881**	-.172	-.079
DA Reliance (3): I incorporated the deception detection software's results into my decisions.	**.849**	-.224	-.309
DA Reliance (4): I relied on the results of the deception detection software.	**.829**	-.225	-.296
DA Reliance (5): I believe that the deception detection software is capable of detecting deception.	**.873**	-.153	-.189
DA Reliance (6): The results of the deception detection software are convincing.	**.928**	-.210	-.213
Management Credibility (1): I believe that Dan Athens is a competent person.	-.194	**.883**	.506
Management Credibility (2): I believe that Dan Athens is a knowledgeable person.	-.105	**.852**	.322
Management Credibility (3): I believe that Dan Athens is a qualified person.	-.217	**.921**	.490
Management Credibility (4): I have confidence in Dan Athens' abilities.	-.272	**.904**	.592
Disclosure Credibility (1): The explanation for the earnings restatement is accurate.	-.212	.610	**.898**
Disclosure Credibility (2): The explanation for the earnings restatement is trustworthy.	-.259	.593	**.924**
Disclosure Credibility (3): The explanation for the earnings restatement is unbiased.	-.148	.350	**.870**
Disclosure Credibility (4): The explanation for the earnings restatement is complete.	-.151	.399	**.872**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

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Panel B: Analyses for Discriminant and Convergent Validity

	Composite Reliability	Average Variance Extracted	Disclosure Credibility	DA Reliance	Management Credibility
Disclosure Credibility	0.916	0.734	**0.857**		
DA Reliance	0.933	0.699	*-0.250*	**0.836**	
Management Credibility	0.914	0.729	*0.652*	*-0.251*	**0.854**

Bolded values on the diagonals indicate the square root of the Average Extracted Variance (AVE).

Italicized values represent interconstruct correlations

To ensure discriminant validity and convergent validity for the three constructs, the Average Extracted Variance (AVE) for each measure was examined. Results from this analysis are reported in Table 2 Panel B. The AVE for each construct is greater than .5 indicating an acceptable level of convergent validity. The square root of the AVE is higher than any interconstruct correlations indicating an acceptable level of discriminant validity. To check the internal validity of the measured constructs, composite reliability was calculated. All measures have a composite reliability greater than .7 indicating an acceptable level of internal reliability. These results suggest that the measures for management credibility, disclosure credibility, and DA reliance have acceptable psychometric properties. Participants' average response on the items for each construct was used to measure DA reliance, management credibility, and disclosure credibility[8].

Table 3 Panel A presents the descriptive statistics for the four cells. H1, which predicts that management's pre-existing reputation has a weaker effect on management credibility when the DA detects deception than when the DA fails to detect deception, is tested using an ANCOVA[9]. Management's pre-existing reputation (Bad/Good) and the output of the deception detection DA (Deception Detected/ Deception not Detected) were the independent variables, DA reliance and financial literacy were the covariates, and

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[8] The employed procedure assumes that the measured items do not include measurement errors. To account for measurement errors within each item, factor scores for each construct were used instead of using the average of participants' responses. Untabulated results from this analysis suggest that accounting for measurement error does not have an impact on the overall results.

[9] Untabulated results show that participants' demographic information do not differ significantly across the experimental conditions and that two demographic variables had a significant relationship with the dependent variable: the number of accounting courses had a significant relationship with investors' perception of management credibility and participants' highest level of education had a significant relationship with investors' perception of disclosure credibility. Adding these demographic variables to the analyses does not have an impact on the overall results.

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management credibility was the dependent variable. The results of the ANCOVA analysis are reported in Table 3 Panel B[10]. While not hypothesized, results from Table 3 suggest that the output of the DA has a significant ($p < 0.001$) effect on management credibility[11]. Management credibility was significantly lower when the DA detects deception (Mean = 4.99; SD = 1.20) than when the DA fails to detect deception (Mean = 5.86; SD = .92). The results also suggest that management's pre-existing reputation has a significant effect on management credibility such that management credibility is significantly higher ($p < 0.001$) when managers have a good pre-existing reputation (Mean = 5.66; SD = 1.13) than when managers have a bad-pre-existing reputation (Mean = 5.19; SD =1.12). Of the two covariates, DA reliance has a significant effect and financial literacy has no significant effect on management credibility.

Results from the ANCOVA analysis also show that there is a significant interaction between management's pre-existing reputation and DA output ($p = 0.026$). To test whether management's pre-existing reputation has a stronger effect on management credibility when the deception detection DA fails to detect deception than when the deception detection DA detects deception, two planned contrasts were conducted. The first planned contrast was conducted to show that management credibility was highest when the DA failed to detect deception for managers with a good pre-existing reputation. The second contrast was conducted to show that participants have higher perceptions of management credibility for managers with a bad pre-existing reputation when the

[10] Since the equal cell size assumption has been met, the equal variance assumption can be relaxed (Glass et al., 1972).
[11] All p-values are one tailed and the cutoff for significance is .05.

deception detection DA fails to detect deception than when the deception detection DA detects deception.

Results of the planned contrast are reported on Table 3 Panel C. Results from the first and second planned contrast indicate that the interaction between management's pre-existing reputation and deception detection is ordinal with management's pre-existing reputation having a stronger effect on management credibility when the deception detection DA fails to detect deception than when the deception detection DA detects deception. Therefore, these results provide support that deception detection moderates the effect of management's pre-existing reputation on management credibility set forth in H1. The interaction between management's pre-existing reputation and deception detection is plotted in Figure 2.

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Table 3: Management Credibility

Panel A: Management Credibility – Mean (Standard Deviation) [Sample Size]

	DA Output		
Management's Pre-existing Reputation	Deception Detected	Deception Not Detected	Average
High	5.16 (1.23) [94]	6.17 (.75) [94]	5.66 (1.13) [188]
Low	4.84 (1.15) [94]	5.55 (.98) [94]	5.19 (1.12) [188]
Average	4.99 (1.20) [188]	5.86 (.92) [188]	[376]

Panel B: ANCOVA Model of Between-Subjects Effects (Dependent Variable = Management Credibility)

Source	S.S	d.f.	M.S.	F-Ratio	p-value*
Management's Pre-existing Reputation	18.171	1	18.171	17.074	**<0.001**
DA Output	54.139	1	54.139	50.871	**<0.001**
Management's Pre-existing Reputation * DA Output	4.042	1	4.042	3.798	**0.026**
Covariates:					
DA Reliance	8.319	1	8.319	7.817	**0.003**
Financial Literacy	1.787	1	1.787	1.679	0.098
Error	393.774	370	1.064		
Total	11573.438	376			

*All p-values are one-tailed

Panel C: Planned Contrast Analyses

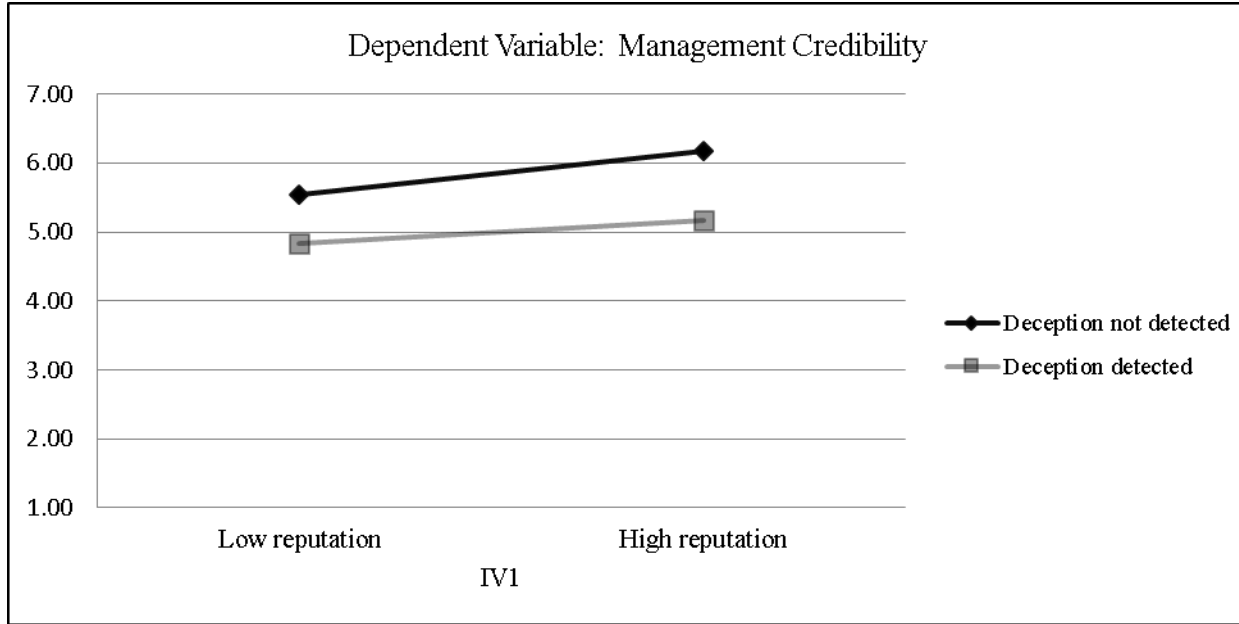| Contrast	Value of Contrast	Std. Error	t	df	**p-value**
Good Pre-existing Reputation/Deception Not Detected > All other conditions (+3, -1, -1,-1)	2.9707	0.30599	9.708	239.740	**< 0.001**
Bad Pre-existing Reputation/Deception Not Detected > Bad Pre-existing Reputation/Deception Detected (+1, -1, 0, 0)	-0.7101	0.15566	-4.562	181.767	**< 0.001**

Figure 2: The Moderating Effect of DA Output on Management Credibility

H2 and H3 are tested using PROCESS (Hayes, 2013). PROCESS has several built-in models to test mediation and moderated mediation models. To test H2 and set the ground for testing H3, a mediation analysis was conducted. Results from the mediation analysis indicate whether management credibility has a direct effect on disclosure credibility (H2) and whether management credibility mediates the relationship between management's pre-existing reputation and disclosure credibility. To test the mediation model, management's pre-existing reputation was defined as the predictor, management credibility was defined as the mediator, financial literacy was defined as the covariate[12], and disclosure credibility was defined as the outcome variable. Results of the mediation analysis, reported in Table 4 Panel A, indicate that management credibility has a significant effect ($p < 0.001$) on disclosure credibility. Therefore, H2 is supported.

In order to test whether management credibility mediates the relationship between management's pre-existing reputation and disclosure credibility, the indirect effect of management's pre-existing reputation on disclosure credibility must also be significant. Results reported in Table 4 Panel B show that the indirect effect is statistically significant with the bootstrapped confidence intervals ranging from a low of 0.174 to a high of 0.451. The absence of zero within the bootstrapped confidence interval indicates that the indirect effect is statistically significant[13]. These results provide the foundation for testing the moderating effect of deception detection DA on the mediation.

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[12] DA output is not part of this model. Reliance on DAs was not included as a covariate. Including DA reliance as a covariate does not change the overall results of the model.

[13] The bootstrap analysis is based on 10,000 samples. Also, the bootstraps reported in this study are bias-corrected confidence intervals and are set to a confidence level of 90% (the equivalent of one tailed tests).

Table 4: Mediation Analysis of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

Panel A: Direct Effect of Management Credibility on Disclosure Credibility

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	1.110	0.386	2.880	**0.002**	0.475	1.746
Predictor:						
Pre-existing reputation	0.469	0.117	4.003	**<0.001**	0.276	0.662
Mediator:						
Management Credibility	0.638	0.051	12.505	**<0.001**	0.554	0.723
Covariates:						
Financial Literacy	-0.219	0.068	-3.222	**0.001**	-0.331	-0.107

Panel B: The Indirect Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

Mediator	Effect	Boot SE	Bootstrapped LLCI	Bootstrapped ULCI
Management Credibility	0.305	0.084	**0.174**	**0.451**

LLCI: Lower level confidence interval
ULCI: Upper level confidence interval

To test the moderating effect of the DA's output on the indirect effect of management's pre-existing reputation on disclosure credibility, a moderated mediation analysis was conducted. In this analysis, disclosure credibility was defined as the outcome variable, management credibility was defined as the mediator, management's pre-existing reputation was defined as the predictor, DA output was defined as the moderator, and DA reliance and financial literacy were defined as the covariates. The first step in this analysis is to assess the direct effects of management's pre-existing reputation and DA output (as well as the interaction) on management credibility. Results in Table 5 Panel A are consistent with the ANCOVA analysis. Management's pre-existing reputation has a significant ($p < 0.001$) positive effect on management credibility, DA output has a significant ($p < 0.001$) negative effect on management credibility, and the interaction between management's pre-existing reputation and DA output is statistically significant ($p = 0.026$).

The second step in this analysis is to assess the direct effects of management's pre-existing reputation and DA output (as well as the interaction) on disclosure credibility. As shown in Table 5 Panel B, the results indicate that management's pre-existing reputation has a significant ($p < 0.001$) positive effect on disclosure credibility, DA output has a significant ($p < 0.001$) negative effect on disclosure credibility, and the interaction between disclosure credibility and DA output is not significant ($p = 0.069$).

As shown in Table 5 Panel C, an examination of the conditional direct effects of management's pre-existing reputation on disclosure credibility across the two levels of the DA output indicates that management's pre-existing reputation has a significant effect

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on disclosure credibility, regardless of whether the DA detects deception ($p = 0.005$) or not ($p < 0.001$). Nevertheless, the effect of management's pre-existing reputation on disclosure credibility is smaller (0.390) when the DA detects deception than when the deception detection DA fails to detect deception (0.704). This analysis indicates DA output dilutes the direct effect of management's pre-existing reputation on disclosure credibility for both good and bad management's pre-existing reputation.

To assess the conditional indirect effect of management's pre-existing reputation on disclosure credibility, the indirect effect was examined across the two levels of the moderator. Table 5 Panel D indicates that management credibility mediates the effect of management's pre-existing reputation on disclosure credibility when the deception detection DA fails to detect deception (Bootstrapped lower level confidence interval (Bootstrapped LLCI) = 0.181; Bootstrapped upper level confidence interval (Bootstrapped ULCI) = 0.429). When the deception detection DA detects deception, the mediating effect of management credibility becomes non-significant (Bootstrapped LLCI = -0.021; Bootstrapped ULCI = 0.246). Thus, deception detection dilutes the effect of management's pre-existing reputation on management credibility. An examination of the index of moderated mediation shown in Panel E indicates that the indirect effect of management's pre-existing reputation on disclosure credibility is significantly different between the two levels of the moderator, DA output (Bootstrapped LLCI = -0.368; Bootstrapped ULCI = -0.040). These results suggest that DA output dilutes the direct and indirect effect of management's pre-existing reputation on disclosure credibility. Therefore, these results provide support for the moderated mediation set forth in H3.

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Table 5: The Moderated Indirect Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

Panel A: The Direct Effects of Management's Pre-existing Reputation on Management Credibility

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	5.713	0.353	16.177	**<0.001**	5.131	6.296
Pre-existing Reputation	0.654	0.151	4.336	**<0.001**	0.405	0.902
DA Output	-0.572	0.158	-3.628	**<0.001**	-0.831	-0.312
Pre-existing Reputation*DA Output	-0.422	0.217	-1.949	**0.026**	-0.779	-0.065
Covariates:						
DA Reliance	-0.128	0.043	-3.006	**0.003**	-0.199	-0.058
Financial Literacy	0.110	0.061	1.797	0.098	0.009	0.210

Panel B: The Direct Effect of Management's Pre-existing Reputation on Disclosure Credibility

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	2.721	0.447	6.085	**<0.001**	1.984	3.459
Management Credibility	0.449	0.050	8.901	**<0.001**	0.365	0.532
Pre-existing Reputation	0.704	0.150	4.700	**<0.001**	0.457	0.951
DA Output	-0.870	0.155	-5.601	**<0.001**	-1.126	-0.614
Pre-existing Reputation*DA output	-0.314	0.211	-1.490	0.069	-0.662	0.0336
DA Reliance	-0.044	0.042	-1.03	0.152	-0.114	0.026
Financial Literacy	-0.214	0.061	-3.493	**<0.001**	-0.315	-0.113

Panel C: The Conditional Direct Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

DA output	Effect	SE	t	Sig. (One-tailed)	LLCI	ULCI
Deception Not Detected	0.704	0.150	4.700	**<0.001**	0.457	0.951
Deception Detected	0.390	0.150	2.607	**0.005**	0.143	0.637

Panel D: The Conditional Indirect Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

DA Output	Effect	SE	Bootstrapped LLCI	Bootstrapped ULCI
Deception Not Detected	0.293	0.075	**0.181**	**0.429**
Deception Detected	0.104	0.081	-0.021	0.246

Panel E: The Index of Moderated Mediation

Mediator	Index	SE	Bootstrapped LLCI	Bootstrapped ULCI
Management Credibility	-0.189	0.099	**-0.368**	**-0.040**

Supplemental Analyses

One of the implied assumptions of this study is that investors' perceptions of disclosure credibility have a significant and positive effect on investors' willingness to invest. The experimental materials included a measure of willingness to invest. Participants were asked to choose an amount between $0 and $10,000 to invest in the hypothetical company. This question was used to explore whether the investigated relationships in this study have an impact on willingness to invest. To investigate this matter, the data was re-analyzed with the dollar amount that participants chose to invest as the dependent variable (instead of disclosure credibility). The results of the analysis are reported in Table 6. Overall, the results suggest that the findings from using willingness to invest as the dependent variable are consistent with the findings from using disclosure credibility as the dependent variable.

Table 6: The Moderated Indirect Effect of Management's Pre-existing Reputation on Willingness to Invest through Management Credibility

Panel A: The Direct Effect of Management's Pre-existing Reputation on Management Credibility

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	5.713	0.353	16.177	**<0.001**	5.131	6.296
Pre-existing Reputation	0.654	0.151	4.336	**<0.001**	0.405	0.902
DA Output	-0.572	0.158	-3.628	**<0.001**	-0.831	-0.312
Pre-existing Reputation*DA Output	-0.422	0.217	-1.949	**0.026**	-0.779	-0.065
DA Reliance	-0.121	0.043	-2.796	**0.003**	-0.193	-0.050
Financial Literacy	0.082	0.063	1.296	0.098	-0.022	0.186

Panel B: The Direct Effect of Management's Pre-existing Reputation on Willingness to Invest

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	-459.552	908.795	-0.506	0.307	-1958.148	1039.045
Management Credibility	664.239	102.384	6.488	**<0.001**	495.409	833.070
Pre-existing Reputation	1323.723	304.370	4.349	**<0.001**	821.821	1825.626
DA Output	-98.280	315.696	-0.311	0.378	-618.861	422.301
Pre-existing Reputation*DA Output	-822.280	428.585	-1.919	**0.028**	-1529.015	-115.546
DA Reliance	-119.917	86.190	-1.391	0.083	-262.044	22.210
Financial Literacy	-65.291	124.513	-0.524	0.300	-270.611	140.03

Panel C: The Conditional Direct Effect of Management's Pre-existing Reputation on Willingness to Invest

DA Output	Effect	SE	t	Sig. (One-tailed)	LLCI	ULCI
Deception Not Detected	1323.723	304.369	4.349	**<0.001**	821.821	1825.626
Deception Detected	501.443	303.869	1.650	**0.050**	0.364	1002.522

Panel D: The Conditional Indirect Effect of Management's Pre-existing Reputation on Willingness to Invest

DA Output	Effect	SE	Bootstrapped LLCI	Bootstrapped ULCI
Deception Not Detected	434.181	102.676	**281.047**	**621.820**
Deception Detected	153.890	119.318	-33.099	360.057

Panel E: The Index of Moderated Mediation

Mediator	Index	SE	Bootstrapped LLCI	Bootstrapped ULCI
Management Credibility	-280.291	144.995	**-537.471**	**-57.312**

In order to investigate the effect of disclosure credibility and willingness to invest in the same model, an additional analysis was conducted. In this analysis, willingness to invest was defined as the dependent variable, disclosure credibility was defined as the mediating variable, management's pre-existing reputation was defined as the predictor, and DA output was defined as the moderating variable. Results from this analysis are reported in Table 7. The results are generally consistent with the previously reported findings with the following exceptions. First, the conditional direct effect of management's pre-existing reputation did not have a significant impact on willingness to invest ($p = 0.176$) when the deception detection DA detected deception. Second, the indirect effect of management's pre-existing reputation had a significant effect on willingness to invest (Bootstrapped LLCI = 184.071; Bootstrapped ULCI = 612.555) when the deception detection DA detected deception. The results from this analysis also suggest the DA output dilutes the direct and indirect effect of management's pre-existing reputation on willingness to invest. These results provide evidence that disclosure credibility affects willingness to invest and that the effect of the DA is not limited to investors' perceptions of disclosure credibility, but also affects investors' willingness to invest.

Table 7: The Moderated Indirect Effect of Management's Pre-existing Reputation on Willingness to Invest through Disclosure Credibility

Panel A: The Direct Effect of Management's Pre-existing Reputation on Disclosure Credibility

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	5.284	0.377	14.025	**<0.001**	4.662	5.905
Pre-existing reputation	0.997	0.161	6.201	**<0.001**	0.732	1.262
DA output	-1.127	0.168	-6.704	**<0.001**	-1.404	-0.849
Pre-existing reputation*DA output	-0.503	0.231	-2.180	**0.015**	-0.884	-0.123
DA Reliance	-0.098	0.046	-2.121	**0.017**	-0.174	-0.022
Financial Literacy	-0.177	0.067	-2.636	**0.004**	-0.288	-0.066

Panel B: The Direct effect of Management's Pre-existing Reputation on Willingness to Invest

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	-704.331	835.468	-0.843	0.200	-2082.01	673.350
Disclosure Credibility	764.584	93.159	8.207	**<0.000**	610.966	918.202
Pre-existing reputation	995.450	302.798	3.288	**<0.001**	496.139	1494.762
DA output	383.406	318.873	1.202	0.115	-142.415	909.226
Pre-existing reputation*DA output	-717.651	416.520	-1.723	**0.043**	-1404.49	-30.812
DA Reliance	-125.421	83.289	-1.506	0.067	-262.764	11.923
Financial Literacy	124.600	121.707	1.024	0.153	-76.094	325.295

Panel C: The Conditional Direct Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

DA output	Effect	SE	t	Sig. (One-tailed)	LLCI	ULCI
Deception Not Detected	995.450	302.798	3.288	**0.001**	496.139	1494.762
Deception Detected	277.799	297.616	0.933	0.176	-212.968	768.566

Panel D: The Conditional Indirect Effect of Management's Pre-existing Reputation on Investors' Perceptions of Disclosure Credibility

DA output	Effect	SE	Bootstrapped LLCI	Bootstrapped ULCI
Deception Not Detected	762.453	151.736	**536.692**	**1042.503**
Deception Detected	377.534	129.460	**184.071**	**612.555**

Panel E: The Index of Moderated Mediation

Mediator	Index	SE	Bootstrapped LLCI	Bootstrapped ULCI
Disclosure Credibility	-384.92	181.372	**-699.252**	**-100.574**

Summary of Findings

Findings from this study suggest that deception detection dilutes the direct and indirect effect of management's pre-existing reputation on investors' perceptions of disclosure credibility. Investors' perceptions of management credibility and disclosure credibility are significantly higher when managers have a good pre-existing reputation than when manager have a bad pre-existing reputation. When considering management's pre-existing reputation and the DA output jointly, management's pre-existing reputation has a weaker effect on investors' perceptions of management credibility when the DA detects deception than when it fails to detect deception. These findings provide support for the theoretical framework presented in this paper. Deception detection causes a stronger expectation violation when managers have a good pre-existing reputation than when managers have a bad pre-existing reputation. The theoretical framework in this study also suggests that the effect of management's pre-existing reputation on disclosure credibility is mediated by management credibility and moderated by the output of the deception detection DA. The results provide strong support for the predicted effect of the deception detection DA on the relationship between management's pre-existing

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reputation and investors' perceptions of disclosure credibility through management credibility.

Conclusions

Technological developments have increased the spread of video disclosure in capital markets. The spread of this type of disclosure increases the risk of providing investors with deceptive information. Investors' inability to detect deception by themselves prevents them from excluding deceptive information from their information set. Technological developments have not only facilitated the transmission of deceptive information in capital markets, but also have created new ways to detect deception. One of the techniques currently being developed is the use of deception detection DAs that are capable of detecting deception by capturing clues of deceptive behavior. These DAs can be the solution that capital markets have been waiting for to reduce the spread of misleading information. However, unless the output of these DAs is accounted for in investors' decision making, these DAs will fail at improving investors' decision making. In other word, unless these DAs impact investors' behavior, they will not prevent investors from including misleading information in their information set.

Investors are currently using informational clues such as information about management's pre-existing reputation to assess management credibility and disclosure credibility. Deception detection DAs may not be efficient if investors put more weight on their perceptions of management's pre-existing reputation than on the DA. More precisely, investors remain free to discredit the output of the DA. In that case,

management's pre-existing reputation may overcome the DA output, and investors' perceptions of disclosure credibility may become dependent on management's pre-existing reputation alone. History has shown that a good pre-existing reputation is misleading. The biggest fraud cases discovered in the U.S. were committed by managers who established a good reputation. If deception could have been caught at an early stage, some of the negative effects of the fraud cases on U.S. capital markets might have been prevented.

The theoretical framework introduced in this study provides evidence that deception detection DAs dilute the effect of management's pre-existing reputation on disclosure credibility such that the effect of management's pre-existing reputation weakens when the deception detection DA detects deception. This evidence suggests that investors will include the DA output in their information set and improve their decision by reducing their perceptions of disclosure credibility for deceptive information. This evidence also provides support for using EVT in a capital market setting. As predicted by EVT, deception detection causes a stronger expectancy violation when managers have a good pre-existing reputation and the effect of this violation is reflected in their perceptions of management credibility and disclosure credibility.

As with all studies, this study has some limitations. As discussed in the results section, the trust component of management credibility and disclosure credibility load together under one component. Limiting the measure of management credibility to its competence component suggests that the measure employed in this study may suffer from content validity issues. This finding provides room for future research on whether the

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theoretical framework advanced by Mercer (2004) can be tested using the measures for management credibility that are currently available. Her theoretical framework suggests that management credibility is an antecedent to investors' perceptions of disclosure credibility. Findings in this study suggest that the latent measures for management and disclosure credibility may suffer from discriminant validity issues. Future research should investigate whether competence by itself can be used to measure management credibility and whether a better measure than competence and trust can be created to mitigate the discriminant validity issue between management and disclosure credibility.

Future research should also investigate whether specific features of the DA such as the accuracy of deception detection may impact investors' reactions to the output of the DA. For example, in the deception detected condition, participants are told that there is a 90% likelihood that the person in the downloaded video is being deceptive. Whereas, in the deception not detected condition, participants are told that there is a 10% likelihood that the person in the downloaded video is being deceptive. Future research can investigate whether the effect of the output of the deception detection DA changes when the DA's accuracy is lowered to 80% vs. 20%, 70% vs.30%, or 60% vs.40%. Lowering the accuracy of the DA may dilute the size of the violation and, therefore, the effectiveness of these DAs.

Moreover, CEOs understanding of such technology remains unknown. Future research should investigate whether CEOs *ex-ante* knowledge about the availability and use of such technology affects investors' reaction to the DA. For example, future research can investigate whether detecting deception for a CEO who knows *ex-ante* that the video

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disclosure is going to be analyzed has a similar effect on investors as detecting deception

for a CEO who does not know *ex-ante* that the video disclosure is going to be analyzed.

CEOs compliance to such technology may affect investors' beliefs about the accuracy of

the DA.

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STUDY 2
GETTING CAUGHT "SUGAR COATING": THE BEHAVIORAL
IMPLICATIONS OF DETECTING LINGUISTIC MANIPULATIONS
ON NONPROFESSIONAL INVESTORS' DECISIONS

Introduction

Companies communicate with potential and current investors through corporate reports. Investors extract information from these corporate reports to make investment decisions. The accuracy of investors' decisions is dependent on the transparency and truthfulness of the information that they have extracted from these reports (e.g., O' Conner, 2013). One of the issues with corporate reporting is that managers have private access to information and do not always exhibit transparency when reporting information about their company (e.g., Larcker and Zakolyukina, 2012). When managers engage in financial misreporting, investors may make their decisions based on erroneous information and may make poor investment decisions.

Transparency in financial reporting is a concern that regulators continually try to address in order to protect investors (e.g., Turner, 2001). While regulators have tried to address this issue by implementing mechanisms such as the Sarbanes-Oxley Act, reporting transparency remains difficult to attain, especially in areas such as corporate narratives where information is difficult to verify. The narrative portion of the annual report has witnessed significant growth (Francis, 2002; Davis et al., 2012). Under the current regulatory model, these narratives are not subject to the same level of monitoring as quantitative information in annual reports (e.g., Bedard, et al., 2012). The lack of regulatory monitoring creates concerns regarding the consistency between quantitative

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and qualitative information (Clatworthy and Jones, 2003) and the possibility of dissemination of misleading information in financial markets.

Evidence from the accounting literature suggests that managers strategically use linguistic manipulations to "sugar coat" corporate narratives. These linguistic manipulations include tone (Henry, 2008; Feldman et al., 2010; Schleicher and Walker, 2010; Roger et al., 2011; Davis et al., 2012), readability (Courtis, 2004; li, 2008; Rennekamp, 2012), complexity (Miller, 2010), abstractedness and concreteness (Riley et al., 2014), and vividness and pallidness (Hales et al., 2011). Prior research indicates that the use of certain linguistics may be systematically related to environmental performance (Cho et al. 2010), financial performance (Abrahamson and Amir, 1996; Schleicher and Walker, 2010; Riley et al. 2014), or reputation (Geppert and Lawrence, 2008).

Recent evidence suggests that investors' decisions are not solely impacted by the content of corporate narratives, but by the linguistics used in these reports as well (Henry, 2008; Feldman et al., 2010; Hales et al., 2011; Rennekamp, 2012; Miller, 2010; Riley et al., 2014). Investors react differently to disclosures with the same content, but written with different linguistics. More importantly, investors are not aware of the effect of linguistic manipulations on their decisions. They unconsciously react to changes in linguistics (Rennekamp, 2012; Riley et al., 2014).

The literature also suggests that linguistics seem to be more influential on nonprofessional investors (e.g., Miller, 2010). The literature divides investors into two types: professional and nonprofessional investors. Professional investors are those who have the necessary training to comprehend most of the quantitative information in

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corporate reports, who use more advanced valuation models (Maines and McDonald, 2000), and who tend to focus more on the quantitative proportion of annual reports, also referred to as an "analytical bias" (Hofstedt, 1972). Nonprofessional investors do not have the analytical skills of professional investors and are more likely to refer to the narratives when drawing inferences about a company (Lee and Tweedie, 1975; Arnold et al., 2010). Due to the lack of regulatory monitoring of corporate narratives, nonprofessional investors' need for narratives may expose them to a higher risk of including misleading information in their decision making process. If investors are able to see the bias in the linguistics of corporate reports, they may be able to revise their judgment by excluding the biased information (e.g., Kelly et al., 2012). Using a DA that is able to reveal the linguistics used in corporate reports may be one possible means for nonprofessional investors to be able to adjust for the effect of linguistic manipulations.

There are several linguistic analysis tools that could be used in a DA to reveal linguistic manipulations employed by managers. These linguistic analysis tools have been used to predict future performance (Abrahamson and Amir, 1996), fraud (Goel et al., 2010; Cecchini et al., 2010; Humpherys et al., 2011), and bankruptcy (Tennyson et al., 1990; Smith and Taffler, 2000; Cecchini et al., 2010). Studies that have employed these tools encouraged researchers, regulators and even auditors (Humpherys et al., 2011) to use these techniques to measure the effect of linguistics and include them in research models or agendas. Interestingly, except for Cecchini et al. (2010), most of these studies did not highlight the potential benefit that investors may have from using these linguistic

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analysis techniques. The purpose of this study is to investigate the effect of using the output of a linguistic analysis DA on investors' decision making.

This study relies on Expectation Violation Theory (EVT) (Burgoon and Hale, 1988; Burgoon, 1993) to predict investors' reactions to being alerted to linguistic manipulations in corporate reports. EVT is a communication theory built on the assumption that individuals create expectations about the communicator's behavior based on known idiosyncrasies or social norms. These expectations can either be confirmed or disconfirmed. When disconfirmed, an expectation violation occurs and impacts the outcome of the communication. Expectation violations can have a negative or positive sign. When the communicator does not meet (exceeds) the receiver's expectations, a negative (positive) violation occurs. The sign of the violation impacts individuals' decision making. The theory also suggests that the effect of the violation may depend on information about the communicator. As a result, the effect of an expectation violation may be weakened.

In this study, a 2X2 experiment was conducted to test the effect of revealing linguistic manipulations on investors' decision making. Managers' incentives (incentive vs. no incentive) and the detection of linguistic manipulations (linguistic manipulations detected vs. linguistic manipulations not detected) are manipulated across experimental conditions. The detection of linguistic manipulation (the occurrence of an expectation violation) is expected to interact with managers' incentives such that detecting linguistic manipulations moderates the effect of managers' incentives on investors' perceptions of disclosure credibility. More precisely, the effect of managers' incentives on investors'

willingness to invest is expected to be weaker when the DA detects linguistic manipulations than when the DA fails to detect linguistic manipulations.

Four hundred and seventy-two nonprofessional investors participated in this study. Results show that managers' incentives and detection of linguistic manipulations have a significant effect on investors' perceptions of disclosure credibility and willingness to invest, but the detection of linguistic manipulation did not moderate the effect of managers' incentives on investors' perceptions of disclosure credibility and their willingness to invest. The results show that the detection of linguistic manipulations has the same effect on managers with an incentive to manipulate the tone as on managers with no incentive to manipulate the tone. While these results fail to provide support for the interactive effect between linguistic manipulations and managers' incentives, they suggest that DAs are an effective tool that can be used by nonprofessional investors to detect linguistic manipulations.

This study contributes to practice and research. Recently, a significant number of studies have investigated the effect of linguistics used in corporate narratives on investors (Courtis, 2004; Li, 2008; Henry, 2008; Feldman et al., 2010; Schleicher and Walker, 2010; Miller, 2010; Roger et al., 2011; Hales et al., 2011; Rennekamp, 2012; Davis et al. 2012; Riley et al., 2014). However, no solutions were presented to mitigate the effect of linguistics used in cooperate narratives on investors. This study suggests that providing investors with a DA that is capable of revealing linguistic manipulations can help investors mitigate the effect of linguistics on their decision making process. Also, this

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study provides evidence that managers' characteristics such as reporting incentives do not reduce the effectiveness of such tools.

This study contributes to practice by discouraging managers from using linguistic manipulations in corporate narratives. Recent evidence from the accounting literature suggest that managers are less likely to engage in misreporting information if they believe that investors may be able to see through their behavior (Roger and Stocken, 2005). Once the use of DAs to detect linguistic manipulations becomes common practice in capital markets, managers should be less incentivized to use such techniques to affect investors' decisions.

Background

Recently, corporate narratives, such as the MD&A, have witnessed significant growth (Francis, 2002; Davis et al., 2012). The growth of narratives in corporate reporting is a double-edged sword. On one hand, narratives can be used to level the field between professional and nonprofessional investors. These narratives may provide nonprofessional investors with an explanation of unfamiliar quantitative information or may help them extract additional information about a company's performance. On the other hand, narratives can be used by managers opportunistically as an impression management technique to influence decisions (Courtis, 1998; Clatworthy and Jones, 2003; Schleicher and Walker, 2010) and to manage their image (Roger and Stocken, 2005; Craig and Brennan, 2012). Among these manipulations is the strategic use of certain linguistics such as tone (Henry, 2008; Feldman et al., 2010; Schleicher and

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Walker, 2010; Roger et al., 2011; Davis et al., 2012), readability (Courtis, 2004; Li, 2008; Rennekamp, 2012), complexity (Miller, 2010), abstractedness and concreteness (Riley et al., 2014), and vividness and pallidness (Hales et al., 2011).

Deceptive behavior in corporate narratives is difficult to capture because of the various levels of deception. Managers are more likely to be held accountable for extreme forms of deception than for more subtle deceptive behavior that is harder to detect. For example, managers are not necessarily accountable for the tone they use in corporate narratives. Whether to make managers accountable for the tone they used in corporate narratives is still under debate in the legal community and so far the court has ruled for both sides: the investors and the managers (Roger et al., 2011). Changes in tone in corporate narratives are only one of many forms of linguistic manipulations that managers can use to mislead investors. The multitude of linguistic techniques that managers can exhibit to manipulate corporate reports render them more difficult to detect. Evidence from Roger and Stocken (2005) suggests that managers are less likely to engage in misreporting information if they believe that investors may be able to see through their behavior.

The ambiguity of the legal consequences of linguistic manipulations and managers' tendency to misreport information to investors (when they can do it without being detected) creates a significant concern about the impact of managers' undetected behavior on investors' decision making. Managers appear to already use linguistic features in corporate reports as an impression management technique. Cho et al. (2010) reports that companies' use of tone in corporate narratives is related to their

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environmental performance. Companies with bad environmental performance try to obfuscate their bad performance by using a specific tone. More precisely, companies with bad environmental performance were systematically more likely to use an optimistic tone and uncertain tone than companies with better environmental performance. Companies often use tone in their forward-looking statements by using a positive tone when facing an impending performance decline (Schleicher and Walker, 2010). Also, Riley et al. (2014) explore the language category (abstractedness and concreteness) used in press releases for companies with good and bad financial information and report that companies with negative (positive) performance are systematically more likely to use abstract (concrete) language in their press releases.

The evidence above shows that managers take advantage of the regulatory latitude in reporting qualitative information. Linguistic features in corporate narratives are used to "sugar coat" reality. Despite the fact that management's manipulation of linguistics is very concerning, such a technique might not be an issue if investors can see through it or are not impacted by a change in linguistics.

Unfortunately, both experimental and archival evidence shows that nonprofessional investors are influenced by linguistics. Nonprofessional investors' reactions to disclosures are dependent on disclosure readability (Rennekamp, 2012). When exposed to more readable disclosures, investors' valuations judgments are more positive (negative) when reading good (bad) news. Further, a more readable disclosure increases investors' reliance on management disclosure. Investors are more likely to rate a company favorably and to invest when the press releases' narratives use concrete

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language as opposed to abstract language (Riley et al., 2014). The vividness of a narrative can also impact investors' judgment when the news is inconsistent with investors' preferences (Hales et al., 2011). The archival accounting literature reports that the market reacts to the tone used in press releases (Henry, 2008) and MD&A section of annual reports (Feldman et al., 2010). The more readable the disclosure, the more likely investors are to engage in trading (Miller, 2010).

Based on the evidence above, investors are influenced by a change in linguistics in the qualitative portion of annual reports, with nonprofessional investors being the most influenced. Several accounting studies have documented differences between professional and nonprofessional investors. Findings from these papers suggest that professional investors have an "analytical bias" and are more likely to focus on quantitative information than nonprofessional investors (Hofstedt, 1972; Lee and Tweedie, 1975). Nonprofessional investors are less familiar with financial statements, use simpler heuristic models (Maines and McDaniels, 2000), process information sequentially (Pinsker, 2007), focus on explicitly stated information rather than implicitly stated information (Krische, 2005; Han and Tan, 2007), and are more likely to include biased information in their decisions (Malmendier and Shanthikumar, 2007; Mikhail et al., 2007). The information processing differences between professional and nonprofessional investor make nonprofessional investors more vulnerable to management's linguistic manipulations.

Evidence from the literature also indicates that investors' reactions to the linguistics used in annual reports are a result of an unconscious process. Rennekamp

(2012) reports that readability impacts investors' decision making. However, when investors are aware of the other readability format, they filter out the readability bias[14]. Riley et al. (2014) also suggest that an investor's bias to linguistic manipulation is an unconscious process. They asked their participants whether they would have made different decisions if the press releases did not have narratives in them and whether they found the narrative sections of the press releases to be informative. Participants' answers to these questions across the experimental conditions did not differ. Nevertheless, they made different decision when they were exposed to more concrete vs. more abstract language. Similarly, Kelly et al. (2012) argue that nonprofessional investors are not aware of the optimistic bias in stock recommendations and are more likely to make poor investment decisions than professional investors (professional investors are more likely to filter out analysts' bias). Participants in that study were provided with the distribution of analysts buy recommendations; merely providing investors with the recommendation distribution does not work as a debiasing mechanism. However, when a warning message is added, investors are able to filter out analysts' bias for their decision making. This suggests that making nonprofessional investors aware of management's linguistic manipulations may work as a debiasing mechanism to improve their decision making process.

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[14] Investors who were initially provided with the more readable format corrected their valuation downward (those who received the less readable disclosure initially did not change their valuation judgment)

Hypotheses and Theory Development

Linguistic manipulations can be detected via the use of computer programs that are equipped with algorithms and predefined dictionaries to capture certain linguistics. These computer programs are DAs that researchers have used to identify the type of language used by managers in corporate reports. Researchers have used these DAs to analyze forward looking statements (Schleicher and Walker, 2010), press releases (Henry, 2008; Riley et al., 2014), and the MD&A (Feldman et al., 2010; Cho et al., 2010). While not all of the DAs that have been used by researchers are available for sale by a third party, these DAs can easily be created and investors can easily have access to them. This study investigates the effect of output from the DA on investors' decisions. More precisely, using EVT (Burgoon and Hale, 1988; Burgoon, 1993), this study predicts the effect of detecting linguistic manipulations in corporate narratives on investors' perceptions of disclosure credibility and their willingness to invest.

Figure 3 below represents the theoretical model for the effect of detecting linguistic manipulations on investors' decision making. The model suggests that the detection of linguistic manipulations interacts with managers' incentives to affect investors' perceptions of disclosure credibility, and that the indirect effect of managers' incentives on investors' willingness to invest is conditional on whether the output of the DA detects linguistic manipulations.
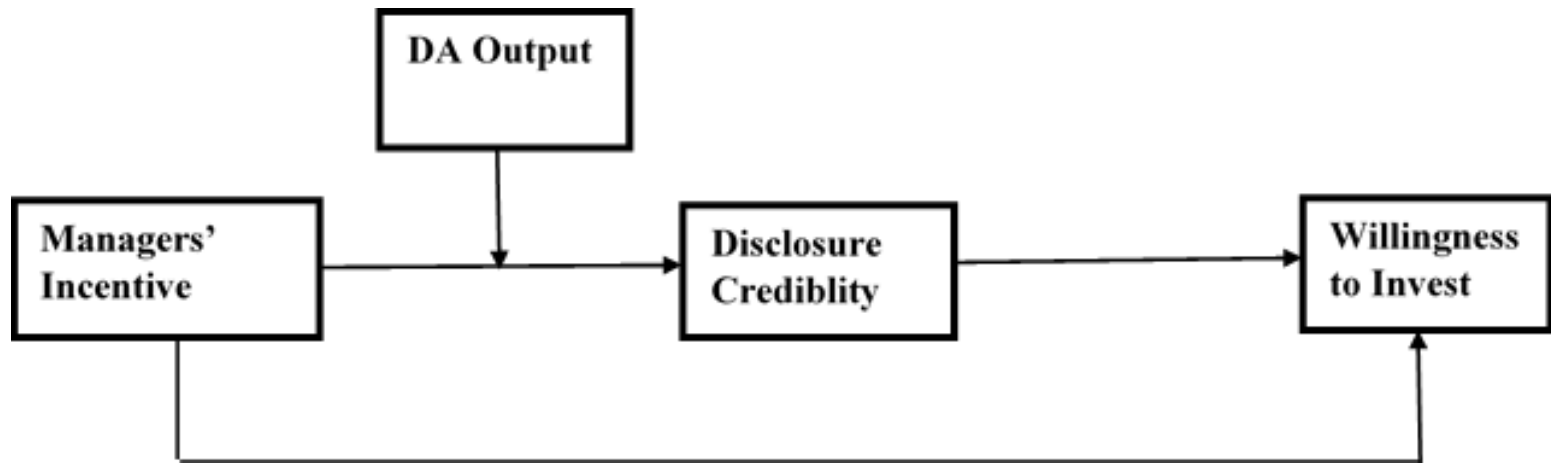
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Figure 3: Theoretical Model

EVT is a communication theory that describes receivers' reactions to an expectancy violation (Burgoon and Hale, 1988; Burgoon, 1993). One central pillar of this theory is the receiver's expectancies about the communicator's behavior or attitude. Expectancies consist of the receiver's projection of the communicator's behavior. These expectancies can be created from social norms or known idiosyncrasies of the communicator (Burgoon and Hale, 1988). These norms are derived from factors such as communicator characteristics, communicator and the receiver relationship, and contextual factors. These factors define the communicator's behavior and the communication's expectation. When the receiver does not have access to information about the communicator, expectancies are based on social norms alone (Burgoon and Hale, 1988). Based on the social norms in an investment setting, managers are expected to communicate information truthfully. *Ex-post* to management disclosure, an investor can confirm or disconfirm the established expectations. When the information communicated by the manager does not meet an investor's expectations, the expectations are disconfirmed and an expectation violation occurs. According to EVT, when a violation occurs, the receiver determines the sign of the violation. A negative (positive) violation occurs when a communicator behaves worse (better) than expected. The sign of the violation has an impact on the communication outcome between the receiver and the communicator such that a negative (positive) violation results in negative (positive) communication outcome (Burgoon and Hale, 1988; Burgoon, 1993).

If the receiver detects a negative violation such as a linguistic manipulation, a negative violation occurs; a manager committed a behavior that did not meet investors'

expectation. Based on EVT, this violation will have a negative impact on the communication outcome (Burgoon and Hale, 1988; Burgoon, 1993). In an investment setting, one of the central outcomes of the communication between managers and investors is the investors' willingness to invest in the company. A positive (negative) communication outcome should encourage (discourage) investors to invest in the company. Investors' perceptions of disclosure credibility are also an outcome of the communication between managers and investors. *Ex-post* to management disclosure, investors evaluate the characteristics of the disclosure communicated to them and revise their perceptions of disclosure credibility accordingly (Mercer, 2004). For these reasons, this study investigates investors' perceptions of disclosure credibility and their willingness to invest as the communication outcome between them and managers.

Investors' expectations are based on managers' incentives and thus managers' incentives have an impact on investors' perceptions of disclosure credibility. More precisely, investors should have lower perceptions of disclosure credibility when performance is bad than when performance is good. When performance is good, managers have no incentive to bolster or manipulate the information that they communicate about their performance. However, when performance is bad, managers have an incentive to manipulate the information that they communicate about their performance. As a result, investors' perceptions of disclosure credibility should be lower for managers with an incentive to manipulate information than for managers with no incentive to manipulate information.

Unless investors are able to see through management's linguistic manipulations, no expectation violation occurs. As discussed above, investors' may unconsciously react to linguistic manipulations and, therefore, may not be able to detect them. However, if investors have access to a DA that is capable of detecting linguistic manipulations, output of this DA may create a negative expectation violation when the DA signals the presence of linguistic manipulations. This negative violation should have a negative impact on the communication outcomes such that investors are expected to have lower perceptions of disclosure credibility when the DA signals linguistic manipulation than when the DA does not signal linguistic manipulation.

When considering the effect of managers' incentives and the detection of linguistic manipulations jointly, the effect of managers' incentives on investors' decision making may depend on whether the DA detects linguistic manipulations. EVT argues that when an expectation violation is not equivocal and its meaning is ambiguous, the communicator reward valance can alter the effect of the violation on the communication outcome. The communicator's reward valence consists of information gathered about the communicator. Depending on the sign of the gathered information (negative or positive), a communicator can have a positive or negative reward valence (Burgoon and Hale, 1988; Burgoon, 1993).

In an investment setting, management's incentives help investors form management's reward valence. The detection of linguistic manipulations does not imply that managers have intentionally used linguistic manipulations. Their behavior may be unintentional (Clatworthy and Jones, 2006; Merkl-Davies and Brennan, 2007). According

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to EVT, when the violation is ambiguous, the violation is subject to more than one interpretation and the reward valance influences which interpretation is chosen (Burgoon and Hale, 1988; Burgoon, 1993). Investors' interpretation and evaluation of the violation may not be consistent across managers' incentives. There are two possible interpretations. First, managers may have purposely used linguistic manipulations. Second, managers may have unintentionally used linguistic manipulations. As a result, detecting linguistic manipulations for managers with no incentive to manipulate the tone used in corporate reports is more ambiguous than detecting linguistic manipulation for managers with an incentive to manipulate the tone. The ambiguity of the reasons behind the linguistic manipulations may impact investors' decisions such that the effect of managers' incentives will be weaker when the DA detects linguistic manipulations than when the DA fails to detect linguistic manipulations. In other words, the effect of managers' incentives on investors' perceptions of disclosure credibility is conditional on whether the DA detects linguistic manipulations.

H1: *Managers' incentives will have a weaker effect on disclosure credibility when the DA detects linguistic manipulations than when the DA fails to detect linguistic manipulations.*

Disclosure credibility arguably has a positive effect on investors' willingness to invest. While few studies have tested this relationship, findings from the literature suggest that capital markets react to changes in disclosure credibility (Mishra et al., 2011; Ng et al., 2013). Market reactions to changes in disclosure credibility indicate that investors use disclosure credibility to make investment decisions. Findings from

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Krishnamurthy et al. (2006) suggest that such a relationship exists. Krishnamurthy et al. (2006) explore market reaction to Arthur Anderson's clients after the audit firm was accused of obstruction of justice. Their findings show that the market reacted negatively to Arthur Anderson's clients. One possible explanation for the negative market reaction is that investors questioned the credibility of information audited by Arthur Anderson. Thus, the more (less) investors believe that information reported by managers is credible, the more (less) they will be willing to invest.

> H2: *Disclosure credibility will have a positive effect on investors' willingness to invest.*

H1 posits that investors have lower perceptions of disclosure credibility when the DA detects linguistic manipulations for managers with an incentive to manipulate the tone than when the DA detects linguistic manipulation for managers with no incentive to manipulate the tone. H2 posits that investors' perceptions of disclosure credibility will have an effect on investors' willingness to invest. Further, managers' incentives should affect investors' decisions such as their willingness to invest. Therefore, managers' incentives may have a direct effect on investors' willingness to invest but may also have an indirect effect through their perceptions of disclosure credibility. Investors' perceptions of disclosure credibility may mediate the effect of managers' incentives on investors' willingness to invest. Based on H1, the detection of linguistic manipulations interacts with managers' incentives to affect investors' perceptions of disclosure credibility. Thus, the indirect effect of managers' incentives on investors' willingness to invest also depends on whether the DA detects linguistic manipulations. The indirect

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effect of managers' incentives on investors' willingness to invest will be stronger when the DA fails to detect linguistic manipulations than when the DA detects linguistic manipulations.

H3:   *The effect of managers' incentives on investors' willingness to invest through disclosure credibility will be stronger when the DA fails to detect linguistic manipulations than when it detects linguistic manipulations.*

Methods

Design

The above hypotheses are tested using a 2X2 experiment with the output of the DA (linguistic manipulations detected vs. linguistic manipulations not detected) and managers' incentives (incentive vs. no incentive) as the independent variables. All participants were provided with the same "environmental matters" section of a company's MD&A. Managers' incentive is manipulated by contrasting the information in the MD&A section to information from a business journal. In the incentive condition, the business journal describes the company as a bad environmental performer. In the no incentive condition, the business journal describes the company as a good environmental performer. To manipulate linguistic manipulation detection, participants receive a brief description of the DA and its output. The description explains that the content from the MD&A has been analyzed using the DA and the report generated indicates whether tone is manipulated in the MD&A. In the undetected linguistic manipulations condition, participants receive a report stating that "The analyzed narrative is free from tone

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manipulations". In the detected linguistic manipulations condition, participants receive a report stating that "The analyzed narrative is NOT free from tone manipulations".

Procedures

Across all experimental conditions, participants are told that they have accumulated $50,000 dollars of personal savings and that they have decided to invest $10,000 dollars of their savings by purchasing a company's stock. Then, they are presented with experimental materials that describe Chocolato, Inc. as a medium-sized confectionery manufacturer and retail operator led by Chief Executive Officer, Dan Johnson. [15] Once introduced to Chocolato, participants have access to a consensus analysts' forecast that reflects growth in Chocolato's revenue. Then, participants are provided with the business journal article that described Chocolato's environmental performance positively in the no incentive condition and negatively in the incentive condition. Participants are provided with the income statement information and the "environmental matters" discussion from the MD&A section of Chocolato's annual report[16].

After reading the company information, participants are then presented with a description of a software tool (the DA) that detects linguistic manipulations, which is capable of detecting tone manipulations in the MD&A. More precisely, they are presented with the output of the DA which indicates whether the MD&A was free from linguistic manipulations. The focus is on the MD&A section of the annual report for three

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[15] The experimental materials were adapted from Elliott et al. (2012).
[16] Part of the MD&A section was adapted from the MD&A examples reported in Cho et al. (2010).

reasons. First, research suggests that linguistic manipulations impact nonprofessional investors' more than professional investors and that nonprofessional investors have a preference for information in the MD&A (Hodge and Pronk, 2006; Arnold et al., 2010). Second, the lack of regulatory monitoring of information reported in the MD&A provides more room for managers to manage investors' impressions. Third, research suggests that tone manipulations are being used in the MD&A section and are impacting investors' decisions (Feldman et al., 2010). After reading the experimental materials, participants are asked to answer a series of questions about the variables of interest and provide demographic information.

Measured Variables

To measure investors' perceptions of disclosure credibility, participants answer five questions anchored from strongly disagree to strongly agree on a seven point likert scale. These questions were taken from the message credibility literature (Chesney and Su, 2010; Flanagin and Metzger, 2007, 2003, 2000) and capture participants' beliefs about whether the information reported in the MD&A section is believable, accurate, trustworthy, unbiased, and complete. Participants' willingness to invest is measured by the dollar amount that they chose to invest in Chocolato (from $0 to $10,000).

Control Variables

Three control variables were added to the analyses: investors' reliance on the DA, investors' financial literacy, and investors' environmental beliefs. Evidence from the literature suggest that investors' financial literacy impacts their judgment and decision

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making (Hilgert et al., 2003; Lusardi, 2008; Lusardi and Mitchell, 2008; Hung et al., 2009; Lusardi and Mitchell, 2011; Van Rooij et al., 2011). Financial literacy consists of investors' knowledge about basic financial concepts. Investors' perceptions of disclosure credibility and their willingness to invest may be driven by their understanding of these financial concepts; therefore, this measure is included in the overall model. To measure investors' financial literacy, five questions were adapted from the Financial Industry Regulation Authority's (FINRA) national survey (FINRA, 2009a; FINRA, 2009b; FINRA, 2012). Scores on this measure range from "zero" (low financial literacy" to "five" (high financial literacy).

Evidence from the literature also suggests that investors' decisions may be driven by their reliance on the DA (e.g., Triki and Weisner, forthcoming). Reliance is "…the degree to which the user of a DA applies the aid and incorporates the recommendations of the aid during judgment formulation…" (Arnold and Sutton, 1998 pg. 180). To control for the effect of DA reliance, a slightly modified version of Hampton's (2005) items was used. Participants were provided with seven items and the responses ranged from "strongly disagree" to "strongly agree" on a seven point likert scale.

As discussed above, managers' incentive was manipulated by contrasting the information in the MD&A section to the information in the business journal describing Chocolato's environmental performance. Some participants' decisions may be solely driven by their environmental beliefs and not by whether managers had incentive to manipulate the information in the MD&A. To isolate the effect of investors' environmental beliefs, Dunlap et al. (2000)'s New Ecological Paradigm Scale (NEPS)

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which measures individuals' environmental beliefs was used. Participants were presented with fifteen items and the responses ranged from "strongly disagree" to "strongly agree" on a seven point likert scale.

Participants

Nonprofessional investors were reached through Amazon Mechanical Turk. Four hundred and seventy-two responses were collected and used to analyze the data[17]. To limit the pool of participants to individuals with some investing experience, the study included three screening questions as follows:

1. Have you ever made personal investments in the common stock of a company?

2. Approximately, how many years of personal investment experience do you have?

3. Approximately, how many times have you purchased common stock of a company as a personal investment?

On average, participants spent 19.66 minutes of their time completing the experimental task. Participants were paid $3 for successfully completing the task resulting in an average hourly wage of $9.16. Participants were 57% male, 43% female,

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[17] Five hundred eleven participants completed the instrument, but, some responses shared the same IP address and some responses had missing data. After deleting these responses, 482 responses remained. The analysis of variance revealed that the variance was unequal across the four cells. To meet the assumption of the ANOVA analysis, either the cell size condition or the equal variance condition has to be met (Glass et al., 1972). Since the equal variance assumption was not supported, some observations were excluded from the analyses. A random number generator was used to equalize the cell sizes across all experimental conditions (Lyubimov et al. 2013). After equalizing cell sizes, 472 responses remained (118 observations per cell size).

90.7% used financial statements to evaluate a company's performance, 72.2% had

business work experience, 19.5% had work experience in financial analyses, and 91.5%

plan to invest in the future. Participants with business (financial analysis) work

experience had average experience of 10.93 (5.23) years. On average, participants have

taken 2.01 accounting courses and 1.81 finance courses. Results from the financial

literacy measures indicate that 44.3% of participants had a perfect scores and 37.9%

answered 4 question out of five correctly.

Table 8: Demographic Information

	Mean	Standard Deviation
Average number of years of investing experience	7.09	7.02
Average number of times making purchases of common stock	17.31	26.28
Average number of accounting classes taken	2.01	2.95
Average number of finance classes taken	1.81	2.84
	Number	Percent
Gender		
Male	269	57.0%
Female	203	43.0%
Age		
18 - 20 years	7	1.5%
21 - 25 years	63	13.3%
26 - 29 years	72	15.3%
30 - 39 years	171	36.2%
40 - 49 years	87	18.4%
50 - 59 years	50	10.6%
60 – 69 years	20	4.2%
>69	1	0.2%
Prefer Not to Answer	1	0.2%
Ethnicity		
Asian	32	6.8%
African American	33	7.0%
Hispanic	23	4.9%
Native American	9	1.9%
Caucasian	369	78.2%
Others	4	0.8%
Prefer Not to Answer	2	0.4%
Education		
Less than high school	1	0.2%
High School/ GED	37	7.8%
Some College	99	21.0%
2-year college degree	56	11.9%
Undergraduate degree	200	42.4%
Master degree	68	14.4%
Doctoral degree	11	2.3%
Used Financial Statements to Evaluate Company Performance		
Yes	428	90.7%
No	44	9.3%

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	Number	Percent
Business Work Experience (Average is 10.93 years)		
Yes	341	72.2%
No	131	27.8%
Work Experience in financial analysis (Average is 5.23 years)		
Yes	92	19.5%
No	380	80.5%
Plan to Invest in Common Stock in Future		
Yes	432	91.5%
No	40	8.5%
Financial Literacy Scores (Average is 4.19)		
Participants who had five correct answers	209	44.3%
Participants who had four correct answers	179	37.9%
Participants who had three correct answers	57	12.1%
Participants who had two correct answers	20	4.2%
Participants who had one correct answers	6	1.3%
Participants who had no correct answers	1	0.2%

Results

In order to explore the factor structure of Dunlap et al. (2000)'s measure of environmental beliefs, an unrotated principal component analysis was conducted. Table 9 Panel A results show that three components emerged. An examination of the component structure suggests that three items (Environmental Beliefs 6, 9, and 14) loaded on more than one component. These items were deleted to obtain a one component solution shown in Panel B. The same analysis was conducted for the DA reliance and disclosure credibility measures. All disclosure credibility items loaded on one common component (Panel C); and, except for one item, all of the DA reliance items loaded on one component (Panel D). The DA reliance item that did not load was excluded from the analyses to obtain a one component solution (Panel E).

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Table 9: Measurement Validation

Panel A: Principal Component Analysis for Environmental Belief

	Components		
	1	2	3
Environmental Belief 1: We are approaching the limit of the number of people the earth can support.	**.656**	.082	-.490
Environmental Belief 2 (Reverse Coded): Humans have the right to modify the natural environment to suit their needs.	**.705**	.120	.292
Environmental Belief 3: When humans interfere with nature it often produces disastrous consequences.	**.789**	-.024	-.018
Environmental Belief 4 (Reverse Coded): Human ingenuity will insure that we do NOT make the earth unlivable.	**.665**	.415	.102
Environmental Belief 5: Humans are severely abusing the environment.	**.817**	-.285	-.114
Environmental Belief 6 (Reverse Coded): The earth has plenty of natural resources if we just learn how to develop them.	**.574**	**.514**	-.174
Environmental Belief 7: Plants and animals have as much right as humans to exist.	**.579**	-.409	.207
Environmental Belief 8 (Reverse Coded): The balance of nature is strong enough to cope with the impacts of modern industrial nations.	**.808**	.093	.031
Environmental Belief 9: Despite our special abilities humans are still subject to the laws of nature.	**.370**	-.376	**.543**
Environmental Belief 10 (Reverse Coded): The so-called "Ecological crisis" facing humankind has been greatly exaggerated.	**.782**	-.142	-.030

	Components		
	1	2	3
Environmental Belief 11: The earth is like a spaceship with very limited room and resources	**.735**	.026	-.348
Environmental Belief 12 (Reverse Coded): Humans were meant to rule over the rest of nature.	**.594**	-.018	.254
Environmental Belief 13: The balance of nature is very delicate and easily upset	**.757**	-.157	-.054
Environmental Belief 14 (Reverse Coded): Humans will eventually learn enough about how nature works to be able to control it.	**.489**	**.556**	**.467**
Environmental Belief 15: If things continue on their present course, we will soon experience a major ecological catastrophe.	**.817**	-.253	-.184

Extraction Method: Principal Component Analysis

Panel B: One Component Solution for Environmental Beliefs

	Component
Environmental Belief 1: We are approaching the limit of the number of people the earth can support.	.665
Environmental Belief 2 (Reverse Coded): Humans have the right to modify the natural environment to suit their needs.	.695
Environmental Belief 3: When humans interfere with nature it often produces disastrous consequences.	.794
Environmental Belief 4 (Reverse Coded): Human ingenuity will insure that we do NOT make the earth unlivable.	.640
Environmental Belief 5: Humans are severely abusing the environment.	.841
Environmental Belief 7: Plants and animals have as much right as humans to exist.	.594
Environmental Belief 8 (Reverse Coded): The balance of nature is strong enough to cope with the impacts of modern industrial nations.	.801
Environmental Belief 10 (Reverse Coded): The so-called "Ecological crisis" facing humankind has been greatly exaggerated.	.789
Environmental Belief 11: The earth is like a spaceship with very limited room and resources	.738
Environmental Belief 12 (Reverse Coded): Humans were meant to rule over the rest of nature.	.597
Environmental Belief 13: The balance of nature is very delicate and easily upset	.765
Environmental Belief 15: If things continue on their present course, we will soon experience a major ecological catastrophe.	.836

Extraction Method: Principal Component Analysis.

Panel C: Principal Component Analysis for Disclosure Credibility

	Component
Disclosure credibility 1: The information reported in the MD&A section is believable.	**.934**
Disclosure credibility 2: The information reported in the MD&A section is accurate.	**.938**
Disclosure credibility 3: The information reported in the MD&A section is trustworthy	**.943**
Disclosure credibility 4: The information reported in the MD&A section is unbiased	**.811**
Disclosure credibility 5: The information reported in the MD&A section is complete.	**.829**

Extraction Method: Principal Component Analysis

Panel D: Principal Component Analysis for Reliance

	Components	
	1	2
Reliance 1: I agree with the results of the results of the tone analysis software.	**.817**	-.248
Reliance 2: I have confidence in the result of the results of the tone analysis software	**.894**	-.121
Reliance 3 (reverse coded): I can detect tone manipulation without the tone analysis software.	.154	**.942**
Reliance 4: I incorporated the tone analysis software's results into my decisions	**.821**	.146
Reliance 5: I relied on the results of the tone analysis software	**.817**	.238
Reliance 6: I believe that the tone analysis software is capable of detecting tone manipulations	**.849**	-.108
Reliance 7: The results of the tone analysis software are convincing.	**.910**	-.063

Extraction Method: Principal Component Analysis

Panel E: Principal Component Analysis for Reliance

	Component
Reliance 1: I agree with the results of the results of the tone analysis software.	**.822**
Reliance 2: I have confidence in the result of the results of the tone analysis software	**.896**
Reliance 4: I incorporated the tone analysis software's results into my decisions	**.819**
Reliance 5: I relied on the results of the tone analysis software	**.812**
Reliance 6: I believe that the tone analysis software is capable of detecting tone manipulations	**.851**
Reliance 7: The results of the tone analysis software are convincing.	**.911**

Extraction Method: Principal Component Analysis

To explore the discriminant and convergent validity of all three measures, all the items that generated a one component solution were analyzed together using a Promax rotation. The results show that all items loaded on their respective components. Nevertheless, the measure for environmental beliefs did not reach an acceptable level of average variance extracted (AVE). Untabulated results showed that the AVE for the environmental beliefs measure was (.49) which is inferior to the cutoff value of .50. As a result, an additional item (Environmental Beliefs 7), which had the lowest loading in the analysis, was deleted from the environmental beliefs measure to reach an acceptable AVE. The list of items included in the analyses is reported in Table 10 Panel A. The results suggest that after deleting this additional item, all measures have an acceptable AVE as well as acceptable convergent validity for all measures. The measures' discriminate validity was also assessed by checking whether the square root of the AVE was higher than the interconstruct correlations. Results suggest that all interconstruct correlations are less than the square root of the measures' AVEs indicating an acceptable discriminate validity (Panel B). Also, all three measures had a composite reliability higher than .90 indicating that all measures had acceptable internal reliability. Results from these analyses suggest that these measures have acceptable psychometric properties. Participants' average response on the items for each construct was used to measure participants' environmental beliefs, DA reliance, and perceptions of disclosure credibility.

Table 10: Principal Component Analysis and Psychometric Properties

Panel A: Principal Component Analysis (with Promax Rotation)

	Components		
	1	2	3
Environmental Belief 1: We are approaching the limit of the number of people the earth can support.	**.672**	.066	-.006
Environmental Belief 2 (Reverse Coded): Humans have the right to modify the natural environment to suit their needs.	**.690**	.096	-.090
Environmental Belief 3: When humans interfere with nature it often produces disastrous consequences.	**.797**	.066	-.032
Environmental Belief 4 (Reverse Coded): Human ingenuity will insure that we do NOT make the earth unlivable.	**.648**	.003	-.029
Environmental Belief 5: Humans are severely abusing the environment.	**.840**	.070	-.041
Environmental Belief 8 (Reverse Coded): The balance of nature is strong enough to cope with the impacts of modern industrial nations.	**.812**	-.012	-.086
Environmental Belief 10 (Reverse Coded): The so-called "Ecological crisis" facing humankind has been greatly exaggerated.	**.791**	.070	-.085
Environmental Belief 11: The earth is like a spaceship with very limited room and resources	**.746**	.021	-.029
Environmental Belief 12 (Reverse Coded): Humans were meant to rule over the rest of nature.	**.588**	-.012	-.057
Environmental Belief 13: The balance of nature is very delicate and easily upset	**.764**	.129	-.005
Environmental Belief 15: If things continue on their present course, we will soon experience a major ecological catastrophe.	**.837**	.115	.044
Reliance 1: I agree with the results of the results of the tone analysis software.	-.008	**.823**	.081

	Components		
	1	2	3
Reliance 2: I have confidence in the result of the results of the tone analysis software	.066	**.896**	.167
Reliance 4: I incorporated the tone analysis software's results into my decisions	.066	**.818**	.183
Reliance 5: I relied on the results of the tone analysis software	.062	**.811**	.205
Reliance 6: I believe that the tone analysis software is capable of detecting tone manipulations	.070	**.850**	.173
Reliance 7: The results of the tone analysis software are convincing.	.118	**.912**	.165
Disclosure credibility 1: The information reported in the MD&A section is believable.	-.064	.139	**.934**
Disclosure credibility 2: The information reported in the MD&A section is accurate.	-.083	.154	**.937**
Disclosure credibility 3: The information reported in the MD&A section is trustworthy	-.089	.152	**.943**
Disclosure credibility 4: The information reported in the MD&A section is unbiased	.036	.178	**.812**
Disclosure credibility 5: The information reported in the MD&A section is complete.	-.020	.228	**.826**

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

Panel B: Analyses for Discriminant and Convergent Validity

	Composite Reliability	Average Variance Extracted	Environmental Belief	Disclosure Credibility	DA Reliance
Environmental Belief	0.920	0.517	**0.719**		
Disclosure Credibility	0.936	0.749	*-0.070*	**0.866**	
DA Reliance	0.925	0.673	*0.093*	*0.172*	**0.821**

Bolded values on the diagonals indicate the square root of the Average Extracted Variance (AVE).

Italicized values represent interconstruct correlations

In order to verify that participants perceived that bad environmental performers have more incentive to change the language used in the MD&A section than good environmental performers, participants were asked to provide their agreement about the manager's incentives to manipulate the tone used in the MD&A. Answers on this item ranged from strongly disagree (indicating no incentive) to strongly agree (indicating incentive). Untabulated results show that the mean response on this question was significantly higher ($p < 0.001$) for participants in the bad environmental performance condition (mean = 5.48; standard deviation = 1.41) than for participants in the good environmental performance condition (mean = 4.50; standard deviation = 1.64). These results suggest that the manipulation of managers' incentives was successful and that participants understood managerial reporting incentives.

The descriptive statistics which are shown in Table 11, Panel A, indicate that participants had higher perceptions of disclosure credibility when managers had no incentive to manipulate the language used in the MD&A (mean = 4.87; standard deviation = 1.07) than when managers had an incentive to manipulate the language used in the MD&A (mean = 3.70; standard deviation = 1.43). Participants had lower perceptions of disclosure credibility when the DA detected linguistic manipulation (mean = 3.73; standard deviation = 1.31) than when the DA failed to detect linguistic manipulations (mean = 4.84; standard deviation = 1.25).

To test H1, an ANCOVA analysis was conducted with managers' incentives (incentive vs. no incentive) and DA Output (tone manipulation not detected vs. tone manipulation detected) as the independent variables, and investors' perceptions of

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disclosure credibility as the dependent variable. The control variables included in the ANCOVA analysis are investors' reliance on the DA, financial literacy, environmental beliefs, and highest level of education[18]. Results from the ANCOVA analysis, shown in Panel B, indicate that the company's environmental performance had a significant effect on investors' perceptions of disclosure credibility such that investors in the incentive condition rated disclosure credibility significantly lower ($p < 0.001$) than investors in the no incentive condition. The results also suggest that the detection of tone manipulations had a significant effect on investors' perceptions of disclosure credibility such that investors rated management's disclosure credibility to be significantly lower ($p < 0.001$) when the DA detected tone manipulations than when the DA failed to detect tone manipulations. While the results suggest that the DA output and managers' incentives have a main effect on investor' perceptions of disclosure credibility, the results fail to provide support for the interactive effect predicted in H1. Results from the ANCOVA analysis suggest that the interaction between DA output and managers' incentives is not statistically significant ($p = 0.232$). The results suggest that the effect of managers' incentives on investors' perceptions of disclosure credibility is not moderated by the detection of tone manipulation. Therefore, H1 is not supported.

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[18] Untabulated results show that participants' demographic information do not differ significantly across the experimental conditions and that participants' highest level of education had a significant relationship with their perceptions of disclosure credibility and their willingness to invest. To account for the effect of education on the dependent variables, education was added as a control variable.

Table 11: Disclosure Credibility

Panel A: Disclosure Credibility – Mean (Standard Deviation) [Sample Size]

	Managers' Incentive		
DA Output	Incentive	No Incentive	Average
Undetected Tone Manipulations	4.22 (1.33) [118]	5.45 (0.78) [118]	4.84 (1.25) [236]
Detected Tone Manipulations	3.17 (1.34) [118]	4.30 (1.01) [118]	3.73 (1.31) [236]
Average	3.70 (1.43) [118]	4.87 (1.07) [118]	[472]

Panel B: ANCOVA Model of Between-Subjects Effects (Dependent Variable = Disclosure Credibility)

Source	S.S	d.f.	M.S.	F-Ratio	p-value*
Managers' Incentive	140.762	1	140.762	114.634	**<0.001**
DA Output	143.282	1	143.282	116.686	**<0.001**
Managers' Incentive * DA Output	0.657	1	0.657	0.535	0.232
Covariates:					
Financial Literacy	1.683	1	1.683	1.371	0.121
Education	6.093	1	6.093	4.962	**0.013**
Environmental Beliefs	2.779	1	2.779	2.263	0.067
DA Reliance	20.399	1	20.399	16.612	**<0.001**
Error	569.758	464	1.228		
Total	9581.320	472			

*All p-values are one-tailed

A mediation analysis was conducted to test the mediating role of disclosure credibility and to test H2. The mediation analysis was conducted by using PROCESS (Hayes, 2013). The results of this analysis are shown in Table 12. In the mediation analysis, investors' willingness to invest was set as the outcome variable, managers' incentives was set as the predictor, and disclosure credibility was set as the mediator. Also, investors' education, financial literacy, and environmental beliefs were added as control variables. Results from the mediation analysis show that disclosure credibility has a significant effect ($p < 0.001$) on investors' willingness to invest. Therefore, H2 is supported. The results also show that disclosure credibility mediates the effect of managers' incentives on investors' willingness to invest (Bootstrapped lower level confidence interval = 632.768; Bootstrapped upper level confidence interval = 1069.455).

H3 predicts a moderated mediation. The results from testing H1 do not support the predicted moderation; as a result, a moderated mediation cannot be tested. Thus, the results also fail to support H3.

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Table 12: Mediation Analysis of Managers' Incentive on Investors' Willingness to Invest

Panel A: Direct Effect of Managers' Incentive on Investors Willingness to Invest

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	619.087	836.087	0.741	0.230	-758.893	1997.066
Predictor:						
Managers' Incentive	524.752	229.194	2.29	**0.011**	147.011	902.493
Mediator:						
Disclosure Credibility	736.423	83.484	8.821	**<0.001**	598.831	874.016
Covariates:						
Financial Literacy	-6.086	116.707	-0.052	0.479	-198.434	186.262
Environmental Beliefs	-140.729	85.976	-1.637	0.051	-282.427	0.97
Education	-140.5	85.902	-1.636	0.052	-282.078	1.078

Panel B: Indirect Effect of Managers' Incentive on Investors Willingness to Invest

Mediator	Effect	Boot SE	Bootstrapped LLCI	Bootstrapped ULCI
Disclosure Credibility	836.491	132.227	**632.768**	**1069.455**

LLCI: Lower level confidence interval

ULCI: Upper level confidence interval

Supplemental Analyses

To test H1, investors' perception of disclosure credibility was used as the dependent variable in the ANCOVA analysis. To investigate the effect of DA output and managers' incentives on investors' willingness to invest, the same ANCOVA analysis was conducted with investors' willingness to invest as the dependent variable. The results show that managers' incentives and the detection of tone manipulations have a significant effect on investors' willingness to invest ($p < 0.001$ and $p = 0.022$ respectively), and that the detection of tone manipulation did not moderate the effect of managers' incentives on investors' willingness to invest ($p = 0.471$). Results are reported in Table 13.

Table 13: Investors' Willingness to Invest

Panel A: Investors' Willingness to Invest – Mean (Standard Deviation) [Sample Size]

	Managers' Incentive		
DA Output	Incentive	No Incentive	Average
Undetected Tone Manipulations	$3,126.09 ($2,235.493) [118]	$4,744.06 ($2,426.12) [118]	$3,935.08 ($2,464.92) [236]
Detected Tone Manipulations	$2,871.64 ($2,609.36) [118]	$4,098.52 ($2,516.97) [118]	$3,485.08 ($2,630.95) [236]
Average	$2,998.87 ($2,427.80) [118]	$4,421.29 ($2,487.81) [118]	[472]

Panel B: ANCOVA Model of Between-Subjects Effects (Dependent Variable = Investors' Willingness to Invest)

Source	S.S	d.f.	M.S.	F-Ratio	p-value*
Managers' Incentive	200978881.054	1	200978881.054	34.407	**<0.001**
DA Output	23767320.127	1	23767320.127	4.069	**0.022**
Managers' Incentive * DA Output	31649.059	1	31649.059	0.005	0.471
Covariates:					
Financial Literacy	805373.708	1	805373.708	0.138	0.355
Education	26921295.404	1	26921295.404	4.609	**0.016**
Environmental Beliefs	25498455.185	1	25498455.185	4.365	**0.019**
DA Reliance	32322512.754	1	32322512.754	5.534	**0.010**
Error	2710290532.317	464	5841143.389		
Total	9575280269.000	472			

*All p-values are one-tailed

Summary of Findings

Results from the ANCOVA analyses show that investors in the incentive condition had a significantly lower perception of disclosure credibility and willingness to invest than investors in the no incentive condition. These results suggest that investors understand managerial reporting incentives and that investors had a lower perception of disclosure credibility when managers had an incentive to manipulate the language used in the MD&A than when managers did not have an incentive to manipulate the language used in the MD&A. Detecting tone manipulations also had a significant effect on investors' perception of disclosure credibility and on their willingness to invest. Investors had significantly lower perceptions of disclosure credibility and willingness to invest when the DA detected tone manipulations than when the DA failed to detect tone manipulations.

The interaction between managers' incentives and the detection of tone manipulations predicted in H1 was not statistically significant. The effect of managers' incentives on investors' perception of disclosure credibility and willingness to invest did not depend on whether the DA detected tone manipulations. These results suggest that despite investors' understanding of managers' incentives to manipulate the tone when they are bad environmental performers, tone detection did not moderate the effect of managers' incentives on investors' perception of disclosure credibility and their willingness to invest. The results also suggest that investors' perceptions of disclosure credibility hav a positive effect on investors' willingness to invest. Thus, H2 was supported. While the results show that investors' perceptions of disclosure credibility

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mediates the effect of managers' incentives on investors' willingness to invest, they do not support the moderated mediation predicted in H3. The moderated mediation could not be tested without providing support for H1.

Conclusions

Findings from this study suggest that nonprofessional investors understand managers' reporting incentives and that investors' revise their perceptions of disclosure credibility and willingness to invest according to these incentives. Investors' perception of disclosure credibility and willingness to invest is lower when managers have an incentive to obfuscate their environmental performance. Also, the use of a tone detection DA had a significant impact on investors' perception of disclosure credibility and their willingness to invest such that investors' perception of disclosure credibility and their willingness to invest was lower when the DA detected tone manipulations that when the DA did not detect tone manipulations.

This study argued that the effect of managers' incentives on investors' willingness to invest is conditional on whether the DA detects linguistic manipulations. More precisely, using EVT, this study argued that managers' incentives have a weaker effect on investors' willingness to invest when the DA detects linguistic manipulations than when the DA fails to detect linguistic manipulations. Results from this study show that detecting linguistic manipulation does not moderate the effect of managers' incentive on investors' willingness to invest. As a result, the results of this study do not support the predictions of the theoretical model advanced in this study.

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Based on EVT, when the expectation violation is not equivocal and its meaning is ambiguous, investors' understanding of managers' incentives can reduce the effect of the violation. Detecting linguistic manipulations does not imply that managers have intentionally used linguistic manipulations. The argument made in this paper was that detecting linguistic manipulations for managers with no incentive to manipulate the language in the MD&A was more ambiguous than detecting linguistic manipulations for managers with an incentive to manipulate the language. The ambiguity may be the result of investors' inference of whether managers used linguistic manipulations intentionally. The results from this study suggest that investors do not distinguish between intentional and unintentional linguistic manipulations. When the DA detects linguistic manipulations, investors infer that managers' behavior is intentional. Overall, findings from this study show that tone detection software impacts investors' judgments and decision making and that, regardless of managers' incentives, the detection of tone manipulations has a negative effect on investors' perception disclosure credibility. As a result, findings from this study provide support for using tone detection DAs as a tool to detect linguistic manipulations in corporate reports.

While this study provides insight into the effect of detecting linguistic manipulations on investors' perceptions of disclosure credibility and their willingness to invest, several questions remain unanswered. The DA used in this study operationalized linguistic manipulations by informing participants that the analyzed narrative was not free from tone manipulations. Nevertheless, tone is one of many types of linguistic manipulations. Future research should investigate whether the type of linguistic

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manipulations detected has a different effect on nonprofessional investors' decision making. For example, does a DA that detects optimism in corporate reports have a similar effect on investors' judgment and decision making as a DA that detects certainty? Also, linguistic manipulations were detected in the MD&A section of the annual report, which is reviewed by the external auditor. The effect of detecting linguistic manipulations may not have a similar effect if the linguistic manipulations were detected in a report that is not subject to a review by external auditors. Future research should explore whether the location of language manipulations matters.

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THE IMPACT OF SOCIAL MEDIA ON NONPROFESSIONAL INVESTORS' DECISION MAKING

> A fundamental observation about human society is that people who communicate regularly with one another think similarly. There is at any place and in any time a *Zeitgeist*, a spirit of the times…Word-of-mouth transmission of ideas appears to be an important contributor to day-to-day or hour-to-hour stock market fluctuations (Shiller, 2000 pg. 148, 155).

Introduction

In capital markets, information about a company is asymmetrically available for managers and investors. Contrary to managers, investors do not have full access to information. To compensate for information asymmetry, investors can seek additional information from other sources. One of these sources is information received from other individuals with whom they interact. Research suggests that investors seek and include information received from these individuals in their decision making process (Shiller and Pound, 1989; Kelly and O'Grada, 2000; Hong et al., 2005; Ivkovic and Weisbenner, 2007). This information takes the form of word-of-mouth where investors exchange their opinions and views.

Technological advancements have boosted the interconnectedness between individuals and created new social media outlets where individual investors can easily access each other's opinions about a specific topic. Traditional word-of-mouth is now transformed to an electronic word-of-mouth (eWOM[19]) where investors can receive

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[19] Electronic word-of-mouth is defined as "…any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thrau et al., 2004 pg. 39).

word-of-mouth information, not only from individuals with whom they interact, but also from unknown individuals with whom they have never previously interacted. In other words, the communication form between investors has morphed to include both face-to-face communication and computer-mediated communication (CMC). eWOM can be found in numerous social media outlets such as blogs, forums, YouTube videos, Facebook, Twitter, etc. This study focuses on eWOM about management disclosure. When management communicates information to capital markets, any individual is free to share his or her beliefs and opinions about these disclosures. For example, an individual may believe that the information communicated by management is misleading and share those beliefs with others via CMC. This information may not necessarily be reliable, but can be readily available to anyone who reads social media posts. Anyone, whether expert in certain matters or not, can post comments on various social media sites. Forums are one of the many social media outlets that investors can access. Information in forums is generated and used by a group of individuals (hereafter referred to as bloggers[20]) who can freely share their views and opinions about a certain topic. When investors include information in their decision making process, the quality of their investment decisions becomes dependent on the quality of information that they have received and the weight allocated to that information (O' Conner, 2013). The purpose of this study is to investigate whether eWOM from social media has an influence on investors' decision making and how eWOM influences their decision making.

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[20] The term bloggers is used to refer to "forum users".

Spears and Lea's (1992) "social identification of the de-individuation effect"
model (SIDE) suggests that the influence of eWOM is a function of an individual's social
identity. Specifically, SIDE suggests that eWOM will have a stronger influence on
investors who identify themselves with a group of bloggers (high social identification)
than investors who do not identify themselves with a group of bloggers (low social
identification). SIDE also suggests that the degree of visual anonymity in social media
affects the influence of eWOM on investors and that the effect of visual anonymity on the
influence of eWOM is conditional on whether investors' identify themselves with a group
of bloggers. Based on SIDE, this study predicts that investors' decisions are more (less)
influenced by eWOM when they have high (low) social identification. Also, investors
with low social identification are more influenced by eWOM when they _view_ bloggers'
comments via video than when they _read_ bloggers' comments in text form; investors
with high social identification are more influenced by eWOM when they _read_ bloggers'
text comments than when they _view_ bloggers' video comments.

To test the theorized relationships, a 2X2 experiment is conducted. Social
identification (high social identification vs. low social identification) and visual
anonymity (text comments vs. video comments) are manipulated, and investors'
perception of disclosure credibility and willingness to invest are the dependent variables.
Participants receive information on a hypothetical company whose CEO announced an
earnings' restatement. After the announcement, participants are provided with
hypothetical bloggers' comments criticizing the credibility of the CEO's explanation for
the earnings' restatement and stating that the stock of this company was not a good

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investment. Visual anonymity is manipulated by changing the format of bloggers' comments. Visual anonymity is ensured by providing participants with text comments and is compromised by providing participants with video comments. When participants *read* bloggers' text comments, they have no access to information about the bloggers. On the other hand, when participants *view* bloggers' video comments, they have access to information about the bloggers. Social identification is manipulated by informing participants whether they are members of and have previously participated in the forum. After receiving bloggers' comments, participants are asked to provide their perceptions of disclosure credibility and willingness to invest.

Results from this research suggest that bloggers' comments have a stronger influence on investors' perceptions of disclosure credibility when investors have high social identification than when investors have low social identification. Also, bloggers' comments have an influence on investors' willingness to invest such that investors with low social identification are more influenced when they *read* text comments than when they *view* video comments, and investors with high social identification are more influenced when they *view* video comments than when they *read* text comments. While findings from this study provide support for the moderating role of social identification, the relationship is in the opposite direction than the direction predicted by SIDE. Thus, results from this study fail to support the SIDE model.

This study contributes to the literature by answering the call for more research on investors' perceptions of disclosure credibility (Mercer, 2004) and by providing additional evidence on the effect of disclosure credibility on investors' willingness to

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invest. This study also benefits regulators as it provides evidence that individual investors include information available in unregulated social media in their decision making model. This evidence raises concerns on whether to regulate the information in social media. For example, lawmakers can make individuals more accountable for spreading rumors that affect capital markets. This study also provides insights for future research. Future research can investigate de-biasing mechanisms that nonprofessional investors can use to mitigate the influence of information retrieved in unregulated social media outlets.

This study also provides theoretical insights into the effect of social identification and visual anonymity on investors' decision making. More precisely, while this study fails to provide support for the SIDE model, it supports the role of social identification in computer mediated communication. Moreover, the results of this study suggest that the directionality of the theoretical predictions made by SIDE may not accurately describe the effect of visual anonymity and social identification on individuals' decision making. These findings suggest that more theoretical work and research on the effect of social media is needed.

<div align="center">Background</div>

Investors are not isolated from other investors and other individuals available in their environment. Investors are part of society and subject to interpersonal communication with other individuals who participate in financial markets or have an opinion to share about investment opportunities or threats. Evidence in the literature suggests that investors are incapable of separating themselves from other individuals in

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their environment and include information received from these individuals in their decision making process (Shiller and Pound, 1989; Kelly and O'Grada, 2000; Hong et al., 2005; Ivkovic and Weisbenner, 2007).

Financial markets have two types of constituents: professional and nonprofessional investors. One of the main differences between these two groups of investors is the level of training and understanding of financial information. Nonprofessional investors use more simplistic heuristics to analyze financial statements and are more exposed to falling into bad investment decisions than professional investors. Nevertheless, the literature shows that neither professional nor nonprofessional investors are immune to the influence of other individuals in their environment. Evidence from Hong et al. (2005) shows that fund managers may make their investment decisions based on word-of-mouth from other fund managers. Similarly, Shiller and Pound (1989) report that some institutional investors do not use a systematic approach when making their investment decisions and are influenced by other individuals.

If professional investors are incapable of isolating themselves from other individuals when making their investment decisions, nonprofessional investors are probably also subject to influence from others. Evidence in the literature supports this logic and suggests that nonprofessional investors include others' advice when making financial decisions. For example, an individual's choice of retirement plans is dependent on the choice of other individuals working in the same department (Duflo and Saez 2000). Further, household investment decisions are correlated with their neighbors' investment decisions and this correlation is a result of word-of-mouth between neighbors

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(Ivkovic and Weisbenner 2007). Word-of-mouth is stronger in states and in more populated areas where individuals are more inclined to engage in social activities.

> "…a third of individual investors say their initial interest [in a stock] was prompted by persons other than a stockbroker" (Shiller and Pound, 1989 pg. 61).

> "The great majority of the individual investors said they had done no analysis of their own of the stock. Among individual investors, 28% in the random sample and 45% in the rapid price increase sample said that they not only knew of someone else who had bought the stock but were influenced by this fact in their decision to purchase the stock" (Shiller and Pound, 1989 pg. 62).

This evidence suggests that both types of financial market participants are influenced by other individuals when making their investment decisions. The strong reach of word-of-mouth in capital markets is not surprising. Word-of-mouth is more influential in uncertain environments (Mourali et al., 2005) such as financial markets and has more impact on products with attributes that are hard to verify pre and post purchase (Lim and Chung, 2011) such as stocks.

Even though both groups of investors are subject to including others' advice in their investment decisions, this study focuses on nonprofessional investors for several reasons. Moreover, the advice taking and advice giving literature shows that egocentric advice discounting may depend on the differential level of knowledge between advice takers and advice givers. Advice takers are less likely to discount advice when they are less knowledgeable about the matter than advice givers. Further, advice takers are more likely to rely on the advice giver's recommendation when the task is complex (see Bonaccio and Dalal, 2006). Since nonprofessional investors have lower knowledge than professional investors and investment decisions are complex, relatively speaking,

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nonprofessional investors are more at risk for including word-of-mouth in their decisions than professional investors. Therefore, this study focuses on nonprofessional investors.

Technological advances have drastically transformed the flow of information in capital markets. Investors are now exposed to an incredible amount of information and face new challenges of how to assess and use that information. They are not only exposed to information reported by management or word-of-mouth from someone with which they interact, but also to a significant number of other sources of information available in social media such as corporate blogs, message boards, and online forums. Access to these new sources of information is also facilitated by the advances of computer technology. Individuals are not limited to computers to access the internet anymore. New devices such as smartphones and tablets are also enhancing accessibility to the information available on the internet.

Some researchers have reported that the advances of information technology have reduced drifts and made investors more equipped to make financial decisions (Asthana, 2003). This idea is consistent with Levitt and Dubner's (2005) view that the internet has "mortally wounded" information asymmetry in financial markets. However, such a view can be myopic. An increase in information can also enhance investors' biases such as confirmation bias (e.g., Park et al., 2013) or illusion of knowledge (e.g., Barber and Odean, 2002). The effect of more information in financial markets depends on how investors use this information (O'Conner, 2013).

Regulators such as the SEC seem to be focusing on the changes in communication between corporation and investors. However, the internet not only enhances the

communication between corporations and investors, but also facilitates communication between investors. Nonprofessional investors are not only exposed to word-of-mouth, but also to eWOM. They can receive and give advice to or from others on the internet at an uncontrollable pace. Concerns about the increased interconnectedness between investors were raised by then SEC Chairman Arthur Levitt in his speech about on-line investing. He stated:

> "While the scams we have seen on the Internet are the same basic frauds that have always accompanied the flow of money, the Internet's speed, low cost and relative anonymity give con artists access to an unprecedented number of innocent investors…Lastly, I want to raise some points about chat rooms, which increasingly have become a source of information and misinformation for many investors. They have been compared to a high-tech version of morning gossip or advice at the company water cooler. But, at least you knew your co-workers at the water cooler. That just isn't true on the Internet. And, I hope investors recognize that" (Levitt, 1999).

One of the major concerns with the boom of social media is that anyone can connect to the internet and share an opinion with the rest of the world, and that individuals are using the internet to seek financial information and advice (Jones, 2006; Sillence and Briggs, 2007; Wiliamson and Smith, 2010). More intriguingly, recent studies have identified finance and health information as heavily trafficked domains in the internet (Stanford et al., 2002; Sillence and Briggs, 2007).

Investors' use of information reported on the internet raises red flags because assessing the credibility of information available on the internet is a very difficult task (Greer, 2003), and investors may not be well equipped to assess the credibility of financial information in particular. Stanford et al. (2002) reported that consumers often identify website design as their primary cues to assess financial website credibility. Also,

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research on investors' confirmation bias behavior has shown that investors may discredit credible information to confirm their initial beliefs (Thayer, 2011).

Nonprofessional investors may end up including erroneous or deceptive information in their financial decisions. Deception experts are concerned about the dissemination of lies or misleading information in the internet.

"…[T]he number of media now available to aid in the fabrication and dissemination of lies is growing virtually unchecked and shows no signs of stopping soon" (Meyer, 2010 pg. 12).

"Deciding which sources are worth our time, and which ones are worth our trust, has become a burdensome task… A blog rumor or an eccentric political commentator's opinion can be passed to so many people so quickly that within a few minutes thousands of people take it as fact" (Meyer, 2010 pg. 16).

The internet has become an important source of information that individuals actively use. Where individuals obtain their information becomes a very concerning issue. If internet users are only using advice from professionals, using information from the internet may not be as concerning. Professional advice is subject to accountability and in most instances is subject to regulatory sanctions. For example, the Financial Industry Regulatory Authority (FINRA) has mechanisms in place to regulate the postings of its members on social media (FINRA, 2010). While professionals are easier to monitor and subjugate to regulatory laws, individual users of social media are not liable for sharing information on the internet. Anyone can critique or share an opinion in a forum without being accountable for their actions. Internet users are not reluctant to access and use information from less regulated websites that are maintained by individuals and retailers. Sillence et al. (2007) investigated consumers' access to health information in year 2000

and year 2005 and reported that individuals' access to less regulated health sites has increased.

Internet users' preference for informal and unregulated websites over websites run by professionals is not surprising. Internet users seek independent, unbiased, and impartial advice (Sillence and Briggs, 2007; Sillence et al., 2007). To internet users, professionals may not be impartial or may not act in their best interest. The lack of independence and partiality may convey a negative first impression to the users of online advice (Briggs et al., 2002).

> "The very anonymity of many bloggers seems to give their words more power. We don't know them, yet it's hard to dismiss them. What if we ignore them and they turn out to be right? Are we at risk of missing out on the next important insider tip, trend, or opportunity?" (Meyer, 2010 pg. 17).

An individual's preference for non-expert advice is evident in online social support forums where experts' input are not welcomed (Vayreda and Antaki, 2009), and in the health domain where patients seek and act upon unregulated advice retrieved from the internet (Sillence et al., 2007). The advice taking and advice giving literature also indicates that individuals may react negatively to a professionals' advice. More precisely, this literature shows that advice taking individuals are more likely to discount advice if they think that the advice giver does not share the same goals (Bonaccio and Dalal, 2006).

The evidence above suggests that nonprofessional investors may discount advice communicated by professional financial advisors because they may suspect that they are trying to sell them something. Nonprofessional investors are less likely to discount advice

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from independent advice givers. "…[W]e face the danger of becoming overly dependent on advice and information from people we'll never meet, who have manufactured advice information from people they have never met" (Meyer, 2010 pg. 17). Additionally, there is evidence that the impact of eWOM is more significant in uncertain environments (Park and Lee, 2009). Financial markets seem to be a place where eWOM may have a strong impact on nonprofessional investors. The very nature of financial markets and the knowledge structure of nonprofessional investors make them vulnerable to being influenced by information posted on the internet.

There is a paucity of research on how investors use online information (O'Conner, 2013), and how nonprofessional investors use the information posted by unknown individuals. Further, how the advice available on the internet impacts nonprofessional investors' decision making is unclear. This study explores the influence of information retrieved from forums on investors' decision making.

Theoretical Development and Hypotheses

Figure 4 presents the theoretical model regarding the influence of bloggers' comments on investors' perceptions of disclosure credibility and willingness to invest. The model suggests that visual anonymity and investors' social identification have an impact on investors' perceptions of disclosure credibility and their willingness to invest. More precisely, investors' social identification moderates the direct effect of visual anonymity on investors' perceptions of disclosure credibility and the indirect effect of visual anonymity on investors' willingness to invest.

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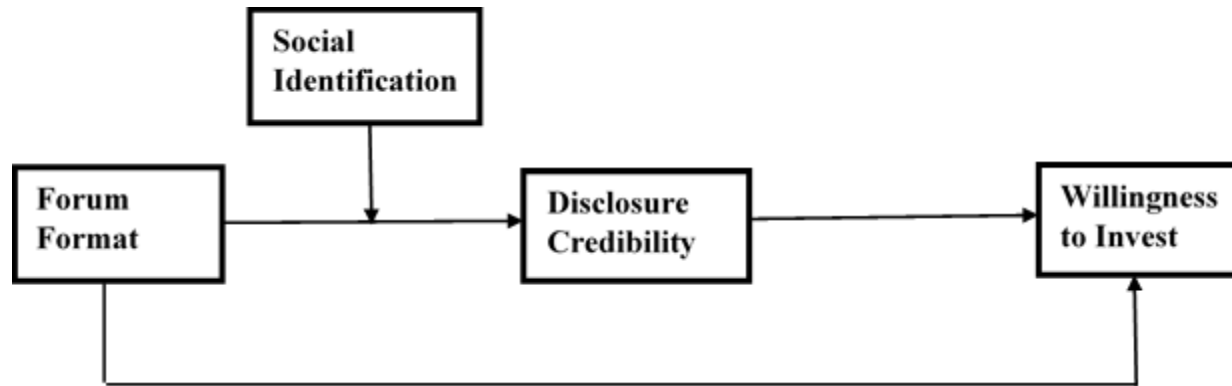
Figure 4: Theoretical Model

This study draws on Spears and Lea's (1992) SIDE model to predict the behavioral implications of accessing information from investment forums on the internet. SIDE is a CMC theory built on Tajfel and Turner's (1986) Social Identification Theory (SIT) and Turner et al.'s (1987) Social Categorization Theory (SCT). Using these two "sister" theories, SIDE posits that social influence from computer mediated communications is a function of identity saliency (Spears and Lea, 1992). More precisely, the model predicts that individuals are more likely to be influenced by the group norm in social media outlets when their group identity is salient (high social identification) than when their personal identity is salient (low social identification). The distinction between personal and social identity comes from SIT (Tajfel and Turner, 1986). According to SIT, an individual's identity is placed on a continuum ranging from personal identity where an individual acts at an interpersonal level to social identity where an individual acts at the group level. At the social identity level, the self is redefined from the lone individual to his membership in a certain group. At this level, individuals begin to think in terms of ("us" vs. "them") instead of ("me" vs. "them"). Moving from personal identity to social identity along the identity continuum depersonalizes the individual. The individual's identity becomes defined by group membership.

According to SCT, individuals categorize themselves with a group and define other groups as well (Turner et al., 1987). The process of categorization allows individuals to create order to a chaotic social structure. Individuals engage in a comparative process where they group themselves with individuals who share common

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characteristics such as a "common threat" and distinguish themselves from individuals who do not share common characteristics. Intragroup differences are always smaller than intergroup differences. According to SCT, when social identity is salient (individuals define themselves as group members), individuals become influenced by the group norm (Turner et al., 1987).

In a capital market setting, communication flows from management to investors or between investors. When management communicates information to capital markets, an investor can individually assess the credibility of this information and act accordingly. Alternatively, the investor can assess the credibility of the information by accessing the opinion of others who belong to the same group. The former case occurs when personal identity is salient and results in low social identification: "I, an individual investor" vs. "management". In that case, an individual is not influenced by others. The latter case occurs when social identity is salient and results in high social identification: "us, a group of investors" vs. "management". In that case, an individual's assessment of the information is influenced by others. According to SIDE, an investor's evaluation of the credibility of information communicated by management and willingness to invest is dependent on the saliency of his/her identity (Spears and Lea, 1992). Investors with high social identification with others will be more influenced by their comments than investors with low social identification. Therefore, investors' perceptions of disclosure credibility will be more influenced by bloggers' comments when investors have high social identification with the group of bloggers than when investors have low social identification with the group of bloggers.

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SIDE also accounts for the effect of visual anonymity on investors' decision making (Spears and Lea, 1992). Visual anonymity determines the degree of anonymity of bloggers. For example, when bloggers' comments are communicated via text, their identity remains anonymous to the readers of the forum. On the other hand, when bloggers' comments are communicated via video, their identity is revealed to the users of the blog and to investors' accessing the forum. In this case, investors have access to additional information to make their decisions.

According to SIDE, the effect of this additional information is conditional on investors' degree of social identification. When individuals have high social identification, visual anonymity obfuscates intragroup differences. Individuals are less likely to discover intragroup differences when other group members are visually anonymous than when other group members are not visually anonymous. However, if visual anonymity is compromised, individuals can see intragroup differences and these differences will lower their identification with the group. Therefore, individuals with high social identification will adhere more to the group norm and be more influenced by group members when other group members are visually anonymous than when visual anonymity is compromised.

Visual anonymity has the opposite effect on individuals with low social identification (Spears and Lea, 1992). When individuals do not identify themselves with the group, they already believe that there are intragroup differences. Visual anonymity enhances these beliefs because individuals do not have a chance to identify intragroup communalities. When visual anonymity is compromised, individuals may see less

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intragroup differences than what they initially formed and, as a result, identify more with the group. Therefore, individuals with low social identification will adhere less to the group norm and be less influenced by the group members when other group members are visually anonymous than when visual anonymity is compromised.

Bloggers on social media are not always anonymous. Bloggers are not limited to typing statements. They can easily attach a picture to their profile, add a link to a personal website, record their own voice, or post a video to express their views. These additional features provide new information to investors. For example, when communicating information via video instead of text, bloggers provide new information about their identity. Nevertheless, the effect of this additional information on investors' perceptions of disclosure credibility is conditional on investors' degree of social identification.

H1: *Bloggers' comments will have more (less) influence on investors' perceptions of disclosure credibility when investors have high (low) social identification and read bloggers' written comments than when investors have high (low) social identification and view bloggers' oral comments.*

Investors assess the credibility of information communicated by management before making investment decisions (Mercer, 2004). Despite the importance of disclosure credibility to investors, very few studies have investigated the effect of disclosure credibility on investors' willingness to invest. Findings from the archival literature indicate that such a relationship exists (Mishra et al., 2011; Ng et al., 2013). These studies indicate that a positive relationship between disclosure credibility and willingness to invest exists and that capital markets react negatively to reduced disclosure credibility.

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Findings from the auditing literature also suggest that such a relationship exists. For example, Krishnamurthy et al. (2006) investigated how the market reacted to Arthur Andersen's clients after the audit firm was accused of obstruction of justice. Their results show that the market reacted negatively to Arthur Andersen's clients. Audits should provide credibility to ensure that the disclosures of a certain company are credible and reflect the true economic state. The accusations made against Arthur Anderson created the perception that the disclosures made by firms audited by Arthur Andersen may not be credible, and thus caused investors to react negatively. Based on this prior research, this study predicts that:

H2:   *Disclosure credibility will have a positive effect on investors' willingness to invest.*

Media richness theory (Daft and Lengel, 1984) suggests that richer media communicates information more effectively in complex decision making environments. The investment setting is a complex decision environment where richer media such as video forum comments should communicate information more effectively and consequently have stronger influence on investors' willingness to invest. Thus, investors' willingness to invest may be influenced by visual anonymity such that video comments may have a stronger effect on investors' willingness to invest than text comments.

Based on H1, visual anonymity has an impact on investors' perceptions of disclosure credibility that is moderated by investors' social identification, investors' perceptions of disclosure credibility have an effect on investors' willingness to invest, and visual anonymity has an impact on investors' willingness to invest. Therefore, the

effect of visual anonymity on investors' willingness to invest flows through investors' perceptions of disclosure credibility. In other words, visual anonymity has an indirect effect on investors' willingness to invest. Since investors' social identification moderates the direct effect of visual anonymity on disclosure credibility, the indirect effect is also moderated by investors' social identification. Therefore, this study proposes that:

H3: *Bloggers' comment will have a stronger (weaker) effect on investors' willingness to invest through their perceptions of disclosure credibility when investors have high (low) social identification and read bloggers' written comments than when investors have high (low) social identification and view bloggers' oral comments.*

Methods

Design

To test the theoretical model advanced in this study, a 2X2 experiment with social identification (low social identification vs. high social identification) and visual anonymity (text comments vs. video comments) as the independent variables was conducted. Social identification was manipulated by telling the participant whether they were or were not members of an investment forum. In the high social identification condition, participants were told: "You are an active member of InvestorsTalk: you visit the forum daily, comment often, and have developed relationships with the other members of the forum." In the low social identification condition, participants were told: "You are not a member of this forum and you have never visited this forum before."

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Visual anonymity was manipulated by providing the participants with text comments in the text format condition and video comments in the video format condition.

Procedures

Participants were invited to participate in a research study about investment decisions. Once they agreed to participate, participants were told that they had accumulated $50,000 of personal savings, and that they had decided to invest $10,000 of these savings to purchase stocks. Then, participants were provided with information about a hypothetical company: Morningblend[21]. The company was described as an international coffee manufacturer and retail operator in the United States. Participants were provided with a brief business article about Morningblend's CEO: Mark Ray. The article highlighted that Mark Ray had a good reputation and concluded with the following statement, "Analysts seem to have very positive views about Morningblend – a testament to management's reputation for open and honest communication with the investment community." Participants were also provided with Morningblend's income statement for two consecutive years.

Then, participants were informed that Mark Ray announced an earnings' restatement and were provided with a video where they were able to watch Mark Ray announcing the earnings' restatement[22]. After watching the earnings' restatement, participants were provided with analysts' forecast. The analysts' forecast stated that

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[21] The experimental materials for this study are adapted from Elliott et al. (2012). The description of the CEO's reputation was adapted from Cianci and Kaplan (2010).

[22] Participants had to watch the full video to be included in the study. Participants who tried to move forward before the end of the video were directed away from the instrument.

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analysts expected Morningblend stock to keep increasing. Then, participants were told that they had access to an independent investment forum where members of the forum have expressed their opinions and written comments about Mark Ray's earnings' restatement. All the comments in the forum indicated that members of the forum did not believe the explanation provided by Mark Ray for the earnings' restatement and that they were not willing to invest in Morningblend. While the content was the same, the comments were provided to participants either in text or video format. After receiving the comments, participants were asked to answer a set of questions to capture their perceptions of disclosure credibility and their willingness to invest, and a set of basic demographic questions.

Measured Variables

Investors' perceptions of disclosure credibility was measured by capturing participants' agreement that the explanation for the earnings' restatement was believable, accurate, trustworthy, unbiased, and complete. Participants' agreement was anchored on a seven point likert scale ranging from strongly disagree to strongly agree. This measure of disclosure credibility was adapted from the message credibility literature (Chesney and Su, 2010; Flanagin and Metzger, 2007, 2003, 2000). To measure participants' willingness to invest, participants were asked to indicate how much of their $10,000 they would invest in Morningblend.

Control Variables

Financial literacy consists of individuals' knowledge about basic financial concepts. Findings from the literature on investors' judgment and decision making suggest that individuals' financial literacy has an effect on investors' decisions (Hilgert et al., 2003; Lusardi, 2008; Lusardi and Mitchell, 2008; Hung et al., 2009; Lusardi and Mitchell, 2011; Van Rooij et al., 2011). For example, recent evidence suggests that individuals with a better understanding of basic financial concepts are less likely to rely on external advice (Van Rooij et al., 2011). In the context of this study, financial literacy may have an effect on investors' perceptions of disclosure credibility and on their willingness to invest. As a result, investors' financial literacy is included in the analyses as a control variable. To control for the effect of financial literacy on participants' judgment and decision making, a measure of financial literacy was added as a control variable. Financial literacy was measured using five items about basic financial concepts developed by FINRA (FINRA, 2009a; FINRA, 2009b; FINRA, 2012). Scores on this measure indicate the number of items answered correctly and range from "zero" (low financial literacy) to "five" (high financial literacy).

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Participants

Amazon Mechanical Turk (MTurk) was used to collect 401 usable responses from nonprofessional investors[23, 24]. To limit the pool of participants to individuals with some investing experience, the study included three screening questions as follows:

1. Have you ever made personal investments in the common stock of a company?

2. Approximately, how many years of personal investment experience do you have?

3. Approximately, how many times have you purchased common stock of a company as a personal investment?

Individuals who answered "no" to the first question or "less than one" to either of the next two questions were directed away from the experiment.

Participants who completed the experiment were paid $3 for their participation in the study. Participants spent an average time of 21.67 minutes completing the experimental materials, the equivalent of an average hourly wage of $8.31. On average, participants have 6.59 years of personal investing experience, have purchased common stock 20.42 times, have taken 2.28 accounting classes, and have taken 2.01 finance classes. Of the participants, 60.3% are male, 39.7% are female, 68.8% have prior

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[23] Initial data collection resulted in 483 observations. 69 responses were deleted because they had duplicate IP addresses indicating that some participants may have participated more than once. Also, 13 responses were deleted because they had missing data.

[24] MTurk offers information about participants' residency, assignment (HIT) approval rate, and the number of approved assignments. This information was used to exclude individuals coming from outside the US, who had less than 500 approved assignments, or who had an approval rate lower than 95%. MTurk participants that did not meet these criteria were not able to see the invitation for the study.

business work experience with an average of 10.72 years, 91.5% have used financial statements to evaluate a company's performance, 13.7% have prior work experience in financial analysis with an average of 4.6 years, and 91.8% plan to invest in the common stock of a company at some time in the future. Results from the financial literacy measure indicate that 46.4% of participants answered all of the financial literacy questions correctly and the average score for all participants was 4.16 out of 5.00. Demographics of the participants are shown in Table 14.

Table 14: Demographic Information

	Mean	**Standard Deviation**
Average number of years of investing experience	6.59	6.00
Average number of times making purchases of common stock	20.42	28.87
Average number of accounting classes taken	2.28	3.75
Average number of finance classes taken	2.01	3.52
	Number	**Percent**
Gender		
Male	242	60.3%
Female	159	39.7%
Age		
18-20 years	2	0.5%
21-25 years	54	13.5%
26-29 years	78	19.5%
30-39 years	160	39.9%
40-49 years	59	14.7%
50-59 years	35	8.7%
>60	13	3.2%
Ethnicity		
Asian	30	7.5%
African American	32	8.0%
Hispanic	29	7.2%
Native American	2	0.5%
Caucasian	304	75.8%
Others	4	1.0%

	Number	Percent
Education		
Less than high school	2	0.5%
High School/ GED	27	6.7%
Some College	99	24.7%
2-year college degree	54	13.5%
Undergraduate degree	164	40.9%
Master degree	47	11.7%
Doctoral degree	8	2.0%
Used Financial Statements to Evaluate Company Performance		
Yes	367	91.5%
No	34	8.5%
Prior Business Work Experience (Average is 10.72 years)		
Yes	276	68.8%
No	125	31.2%
Prior Work Experience in financial analysis (Average is 4.6 years)		
Yes	55	13.7%
No	346	86.3%
Plan to Invest in Common Stock in Future		
Yes	368	91.8%
No	33	8.2%
Financial Literacy Scores (Average is 4.16)		
Participants who had five correct answers	186	46.4%
Participants who had four correct answers	130	32.4%
Participants who had three correct answers	58	14.5%
Participants who had two correct answers	19	4.7%
Participants who had one correct answers	7	1.7%
Participants who had no correct answers	1	0.2%

At the end of the experiment, participants were asked two manipulation check questions: whether they were members of the forum and whether they received the bloggers' comments in a text or video format. Participants who failed to answer either of these manipulation check questions correctly were directed away from the instrument. Also, to ensure that participants watched or read all of the bloggers' comments, a timer

was set to exclude participants who did not spend enough time to watch or read the entire set of the bloggers' comments.

After completing the experiment, participants answered six questions to measure the degree of their social identification. Three questions were adapted from Doosje et al.'s (1995) measure of social identification. This measure was identified by Haslam (2004) as a suitable measure for social identification. Three additional questions were developed specifically for this study[25]. To verify that the social identification manipulation was successful, an independent sample t-test was conducted to compare individuals' social identification in the low social identification condition to individuals' social identification in the high social identification condition. Results indicate that participants in the low social identification have a significantly lower ($p < 0.001$) rating of social identification (mean = 4.12; standard deviation = 1.10) than individuals in the high social identification condition (mean = 5.62; standard deviation = 0.86). Therefore, the social identification manipulation was successful.

<div align="center">Results</div>

In order to validate the measures of social identification and disclosure credibility, a principal component analysis with a Promax rotation was conducted. Results from the principal component analysis suggest that all items loaded on two components. All disclosure credibility items loaded on one component and all social identification items

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[25] Untabulated results show that all six items used to measure social identification loaded on one component and that this measure had an acceptable level of internal reliability. As a result, the average score on these items was used to measure participants' social identification.

loaded on the other component. Results from the principal component analysis are reported in Table 15 Panel A.

Table 15: Measurement Validation

Panel A: Principal Component Analysis (with Promax Rotation)

	Components	
	1	2
Social Identification (1): I see myself as a member of the forum.	**.801**	-.045
Social Identification (2): I feel strong ties with the other members of the forum.	**.878**	-.177
Social Identification (3): I identify with the other members of the forum.	**.905**	-.246
Social Identification (4): I share certain traits with the other members of the forum.	**.804**	-.256
Social Identification (5): I share the same interest with the other members of the forum.	**.715**	-.189
Social Identification (6): I can relate to the other members of the forum.	**.833**	-.331
Disclosure Credibility (1): The explanation for the earnings' restatement is believable.	-.237	**.910**
Disclosure Credibility (2): The explanation for the earnings restatement is accurate.	-.242	**.918**
Disclosure Credibility (3): The explanation for the earnings restatement is trustworthy.	-.258	**.933**
Disclosure Credibility (4): The explanation for the earnings restatement is unbiased.	-.137	**.773**
Disclosure Credibility (5): The explanation for the earnings restatement is complete.	-.206	**.838**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Panel B: Analyses for Discriminant and Convergent Validity

	Composite Reliability	Average Variance Extracted	Social Identification	Disclosure Credibility
Social Identification	0.905	0.618	**0.786**	
Disclosure Credibility	0.925	0.714	*-0.272*	**0.845**

Bolded values on the diagonals indicate the square root of the Average Extracted Variance (AVE).
Italicized values represent interconstruct correlations

To verify that the two measures had acceptable psychometric properties, discriminant and convergent validity were investigated. Results from these analyses are reported in Table 15 Panel B. The Average Variance Extracted (AVE) from each construct is higher than .5, indicating an acceptable level of convergent validity. Also, the AVE is higher than the correlation between the two constructs, indicating an acceptable level of discriminant validity. To verify the internal reliability of each measure, a composite reliability index was calculated for each measure. The composite reliability for each measure is higher than .7 indicating an acceptable internal reliability. As a result, participants' average scores on the disclosure credibility items and the social identification items was used to measure investors' perceptions of disclosure credibility and social identification respectively.

H1 suggests that bloggers' comment should have more (less) influence on disclosure credibility when investors have high (low) social identification and read text comments than when investors have high (low) social identification and view video comments. As illustrated above, the norm created by the bloggers' comments is that the information communicated by Mark Ray is not credible. As a result, a stronger influence of the bloggers comment is reflected through a lower perception of disclosure credibility. To test H1, an ANCOVA is conducted[26]. Visual anonymity (text forum comments vs. video forum comment) and social identification (low vs. high social) are the independent

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[26] Untabulated results show that participants' demographic information do not differ significantly across the experimental conditions.

variables, and disclosure credibility is the dependent variable. As discussed above, financial literacy is included in the analysis as a control variable.

To verify whether any of the demographic variables have a significant impact on investors' perceptions of disclosure credibility, a regression analysis was conducted with investors' perceptions of disclosure credibility as the dependent variable and the demographic variables as the independent variable. Untabulated results from the regression analysis suggest that investors' years of investing experience has a significant relationship with investors' perceptions of disclosure credibility. Therefore, investors' years of investing experience is added to the analyses as a control variable as well.

The descriptive statistics reported in Table 16 Panel A show that the moderating effect of social identification are in the opposite direction to what is expected from the theoretical model. Based on H1, participants with high social identification and who view video comments should have higher perceptions of disclosure credibility than participants with high social identification condition and who read text comments. Also, participants with low social identification and who read text comments should have higher perceptions of disclosure credibility than participants with low social identification condition and who view video comments. Descriptive statistics shown in Panel A suggest that participants with high social identification and who viewed video comments have lower disclosure credibility (mean 3.39; standard deviation = 1.25) than participants with high social identification condition and who read text comments (mean 3.45; standard deviation = 1.30). Also, participants with low social identification and who read text comments have lower disclosure credibility (mean = 3.58; standard deviation = 1.17)

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than participants with low social identification condition and who viewed video comments (mean = 3.64; standard deviation = 1.20).

The results of the ANCOVA analysis are reported in Table 16 Panel B [27]. While not hypothesized, the results suggest that disclosure credibility is significantly lower for participants in the high social identification condition than the low social identification condition (p = 0.028) and that visual anonymity does not have a significant effect on disclosure credibility (p = 0.483). Results from the ANCOVA analysis also suggest that the interaction between social identification and visual anonymity is not statistically significant (p = 0.176). Therefore, these results fail to provide support that social identification moderates the effect of visual anonymity on disclosure credibility set forth in H1.

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[27] A homogeneity test was conducted to verify the equal variance assumption. Results from Levene's test fail to reject the assumption of equal variance. Since the equal variance assumption has been met, the unequal cell sizes are not problematic (Glass et al., 1972).

Table 16: Disclosure Credibility

Panel A: Disclosure Credibility – Mean (Standard Deviation) [Sample Size]

	Social Identification		
Visual Anonymity	Low	High	Average
Text	3.58 (1.17) [103]	3.45 (1.30) [98]	3.52 (1.23) [201]
Video	3.64 (1.24) [101]	3.39 (1.25) [99]	3.52 (1.25) [200]
Average	3.61 (1.20) [204]	3.42 (1.27) [197]	[401]

Panel B: ANCOVA Model of Between-Subjects Effects (Dependent Variable =Disclosure Credibility)

Source	S.S	d.f.	M.S.	F-Ratio	p-value*
Visual Anonymity	0.003	1	0.003	0.002	0.483
Social Identification	5.312	1	5.312	3.666	**0.028**
Visual Anonymity * Social Identification	1.262	1	1.262	0.871	0.176
Covariates:					
Financial Literacy	0.241	1	0.241	0.166	0.342
Investment Experience (in years)	37.153	1	37.153	25.643	**<0.001**
Error	572.299	395	1.449		
Total	5570.840	401			

*All p-values are one-tailed

H2 and H3 are tested by conducting a mediation and a moderated mediation analyses available in PROCESS (Hayes, 2013). A mediation analysis is conducted to investigate the effect of disclosure credibility on willingness to invest and to investigate whether disclosure credibility mediates the relationship between visual anonymity and willingness to invest. To test the mediation model, visual anonymity is defined as the predictor, investors' perceptions of disclosure credibility is defined as the mediator, and willingness to invest is defined as the outcome variable. Financial literacy and investing experience in years are defined as covariates[28]. Results of the mediation analysis, reported in Table 17 Panel A, indicate that disclosure credibility has a significant direct effect ($p < 0.001$) on willingness to invest. These results support the predictions made in H2.

In order to test whether disclosure credibility mediates the relationship between visual anonymity and willingness to invest, the indirect effect must also be significant. Results reported in Table 17 Panel B show that the indirect effect is not statistically significant because the bootstrapped confidence interval ranges from a low of -194.137 to a high of 207.837. The presence of zero within the bootstrapped confidence interval means that the indirect effect is not statistically significant[29]. H3 predicts a moderated

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[28] Two demographic variables had a significant effect on investors' willingness to invest. More precisely, the number of times investors purchased common stocks and investors' age had a significant relationship with investors' willingness to invest. Including the number of times investors purchased common stocks and investors' age as control variables produces similar results. Therefore, they are not included in the analyses.

[29] The number of samples for the bootstrap analysis was set to 10,000. Also, the confidence intervals are bias-corrected confidence intervals. The level of confidence was set to 90% to generate one tailed results.

mediation, the failure of finding a mediating effect of disclosure credibility results in a

failure of providing support for H3.

Table 17: Mediation Analysis of Visual Anonymity on Investors' Willingness to Invest

Panel A: Direct Effect of Visual Anonymity on Investors Willingness to Invest

	Coefficient	SE	t	Sig. (One-tailed)	LLCI	ULCI
(Constant)	-1285.09	539.144	-2.3836	**0.009**	-2173.98	-396.196
Predictor:						
Visual Anonymity	-125.916	206.4395	-0.6099	0.271	-466.275	214.4429
Mediator:						
Disclosure Credibility	1003.318	85.9004	11.68	**<0.001**	861.6933	1144.943
Covariates:						
Financial Literacy	147.4764	107.571	1.371	0.086	-29.877	324.8298
Investment Experience (in years)	-27.1271	18.1776	-1.4923	0.068	-57.0967	2.8425

Panel B: Indirect Effect of Visual Anonymity on Investors Willingness to Invest

Mediator	Effect	Boot SE	Bootstrapped LLCI	Bootstrapped ULCI
Disclosure Credibility	5.3867	121.965	-194.137	207.8367

LLCI: Lower level confidence interval
ULCI: Upper level confidence interval

Additional analyses are conducted to investigate the effect of visual anonymity and social identification on willingness to invest. Table 18 Panel A presents the descriptive statistics for the four cells. The descriptive statistics suggest that participants in the high social identification condition invested more (mean = $2,619.28; standard deviation = $2,438.04) than participants in the low social identification condition (mean = $2,610.16; standard deviation = $2,356.36). The descriptive statistics also suggest that participants with high social identification and who viewed video comments invested less (mean = $2,330.00; standard deviation = $2,474.56) than participants with high social identification condition and who read text comments (mean = $2,911.51; standard deviation = $2,377.48). Also, participants with low social identification and who read text comments invested less (mean = $2,448.31; standard deviation = $2,233.90) than participants with low social identification condition and who viewed video comments (mean = $2,775.31; standard deviation = $2,475.24).

Similar to H1, an ANCOVA analysis is conducted with willingness to invest as the dependent variable. Financial literacy is defined as a covariate. Table 18 Panel B presents the results of the ANCOVA analysis and the results are contrary to expectations. Results from Panel B suggest that visual anonymity and social identification did not have a main effect on willingness to invest ($p = 0.291$ and $p = 0.495$, respectively). Results from the ANCOVA analysis also show that the interaction between visual anonymity and social identification is statistically significant ($p = 0.028$). The results show that

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participants with low social identification are more influenced by bloggers' comments when they _read_ text comments than when they _view_ video comments, and participants with high social identification are more influenced by bloggers' comments when they _view_ video comments than when they _read_ text comments. As described above, the directionality of this interaction is in the opposite direction to the predictions made by the theoretical model advanced in this study. According to SIDE, participants in the low social identification condition should have invested more when they read text comments than when they viewed video comments and participants in the high social identification condition should have invested more when they viewed video comments than when they read text comments. The plot of the interaction is shown in Figure 5 and the plot of the expected interaction is plotted in Figure 6.

Table 18: Investors' Willingness to Invest

Panel A: Investors' Willingness to invest – Mean (Standard Deviation) [Sample Size]

	Social Identification		
Visual Anonymity	Low	High	Average
Text	$2,448.31 ($2,233.90) [103]	$2,911.51 ($2,377.48) [98]	$2,674.15 ($2,310.92) [201]
Video	$2,775.21 ($2,475.24) [101]	$2,330.00 ($2,474.56) [99]	$2,554.83 ($2,478.74) [200]
Average	$2,610.16 ($2,356.36) [204]	$2,619.28 ($2,438.04) [197]	[401]

Panel B: ANCOVA Model of Between-Subjects Effects (Dependent Variable = Willingness to Invest)

Source	S.S	d.f.	M.S.	F-Ratio	p-value*
Visual Anonymity	1726892.466	1	1726892.466	0.302	0.291
Social Identification	749.574	1	749.574	0.000	0.495
Visual Anonymity * Social Identification	20858037.928	1	20858037.928	3.654	**0.028**
Covariates:					
Financial Literacy	9310724.638	1	9310724.638	1.631	0.101
Error	2260761174.544	396	5708992.865		
Total	5033553256.000	401			

*All p-values are one-tailed
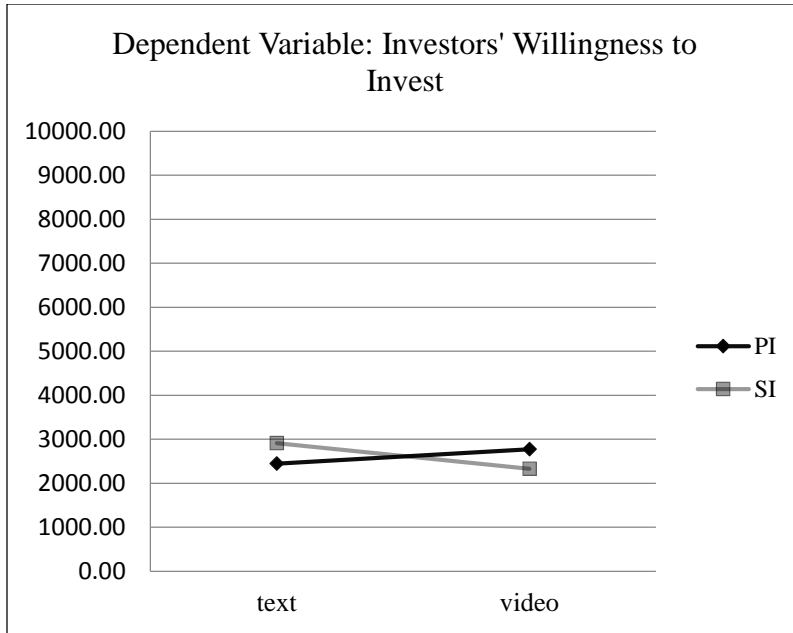
Figure 5: Found Interaction
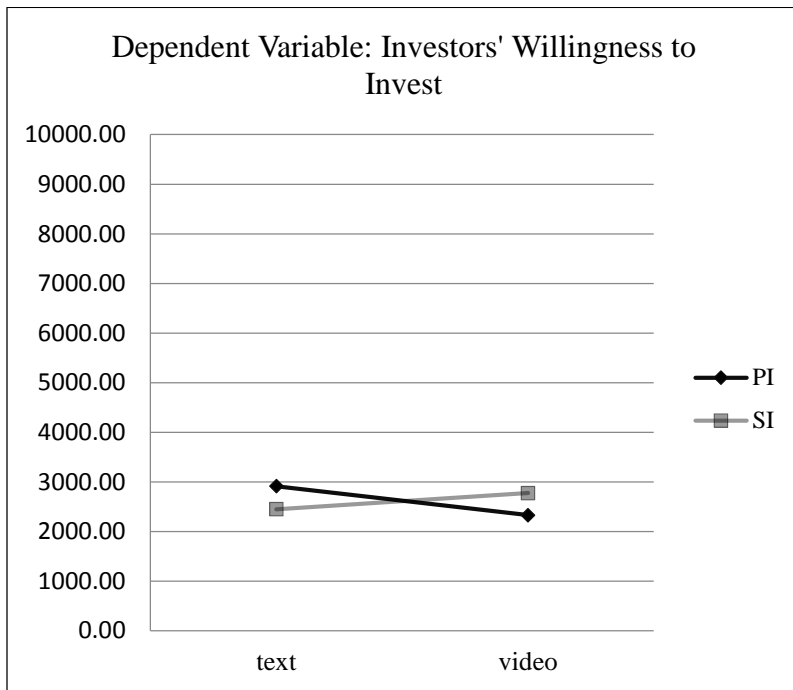
Figure 6: Expected Interaction

<center>Summary of Findings</center>

Findings from this study suggest that social identification impacts investors' perceptions of disclosure credibility. More precisely, the more investors identify with the group of bloggers' the less they perceive management disclosures' to be credible. This suggests that investors' are more influenced by the group norm created by bloggers' comments when they identify with the group of bloggers than when they do not identify with the group of bloggers. This evidence suggests that information available in forums impact investors' judgment and decision making. Interestingly, investors' social identification, by itself, does not have an effect on their willingness to invest.

While the results of this study suggest that social identification does not moderate the effect of visual anonymity on investors' perceptions of disclosure credibility, it does moderate the effect of visual anonymity on investors' willingness to invest. As shown in the supplementary analyses, social identification moderated the effect of visual anonymity on willingness to invest such that investors with low social identification had a higher willingness to invest when they viewed bloggers' video comments than when they read bloggers' text comments; and, investors with high social identification had a higher willingness to invest when they read bloggers' comments than when they viewed bloggers' comments. These results are in the opposite direction to the predictions made by SIDE. According to SIDE, when individuals have high social identification, visual anonymity obfuscates intragroup differences. In other words, video comments should highlight identity differences that are not accessible in the text comment format. As a results, bloggers comment should have a lower effect on investors' decision when visual

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anonymity is compromised. Findings from the supplemental analyses suggest that, for investors' with high social identification, bloggers' comments had a stronger effect on investors' willingness to invest when they were in a video format rather than in a text format.

The SIDE model also suggests that when individuals have low social identification, visual anonymity obfuscates intragroup similarities. In other words, video comments should highlight identity similarities that are not accessible in the text comment format. As a result, bloggers' comments should have a stronger effect on investors' decisions when visual anonymity is compromised. Findings from the supplemental analyses suggest that, for investors with low social identification, bloggers' comment had a weaker effect on investors' willingness to invest when they were in a video format rather than in a text format. Overall, the results of this study fail to support the theoretical predictions made by the SIDE model. Nevertheless, the results provide support for the moderating role of social identification, but in the opposite direction and only with respect to willingness to invest, not disclosure credibility.

Also, findings suggest that investors' perceptions of disclosure credibility and their willingness to invest do not share the same antecedents. Some factors may have an impact on investors' disclosure credibility and not their willingness to invest and vice versa. These findings suggest that studies that focus on investigating the effect of certain factors on disclosure credibility should investigate the effect of these factors on investors' investment decisions as well.

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<u>Conclusions</u>

Investors are consistently seeking new ways of acquiring information to reduce the information asymmetry between them and managers, and to reduce information cost. The flow of information in capital markets is witnessing a drastic change. Investors have access to numerous outlets of information and are exposed to the risk of including misleading information in their decision making process. The quality of investors' decisions is dependent on the quality of information they access. This study focused on a specific source of information: investment forums. The use of the internet has facilitated investors' access to unmonitored and unregulated investment forums. Information retrieved in these forums may be misleading and investors should be hesitant to incorporate that information into their decisions.

From a theoretical perspective, this study fails to support the predictions made by the SIDE model. Based on the SIDE model, the first hypothesis in this study predicts that bloggers' comment will have more (less) influence on investors' perceptions of disclosure credibility when investors have high (low) social identification and read bloggers' comments than when investors have high (low) social identification and view bloggers' comments. The findings suggest that the effect of visual anonymity on investors' perceptions of disclosure credibility does not depend on investors' social identification with other members of the forum. Therefore, these findings fail to provide support for the hypothesized effect of social identification and visual anonymity on investors' perceptions of disclosure credibility.

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The results provide support for the hypothesized positive effect of investors' perceptions of disclosure credibility on their willingness to invest. The results also suggest that visual anonymity does not have an effect on investors' willingness to invest through investors' perceptions of disclosure credibility. As a result, the moderating effect of social identification on this effect could not be tested. Thus, the results fail to provide evidence to support the predicted moderated mediation.

Nevertheless, the results suggest that social identification, by itself, influences investors' perceptions of disclosure credibility. This result indicates that information from forums such as the one used in this study are becoming part of investors' decision making and that the degree of their social identification with members of the forum strengthens the influence of these forums. In other words, members are more influenced by the norm created within these forums than non-members. Also, findings from the supplemental analyses suggest that whether investors are forum members and whether investors have access to clues about bloggers' identity jointly affect their willingness to invest. This finding suggests that investors who are not a member of a forum invested more when they had access to clues about bloggers' identity than when they did not have access to bloggers' identity. Also, investors who are member of a forum invested more when they did not have access to clues about bloggers' identity than when they had access to clues about bloggers' identity. Overall, these findings, although not hypothesized, provide evidence that information in social media has an impact on investors' judgment and decision making.

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While this study provides preliminary evidence that social identification impacts investors' decision making, several questions remain unanswered. Findings from this study suggest that investors' perceptions of disclosure credibility and their willingness to invest are impacted differently by social identification and visual anonymity. Future research should investigate why certain factors impact investors' perceptions of disclosure credibility and not their willingness to invest, or vice versa. Also, future research should investigate whether other social media outlets impact investors' judgment differently. For example, does information from blogs impact investors' decision more than information from forums? Does a company involvement in social media impact the way investors' process information? Do investors process information from regulated social media differently from information in unregulated social media?

As with all studies, this study has some limitations. The data was collected from Amazon Mechanical Turk. Individual investors from Amazon Mechanical Turk are very familiar with internet tools and spend a significant amount of time online. Therefore, findings from this study may not be generalizable to nonprofessional investors who are not internet savvy or do not spend a significant amount of time seeking information online.

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GENERAL CONCLUSIONS

The focus of this dissertation is on investors' perceptions of disclosure credibility. All three chapters investigate the effect of certain factors on investors' perceptions of disclosure credibility and the impact of these factors on investors' willingness to invest. Findings from this dissertation support the important role of disclosure credibility in investors' judgment and decision making process by suggesting that investors' perceptions of disclosure credibility is a key determinant of their willingness to invest. Across all chapters investors' perceptions of disclosure credibility had a significant effect on investors' willingness to invest.

Each chapter of this dissertation contributes to the literature by providing a better understanding of investors' evaluation of disclosure credibility. Findings from the first study provide evidence that managers' pre-existing reputation has an effect on investors' perceptions of disclosure credibility, such that investors have higher perceptions of disclosure credibility when managers have a good pre-existing reputation than when managers have bad pre-existing reputation. This finding suggests that investors use management's pre-existing reputation as a heuristic to evaluate disclosure credibility. Findings from Study 1 also show, as suggested by Mercer (2004), that management credibility has an effect on disclosure credibility and that management credibility mediates the relationship between management's pre-existing reputation and investors' perceptions of disclosure credibility. While these findings provide support for Mercer's (2004) framework, they highlight and raise new measurement issues. Findings from Study 1 suggest that the trust component of management credibility and disclosure

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credibility loaded in one component. In other words, disclosure credibility and investors' trust in mangers may not be distinguishable constructs and that care must be taken when testing Mercer's (2004) framework. The trust component of management credibility should be extracted before investigating the relationship between management credibility and disclosure credibility. Otherwise, analyses may suffer from statistical issues such as multicollinearity due to the high correlation between the trust component of management credibility and disclosure credibility.

Results from Study 1 also provide support for the moderating role of deception detection DAs. The direct and indirect effects of pre-existing reputation on disclosure credibility were diluted by detecting deception. These results suggest that deception detection DAs impact investors' judgment and decision making and that these DAs can be used to detect deception at an early stage and can help investors make better decisions.

Study 2 investigates the effect of detecting linguistic manipulations in corporate narratives on investors' perceptions of disclosure credibility and their willingness to invest when managers have an incentive to manipulate the information in these reports and when managers have no incentive to manipulate the information in these reports. The results from Study 2 show that the effect of detecting linguistic manipulations on investors' perceptions of disclosure credibility and willingness to invest does not differ across managerial incentives. These results provide evidence that managerial incentives do not reduce the effect of these DAs on investors' judgment and decision making and, therefore, provide evidence that investors can use these DAs to improve their decisions.

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These results also provide insight to the corporate social responsibility literature. A company's environmental performance had an effect on investors' perception of disclosure credibility and their willingness to invest, even after controlling for investors' environmental beliefs. These results suggest that a company's environmental performance matters and that companies may be able to gain capital by improving their environmental performance.

Study 3 explores whether the format of forum comments affects investors' perceptions of disclosure credibility and their willingness to invest, and how social identification impacts this relationship. There is a paucity of research on the implications of the growth of social media in the financial world. Findings from this study contribute to the literature by highlighting some of the concerns associated with the spread of information on social media and by explaining how information in social media impacts investors' decision making.

Study 3 shows that social identification impacts investors' perceptions of disclosure credibility such that, the more investors identify themselves with a group of forum users, the more they are influenced by forum comments. Findings from Study 3 also suggest that social identification and visual anonymity have a joint effect on investors' willingness to invest. More precisely, the effect of visual anonymity on investors' willingness to invest depends on individuals' social identification. On the one hand, individuals with low social identification are more influenced by forum comments when they read forum comments than when they view forum comments. On the other hand, individuals with high social identification are more influenced by the forum

comments when they view video comments than when they read text comments. While

results from Study 3 are in the opposite direction to the expectations made in the

theoretical model, they provide evidence that forum comments may impact investors'

decisions and that individuals' social identification may explain the effect of these

comments on their investment decisions.

Future Research

Study 1 operationalized deception detection by informing participants that there is

a 90% likelihood that the person in the downloaded video is being deceptive in the

deception detected condition and that there is a 10% likelihood that the person in the

downloaded video is being deceptive in the deception not detected condition. Future

research should investigate whether specific features of the DA such as the accuracy of

deception detection may impact investors' reactions to the output of the DA. For

example, future research can investigate whether the effect of the output of the deception

detection DA changes when the DA's accuracy is lowered to 80% vs. 20%, 70% vs.30%,

or 60% vs.40%. Lowering the accuracy of the DA may dilute the size of the violation and

therefore, the effectiveness of these DAs.

Moreover, CEOs understanding of such technology remains unknown. Future

research should investigate whether CEOs *ex-ante* vs. *ex-post* knowledge about such

technology affects investors' reactions to the DA. For example, future research can

investigate whether detecting deception for a CEO who knows *ex-ante* that the video

disclosure is going to be analyzed has a similar effect on investors as detecting deception

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for a CEO who does not know *ex-ante* that the video disclosure is going to be analyzed. CEOs reaction to such technology may affect investors' beliefs about the accuracy of the DA.

Linguistic manipulation is operationalized in Study 2 by informing participants that analyzed narrative was not free from tone manipulations. Nevertheless, tone is one of many other types of linguistic manipulations. Future research should investigate whether the type of linguistic manipulation detected has a different effect on nonprofessional investors' decision making. For example, does a DA that detects optimism in corporate reports have a similar effect on investors' judgment and decision making as a DA that detects certainty? Also, in Study 2, linguistic manipulations are detected in the MD&A section of the annual report, which is reviewed by the external auditor. The effect of detecting linguistic manipulations may not have a similar effect if it is detected in a report that is not subject to a review by external auditors. Future research should explore whether the location of language manipulations matters.

Research on the effect of social media on investors' judgment and decision making is still at its infancy. Study 3 provides some insight on how information on social media impacts investors' decision making, but several questions remain unanswered. Study 3 provides participants with comments from an unregulated forum. Future research should investigate whether other social media outlets impact investors' judgments differently. For example, does information from blogs impact investors' decisions more than information from forums? Does a company involvement in social media impact the

way investors process information? Do investors process information from regulated social media differently from information from unregulated social media?

Findings from Study 3 also suggest that social identification and visual anonymity impact investors' perceptions of disclosure credibility and willingness to invest differently. Findings suggest that social identification has an effect on investors' perceptions of disclosure credibility but does not have an effect on their willingness to invest. Also, findings suggest that social identification and visual anonymity have a joint effect on investors' willingness to invest, but not on their perceptions of disclosure credibility. Together, these findings suggest that investors' willingness to invest and their perceptions of disclosure credibility do not share the same antecedents and that these constructs should be studied separately.

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APPENDIX A:
INSTRUMENTS FOR STUDY 1

RESEARCH STUDY ON INVESTMENT DECISIONS

You are invited to participate in a research project conducted by Mr. Anis Triki (principal investigator) and Dr. Vicky Arnold (co-investigator) at the University of Central Florida, Kenneth G. Dixon School of Accounting. You will be asked to answer questions that will take about 30 minutes of your time. There are no anticipated potential risks associated with this study. The purpose of the research is to examine non-professional investors' investment decisions.

In this project, we ask you to examine information about Armano, Inc. and answer questions pertaining to your analysis. At the end of the exercise, we ask you to provide some general demographic information. The case information is not intended to include all the information that would be available if you were evaluating Armano, Inc. However, for purposes of this study, base your judgments on the information provided. As the results of this study will be helpful to accounting research, answering each question in a serious and thoughtful manner is very important. Please make sure to carefully read all the materials presented to you before answering the questions.

Whether you take part is up to you. Your responses will be completely anonymous, your name will not be collected or associated in any way with your responses, and only aggregated data will be included in any publications or presentations resulting from this study. If you decide to participate in this project, please understand that your participation is voluntary and that you have the right to withdraw your consent or discontinue participation at any time without penalty. If you have any questions regarding this project, you may contact the researchers by email at Anis.Triki@ucf.edu or Vicky.Arnold@ucf.edu

You must be 18 years of age or older to take part in this research study.

Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. This agreement shall be interpreted according to United States law.

If you consent to take part in this survey, please click the "Forward Button" located in the bottom right of the screen to advance.

INSTRUCTIONS:

Please read the following information about Armano, Inc. very carefully. You will be asked a series of questions based on the information you read. These questions will relate to the following: (1) The information communicated by Armano's CEO, and (2) Armano as a potential investment option.

Our research examines individual investment behavior. The survey starts with qualification questions to assess whether you have the necessary experience. You will not be able to access the survey if you do not meet the qualifications for this study.

If you meet the qualifications for the study, you will be able to access information about Armano, Inc. The survey will include questions to assess whether you read the information provided to you. Unfortunately, we are only allowed to pay you if you answer these questions correctly (to verify that you read the information) and if you complete the survey.

Please do not seek outside information while completing the task - we are interested in your responses to questions that we ask based on the specific information provided. Additionally, it is important that you complete the task in one session, so please ensure that you have approximately 30 minutes before proceeding. As you work through the materials, please do not use your browser's back button to return to previously-viewed pages.

By clicking "yes" you agree to <u>read</u> the following case carefully and answer each question to the best of your ability. If you click "no", you will exit the survey.

Yes
No

Have you ever made personal investments in the common stock of a company?

Yes

No

Approximately, how many years of personal investment experience do you have?

Approximately, how many times have you purchased common stock of a company as a personal investment?

Description of task

Assume that you have accumulated $50,000 of personal savings, and you have decided to invest $10,000 of your savings by purchasing stocks. You want to invest your savings in a company that you believe has potential for growth and will increase the value of your investment in the long term.

When investing in the stock market, there is no guarantee for a good return on your investment. Even the most experienced investors may make poor investment decisions. One of the reasons why poor investment decisions occur is that the investors rely on information reported by management and that information is not necessarily correct. It is up to you as an individual investor to gauge whether a company's disclosure truly represents the economic state of its business and whether the stock is a worthy investment for your personal savings.

In this study, your task is to follow Armano, an international confectionery manufacturer and retail operator led by Chief Executive Officer, Dan Athens. You will receive both financial and nonfinancial information about Armano as events occur and as information is released. After gathering information about the company, you will be asked to assess the credibility of Armano's management and their disclosure, and then to make an investment decision.

Please do not seek outside information while completing the task. There are no correct or incorrect responses - we are interested in your responses to the information provided.

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Introduction to Armano

Armano is a medium-sized, international confectionery manufacturer and retail operator in the United States, Canada, and Europe. The company offers an extensive line of premium chocolates and other confectionery products. Armano's 53,000 square-foot facility in the Midwest has the capacity to produce hundreds of different chocolate candies and other confectionery products for its over 300 worldwide locations. Armano is traded on the New York Stock Exchange.

[Good Pre-existing Reputation condition]

At the beginning of fiscal Year (2012), *The Business Journal* published a brief story about the company's CEO, which is presented below

Good Guys, Bad Guys and This Guy

Dan Athens, CEO of Armano, for less than 2 years, stands out in the industry as an outstanding executive with bulldog tenacity. This tenacity has had a strong influence on Dan Athens' approaches to financial reporting issues. In addition to reporting information required by the SEC, he has built a reputation in the industry for encouraging additional disclosures about the company. Acknowledging that investors may want more information about the company, his focus is on getting results and telling everyone what he is doing to get them.

Prior to joining Armano in 2010, Dan Athens was leading another company, Chocolatiers Inc. While at Chocolatiers Inc., Dan Athens was consistently in agreement with the company's auditor. As a result, the auditor stood for re-election and remained Chocolatiers Inc.'s auditor. During an interview with the press, Dan Athens said "I believe in conducting our business with transparency. Layers of corporate governance, including the external auditors and the audit committee, create assurance that the controls are working."

RateFinancials, an independent research firm, gives high marks to Armano's earning quality because of Dan Athens' conservative accounting policy and estimate choices and because of his disclosure policy, which reflects greater forthcomingness with information provided than is required or typical of other companies in the industry.

Analysts seem to have very positive views about Armano - a testament to management's reputation for open and honest communication with the investment community.

[Bad Pre-existing Reputation condition]

At the beginning of fiscal year (2012), *The Business Journal* **published a brief story about the company's CEO, which is presented below**

Good Guys, Bad Guys and This Guy

Dan Athens, CEO of Armano for less than 2 years, stands out in the industry as an aggressive executive with bulldog tenacity. This tenacity has had a strong influence on Dan Athens' approaches to financial reporting issues. Except for reporting information required by the SEC, he has built a reputation in the industry for opposing additional disclosures about the company. While acknowledging that investors may want more information about the company, his focus is on getting results, not on telling everyone what he is doing to get them.

Prior to joining Armano in 2010, Dan Athens was leading another company, Chocolatiers Inc. While at Chocolatiers Inc., Dan Athens was consistently in disagreement with the company's auditor. As a result, the auditor declined to stand for re-election and another audit firm became Chocolatiers Inc.'s new auditor. During an interview with the press, Dan Athens said ''I believe in conducting our business with secrecy. Layers of corporate governance, including the external auditors and the audit committee, often create costly and wasteful obstacles that must be worked around.''

RateFinancials, an independent research firm, gives low marks to Armano's earning quality because Dan Athens' aggressive accounting policies and estimate choices and because of his disclosure policies which, while not in violation of requirements, is less forthcoming with information than other companies in the industry.

Analysts seem to have mixed views about Armano - a testament to management's reputation for lack of communication with the investment community.

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Analysts' forecasts

Analysts' consensus forecasts of annual earnings reflect growth in Armano's revenue and earnings into the foreseeable future. Despite signs that the economy may be slowing, most analysts expect affordable luxuries, like Armano's chocolates and other confectionery, to remain largely unaffected by weakening macroeconomic conditions.

A sweet victory for Armano as NASF announces 2012 award winners

(Business Wire) – October 4, 2012 – Armano, a premium chocolate manufacturer, won the 2012 Most Outstanding Chocolate Award yesterday at the 42nd Annual Product Award Sponsored by the National Association for Specialty Foods (NASF). Armano's mouthwatering, peppermint-infused chocolate truffles were the clear favorite of the distinguished panel of judges who sampled hundreds of chocolate delights before awarding Armano the highly-coveted prize. In response to the news, analysts revised upward their forecasts of annual earnings for the year ended December 31, 2012.

Armano reports 2012 results

(Business Wire) – January 22, 2013 – Earlier today Armano released earnings for the year ended December 31, 2012. The company reported increases of approximately 22% from the previous year in both revenues ($7.3 billion) and net income ($551 million). Armano's 2012 reported results were consistent with management's guidance and analysts' recently revised forecasts. During today's conference call, Dan Athens, Armano's Chief Executive Officer, attributed the spike in fourth-quarter revenues to sales of Armano's award-winning peppermint-infused chocolate truffle. Sales of the truffle nearly doubled compared to fourth-quarter sales last year.

Armano included the following performance information in their earnings press release:

Income Statement
(In thousands of dollars)

	2012	2011	2010
Net Revenue	$7,261,657	$5,952,178	$4,931,382
Cost of Goods Sold	(3,623,567)	(2,987,993)	(2,490,348)
Gross Profit	$3,638,090	$2,964,185	$2,441,034
Expenses:			
Operating Expenses	(1,946,124)	(1,559,471)	(1,277,228)
Depreciation and Amortization Expense	(394,888)	(337,223)	(287,733)
General and Administrative Expense	(435,699)	(357,131)	(295,883)
Operating Income	$861,379	$710,360	$580,190
Income Tax	(310,096)	(255,730)	(208,868)
Net Income	$551,283	$454,630	$371,322

Health-conscious chocolate lovers anticipate Armano's new exotic collection

(Business Wire) – September 26, 2013 – Armano, a leader in the confectionery industry, announced today the latest addition to its line of award-winning chocolates. Armano's exotic chocolate collection features unique blends of premium, dark chocolate paired with exotic fruits and spices. Dan Athens, Armano's Chief Executive Officer, cited medical research demonstrating the health benefits and antioxidant properties of premium, dark chocolate as the inspiration for the new collection. Armano will begin test marketing the collection next month.

Armano reports 2013 results

(Business wire) – January 24, 2014 – Earlier today Armano released earnings for the year ended December 31, 2013. The company reported revenues of $8.8 billion, an approximately 21% increase from the previous year, and net income of $673 million, an approximately 19% increase from 2012. Reported revenues and net income were consistent with management's guidance and analysts' forecasts, in today's conference call, Dan Athens, Armano's Chief Executive Officer, attributed the 2% difference between growth in revenues and earnings to the closure of 20 underperforming stores. Mr. Athens reiterated his expectation that these store closures will positively impact Armano's long term growth and profitability. He also discussed efforts made to assist employees directly affected by the closures. The conference call concluded with Mr. Athens announcing the successful test-marketing of Armano's Exotic Chocolate Collection. The collection is scheduled for world-wide release next month.

Armano included the following performance information in their earnings press release:

Income Statement
(In thousands of dollars)

	2013	2012	2011
Net Revenue	$8,801,128	$7,261,657	$5,952,178
Cost of Goods Sold	(4,382,962)	(3,623,567)	(2,987,993)
Gross Profit	$4,418,166	$3,638,090	$2,964,185
Expenses			
Operating Expenses	(2,376,305)	(1,946,124)	(1,559,471)
Depreciation and Amortization Expense	(462,414)	(394,888)	(337,223)
General and Administrative Expense	(528,068)	(435,699)	(357,131)
Operating Income	$1,051,379	$861,379	$710,360
Income Taxes	(378,742)	(310,096)	(255,730)
Net Income	$672,637	$551,283	$454,630

Armano announces restatement

(Business wire) – March 10, 2014 – Armano, an international confectionery manufacturer and retail operator, announced today that it will restate its financial statements.

Please make sure to watch the video below. ***You will exit the survey if you fail to watch the full video!***

[Deception Detected Condition]

Evaluating the video

Thanks to recent technological developments, Deception Expert, Inc. has developed a new software that is capable of reliably detecting deception from recorded videos. This software has been tested multiple times and has shown a high accuracy rate. The software can accurately detect deception 9 times out of 10. Several investment groups, government agencies, marketing companies, and research institutes have purchased deception detection software to improve their ability to detect deception from videos.

When people make misleading statements, they exhibit distinctive behaviors that the software is capable of detecting. The software has several technologically advanced functions such as voice pitch analyses, measures of pupil dilatation, tracking eye movements, counting head movements, etc. These functions allow the software to generate a deception likelihood percentage. The percentage is calculated by using advanced algorithms that take consideration of all the collected deception indices.

Luckily, you have access to this software and you were able to run Dan Athens' video when he was explaining the reason for the earning restatement. You downloaded the video into the software and obtained the following result:

There is a 90% likelihood that the person in the downloaded video is being deceptive.

199

[Deception Not Detected Condition]

Evaluating the video

Thanks to recent technological developments, Deception Expert, Inc. has developed a new software that is capable of reliably detecting deception from recorded videos. This software has been tested multiple times and has shown a high accuracy rate. The software can accurately detect deception 9 times out of 10. Several investment groups, government agencies, marketing companies, and research institutes have purchased deception detection software to improve their ability to detect deception from videos.

When people make misleading statements, they exhibit distinctive behaviors that the software is capable of detecting. The software has several technologically advanced functions such as voice pitch analyses, measures of pupil dilatation, tracking eye movements, counting head movements, etc. These functions allow the software to generate a deception likelihood percentage. The percentage is calculated by using advanced algorithms that take consideration of all the collected deception indices.

Luckily, you have access to this software and you were able to run Dan Athens' video when he was explaining the reason for the earning restatement. You downloaded the video into the software and obtained the following result:

There is a 10% likelihood that the person in the downloaded video is being deceptive.

Please answer the following question:

What do you think this study was about?

Research in decision making shows that people, when making decisions and answering questions, prefer not to pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't read questions carefully. If you read this question and have read all the other questions, please select the box marked "other" and type "effort" (do not type the quotation marks) in the box below. Thank you for participating and taking the time to read carefully!

Investment decisions

Earnings restatement

Financial analysis

Other [fill-in-the-blank box provided]

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements <u>about Dan Athens:</u>

I believe that Dan Athens is a competent person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Dan Athens is a knowledgeable person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Dan Athens is a qualified person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

202

I have confidence in Dan Athens' abilities.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Dan Athens is a reliable source of information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Dan Athens is a truthful person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Athens is an honest person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Athens is a genuine person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Athens is a person with integrity.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Athens is acting in the best interest of Armano's shareholders.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

Less than $102

Exactly $102

More than $102

Don't know

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

More than today

Less than today

Exactly the same

Don't know

If the interest rate falls, what should happen to bond prices?

Rise

Fall

Stay the same

Don't know

Please indicate whether this statement is true or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.

True

False

Don't know

Please indicate whether this statement is true or false: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

True

False

Don't know

206

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements <u>about the explanation for the earnings restatement:</u>

The explanation for the earnings restatement is believable.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings restatement is accurate.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings restatement is trustworthy.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

207

The explanation for the earnings restatement is unbiased.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings restatement is complete.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Armano is an attractive investment:

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Armano's performance is:

Very Bad	Bad	Somewhat Bad	Neither Good nor Bad	Somewhat Good	Good	Very Good

---

Please slide the bar below to indicate how much of your $10,000 you would like to invest in Armano?

0   1000   2000   3000   4000   5000   6000   7000   8000   9000   10000

You would like to invest in US Dollars

How likely are you to recommend Armano to a friend?

Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely

---

I believe that Armano is a good investment.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The article published by The Business Journal indicated that Dan Athens' reputation was:

Very Bad	Bad	Somewhat Bad	Neither Good nor Bad	Somewhat Good	Good	Very Good

---

The deception detection software conclusion was that:

There is a 90% likelihood that the person in the downloaded video is being deceptive.

There is a 10% likelihood that the person in the downloaded video is being deceptive.

I agree with the results of the deception detection software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I have confidence in the results of the deception detection software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I can detect deception without the deception detection software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

What do you think is the likelihood that the person in the video is lying?

Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely

211

I incorporated the deception detection software's results into my decisions.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I relied on the results of the deception detection software.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that the deception detection software is capable of detecting deception.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

The results of the deception detection software are convincing.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

Please indicate to what extent you agree with the following statements.

These questions aim to measure your expectations <u>about CEOs behavior in general, and are NOT related to the previous materials.</u>

I expect CEOs to communicate truthful information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect CEOs to behave ethically.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect regulatory enforcement to prevent CEOs from communicating misleading information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I expect auditors to prevent CEOs from communicating misleading information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect CEOs to communicate information objectively.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect CEOs to do what is best for their investors.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Instructions: Please answer a short series of demographic questions. Your responses will remain confidential.

What is your gender?

Male

Female

Prefer not to answer

What is your age?

What is your ethnic background?

Asian

African American

Hispanic

Native American

Caucasian

Others

Prefer not to answer

What is the highest level of education you have completed?

Less than High School

High School / GED

Some College

2-year College Degree

Undergraduate Degree

Masters Degree

Doctoral Degree

[These questions appear only if participants clicked on "Undergraduate Degree" in the previous question]

Is your undergrade degree in:

Accounting

Finance

Other business degree

Non business degree

Are you currently pursuing a master degree?

Yes

No

Have you ever used financial statements to evaluate a company's performance?

Yes

No

Do you plan to invest in the common stock of a company at some time in the future?

Yes

No

How many Accounting courses have you completed (undergraduate + graduate)?

How many Finance courses have you completed (undergraduate + graduate)?

Do you have any prior business work experience?

Yes

No

219

[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of prior business work experience do you have?

[   ]

Do you have any prior work experience in financial analysis?

Yes

No

[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of prior work experience in financial analysis do you have?

[ ]

IMPORTANT PAYMENT INFORMATION:

In order for us to compensate you for your time and effort, please carefully follow the instructions shown below:

Please make up a 5-digit completion code number (e.g., last 5-digits of your phone number). The number should be between 10000 and 99999. Please do not choose 12345, your zip code, or use the same number five times (e.g., 11111). Please make a note of the number you created. You will need to enter the same number on Mechanical Turk again after submitting this survey in order to get paid.

Please enter the 5-digit code into the box shown below.

Please enter this code on the Mechanical Turk Page after submitting this survey. Otherwise, we will not know that you completed the survey and will not be able to compensate you.

222

APPENDIX B:
INSTRUMENTS FOR STUDY 2

RESEARCH STUDY ON INVESTMENT DECISIONS

You are invited to participate in a research project conducted by Mr. Anis Triki (principal investigator) and Dr. Vicky Arnold (co-investigator) at the University of Central Florida, Kenneth G. Dixon School of Accounting. You will be asked to answer questions that will take about 30 minutes of your time. There are no anticipated potential risks associated with this study. The purpose of the research is to examine non-professional investors' investment decisions.

In this project, we ask you to examine information about Chocolato, Inc. and answer questions pertaining to your analysis. At the end of the exercise, we ask you to provide some general demographic information. The case information is not intended to include all the information that would be available if you were evaluating Chocolato, Inc. However, for purposes of this study, base your judgments on the information provided. As the results of this study will be helpful to accounting researchers, answering each question in a serious and thoughtful manner is very important. Please make sure to carefully read all the materials presented to you before answering the questions.

Whether you take part is up to you. Your responses will be completely confidential, your name will not be collected or associated in any way with your responses, and only aggregated data will be included in any publications or presentations resulting from this study. If you decide to participate in this project, please understand that your participation is voluntary and that you have the right to withdraw your consent or discontinue participation at any time without penalty. If you have any questions regarding this project, you may contact the researchers by email at Anis.Triki@ucf.edu or Vicky.Arnold@ucf.edu.

You must be 18 years of age or older to take part in this research study.

Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. This agreement shall be interpreted according to United States law.

If you consent to take part in this survey, please click the "Forward Button" located in the bottom right of the screen to advance.

INSTRUCTIONS:

Please read the following information about Chocolato, Inc. very carefully. You will be asked a series of questions based on the information you read. These questions will relate to the following: (1) The information communicated by Chocolato's CEO, and (2) Chocolato as a potential investment option.

Our research examines individual investment behavior. The survey starts with qualification questions to assess whether you have the necessary experience. You will not be able to access the survey if you do not meet the qualifications for this study.

If you meet the qualifications for the study, you will be able to access information about Chocolato, Inc. The survey will include questions to assess whether you read the information provided to you. Unfortunately, **we are only allowed to pay you if you answer these questions correctly (to verify that you read the information) and if you complete the survey. PLEASE NOTE that we will also refuse payment to participants who participate in this study more than once (i.e. responses with duplicate IP addresses) and to participants who spend an unreasonably short amount of time reading the experimental materials.**

Please do not seek outside information while completing the task - we are interested in your responses to questions that we ask based on the specific information provided. Additionally, it is important that you complete the task in one session, so please ensure that you have approximately 30 minutes before proceeding. As you work through the materials, please do not use your browser's back button to return to previously-viewed pages.

By clicking "yes" you agree to read the following case carefully and answer each question to the best of your ability. If you click "no", you will exit the survey.

Yes

No

Have you ever made personal investments in the common stock of a company?

Yes

No

Approximately, how many years of personal investment experience do you have?

Approximately, how many times have you purchased common stock of a company as a personal investment?

227

www.manaraa.com

Description of task

Assume that you have accumulated $50,000 of personal savings, and you have decided to invest $10,000 of your savings by purchasing stocks. You want to invest your savings in a company that you believe has potential for growth and will increase the value of your investment in the long term.

When investing in the stock market, there is no guarantee for a good return on your investment. Even the most experienced investors may make poor investment decisions. One of the reasons why poor investment decisions occur is that the investors rely on information reported by management and that information is not necessarily correct. It is up to you as an individual investor to gauge whether a company's disclosure truly represents the economic state of its business and whether the stock is a worthy investment for your personal savings.

In this study, your task is to follow Chocolato, an international confectionery manufacturer and retail operator led by Chief Executive Officer, Dan Johnson. You will receive both financial and nonfinancial information about Chocolato as events occur and as information is released. After gathering information about the company, you will be asked to assess the credibility of Chocolato's management and their disclosure, and then to make an investment decision.

Please do not seek outside information while completing the task. We are interested in your responses to the information provided.

Introduction to Chocolato

Chocolato is a medium-sized, international confectionery manufacturer and retailer operating in the United States, Canada, and Europe. The company offers an extensive line of premium chocolates and other confectionery products. Chocolato's 53,000 square-foot facility in the Midwest has the capacity to produce hundreds of different chocolate candies and other confectionery products for its over 300 worldwide locations. Chocolato is traded on the New York Stock Exchange.

Analysts' forecasts

Analysts' consensus forecasts of annual earnings reflect growth in Chocolato's revenue and earnings into the foreseeable future. Most analysts expect affordable luxuries, like Chocolato's chocolates and other confectionery, to remain largely unaffected by weakening macroeconomic conditions.

[Incentive Condition]

At the beginning of fiscal year 2014, *The Business Journal* **published a brief story about the company's environmental performance, which is presented below:**

Chocolato is one of 13 chocolate companies that operate in the U.S. Among its competitors, Chocolato ranks on the bottom of the list with regard to its environmental performance. Chocolato's disregard for the environment is concerning. In 2013, the company's actions have increased the pollution in communities living around the manufacturing facilities. Chocolato's carbon emissions and energy consumption are significantly above the industry's average.

The company's environmental performance clearly reflects its managers' disregard for the environment and the environmental implications of their operations. As a result, Chocolato ranked repeatedly low on rankings established by environmental ranking agencies. Overall, Chocolato is considered to be the worst environmental performer in the chocolate industry.

[No Incentive Condition]

At the beginning of fiscal year 2014, *The Business Journal* **published a brief story about the company's environmental performance, which is presented below:**

Chocolato is one of 13 chocolate companies that operate in the U.S. Among its competitors, Chocolato ranks on the top of the list with regard to its environmental performance. Chocolato's care for the environment is outstanding. In 2013, the company's actions have not increased the pollution in communities living around the manufacturing facilities. Chocolato's carbon emissions and energy consumption are significantly below the industry's average.

The company's environmental performance clearly reflects its managers' care for the environment and the environmental implications of their operations. As a result, Chocolato ranked repeatedly high on rankings established by environmental ranking agencies. Overall, Chocolato is considered to be the best environmental performer in the chocolate industry.

Chocolato Annual Report

Results:

In 2013, the company realized revenue of $8.8 billion, an approximately 21% increase from 2012, and net income of $673 million, an approximately 19% increase from 2012.

Income Statement
(In thousands of dollars)

	2013	2012	2011
Net Revenue	$8,801,128	$7,261,657	$5,952,178
Cost of Goods Sold	(4,382,962)	(3,623,567)	(2,987,993)
Gross Profit	$4,418,166	$3,638,090	$2,964,185
Expenses			
Operating Expenses	(2,376,305)	(1,946,124)	(1,559,471)
Depreciation and Amortization Expense	(462,414)	(394,888)	(337,223)
General and Administrative Expense	(528,068)	(435,699)	(357,131)
Operating Income	$1,051,379	$861,379	$710,360
Income Taxes	(378,742)	(310,096)	(255,730)
Net Income	$672,637	$551,283	$454,630

Chocolato Annual Report

Management Discussion & Analysis (MD&A) Section:

Environmental Matters:

We are committed to minimizing the environmental impact of our operations, regularly reviewing the ways in which we manage our operations and secure our supply of raw materials. We aim to decrease waste generation and greenhouse gas emissions, while improving our company-wide recycling rate.

Our Product Excellence Program provides us with an effective product quality and safety program. This program is intended to ensure that all products we purchase, manufacture and distribute are safe, are of high quality and comply with all applicable laws and regulations. Through the program, we evaluate the supply chain including ingredients, packaging, processes, products, distribution and the environment to determine where product quality and safety controls are necessary. We identify risks and establish controls intended to ensure product quality and safety.

Chocolato is committed to demonstrating high standards of global environmental management and achieving environmental best practices. The company is committed to the continual improvement of its environmental management system and practices, including resource conservation and pollution prevention.

[Tone Manipulation Detected]

Evaluating the Management Discussion & Analysis (MD&A) Section

Thanks to recent technological advancements, ToneDetectionExperts, Inc. has developed a software that is capable of analyzing the tone used in narratives and determining whether the analyzed narratives are free from tone manipulations. Tone manipulations relate to the use of certain words to influence readers' perception of a company. The software has a built in algorithm and dictionary that allows it to define and calculate the frequency of certain words. Once the frequency of these words has been calculated, the software generates an output to indicate whether the analyzed narratives are free from tone manipulations. Several investment groups, government agencies, marketing companies, and research institutes have purchased this software to improve their ability to detect tone manipulation within narratives.

Luckily, you have access to this software and you have a chance to determine whether the narrative used in the MD&A section of the annual report is free from tone manipulations. You copied the MD&A narrative into the software and obtained the following result:

The analyzed narrative is <u>NOT</u> free from tone manipulations.

[Tone Manipulation Not Detected]

Evaluating the Management Discussion & Analysis (MD&A) Section

Thanks to recent technological advancements, ToneDetectionExperts, Inc. has developed a software that is capable of analyzing the tone used in narratives and determining whether the analyzed narratives are free from tone manipulations. Tone manipulations relate to the use of certain words to influence readers' perception of a company. The software has a built in algorithm and dictionary that allows it to define and calculate the frequency of certain words. Once the frequency of these words has been calculated, the software generates an output to indicate whether the analyzed narratives are free from tone manipulations. Several investment groups, government agencies, marketing companies, and research institutes have purchased this software to improve their ability to detect tone manipulation within narratives.

Luckily, you have access to this software and you have a chance to determine whether the narrative used in the MD&A section of the annual report is free from tone manipulations. You copied the MD&A narrative into the software and obtained the following result:

The analyzed narrative is free from tone manipulations.

Please answer the following question:

What do you think this study was about?

Research in decision making shows that people, when making decisions and answering questions, prefer not to pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't read questions carefully. If you read this question and have read all the other questions, please select the box marked "other" and type "effort" (do not type the quotation marks) in the box below. Thank you for participating and taking the time to read carefully!

Investment decisions

Environmental Performance

Financial analysis

Other [fill-in-the-blank box provided]

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements about the Environmental Matters section in the MD&A section of the Annual Report:

The information reported in the MD&A section is believable.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The information reported in the MD&A section is accurate.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The information reported in the MD&A section is trustworthy.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The information reported in the MD&A section is unbiased.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The information reported in the MD&A section is complete.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

Less than $102

Exactly $102

More than $102

Don't know

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

More than today

Less than today

Exactly the same

Don't know

If the interest rate falls, what should happen to bond prices?

Rise

Fall

Stay the same

Don't know

Please indicate whether this statement is true or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.

True

False

Don't know

Please indicate whether this statement is true or false: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

True

False

Don't know

I believe that Chocolato is an attractive investment:

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Chocolato's performance is:

Very Bad	Bad	Somewhat Bad	Neither Good nor Bad	Somewhat Good	Good	Very Good

---

Please slide the bar below to indicate how much of your $10,000 you would like to invest in Chocolato?

| 0 | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 |

You would like to invest in US Dollars

How likely are you to recommend Chocolato to a friend?

Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely

I believe that Chocolato is a good investment.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements <u>about Dan Johnson:</u>

I believe that Dan Johnson is a competent person.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that Dan Johnson is a knowledgeable person.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that Dan Johnson is a qualified person.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I have confidence in Dan Johnson's abilities.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is a reliable source of information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is a truthful person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is an honest person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is a genuine person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is a person with integrity.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Dan Johnson is acting in the best interest of Chocolato's shareholders.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The article published by The Business Journal indicated that Chocolato' environmental performance was:

Very Bad	Bad	Somewhat Bad	Neither Good nor Bad	Somewhat Good	Good	Very Good

Dan Johnson had an incentive to manipulate the tone used in the MD&A section of Chocolato's Annual Report

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The tone analysis software conclusion was that:

The analyzed narrative is <u>NOT</u> free from tone manipulations.

The analyzed narrative is free from tone manipulations.

I agree with the results of the tone analysis software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I have confidence in the results of the tone analysis software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I can detect tone manipulation without the tone analysis software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I incorporated the tone analysis software's results into my decisions.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

247

I relied on the results of the tone analysis software.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that the tone analysis software is capable of detecting tone manipulations.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The results of the tone analysis software are convincing.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Please indicate to what extent you agree with the following statements.

These questions measure your expectations about CEOs behavior in general, and are NOT related to the previous materials.

I expect CEOs to communicate truthful information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect CEOs to behave ethically.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I expect regulatory enforcement to prevent CEOs from communicating misleading information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

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I expect auditors to prevent CEOs from communicating misleading information.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I expect CEOs to communicate information objectively.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I expect CEOs to do what is best for their investors.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

250

Please indicate to what extent you agree with the following statements:

We are approaching the limit of the number of people the earth can support.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Humans have the right to modify the natural environment to suit their needs.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

When humans interfere with nature it often produces disastrous consequences.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

251

Human ingenuity will insure that we do NOT make the earth unlivable.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

Humans are severely abusing the environment.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

The earth has plenty of natural resources if we just learn how to develop them.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

Plants and animals have as much right as humans to exist.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The balance of nature is strong enough to cope with the impacts of modern industrial nations.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

Despite our special abilities humans are still subject to the laws of nature.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The so-called "ecological crisis" facing humankind has been greatly exaggerated.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The earth is like a spaceship with very limited room and resources.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

Humans were meant to rule over the rest of nature.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

The balance of nature is very delicate and easily upset.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Humans will eventually learn enough about how nature works to be able to control it.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

If things continue on their present course, we will soon experience a major ecological catastrophe.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Chocolato's management is very competent at providing disclosures.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Chocolato's management has little knowledge of the factors involved in providing useful disclosures.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that few people are as qualified as Chocolato's management to provide useful disclosures about Chocolato.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Chocolato's management is very trustworthy.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Chocolato's management is very honest.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Chocolato's management may not be truthful in their disclosures.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

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Instructions: Please answer a short series of demographic questions. Your responses will remain confidential.

What is your gender?

Male

Female

Prefer not to answer

What is your age?

[▾]

What is your ethnic background?

Asian

African American

Hispanic

Native American

Caucasian

Others

Prefer not to answer

What is the highest level of education you have completed?

Less than High School

High School / GED

Some College

2-year College Degree

Undergraduate Degree

Masters Degree

Doctoral Degree

[These questions appear only if participants clicked on "Undergraduate Degree" in the previous question]

Is your undergrade degree in:

Accounting

Finance

Other business degree

Non business degree

Are you currently pursuing a master degree?

Yes

No

Have you ever used financial statements to evaluate a company's performance?

Yes

No

Do you plan to invest in the common stock of a company at some time in the future?

Yes

No

How many Accounting courses have you completed (undergraduate + graduate)?

How many Finance courses have you completed (undergraduate + graduate)?

Do you have any business work experience?

Yes

No

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[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of business work experience do you have?

[_____]

Do you have any work experience in financial analysis?

Yes

No

[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of work experience in financial analysis do you have?

IMPORTANT PAYMENT INFORMATION:

In order for us to compensate you for your time and effort, please carefully follow the instructions shown below:

Please make up a 5-digit completion code number (e.g., last 5-digits of your phone number). The number should be between 10000 and 99999. Please do not choose 12345, your zip code, or use the same number five times (e.g., 11111). Please make a note of the number you created. You will need to enter the same number on Mechanical Turk again after submitting this survey in order to get paid.

Please enter the 5-digit code into the box shown below.

Please enter this code on the Mechanical Turk Page after submitting this survey. Otherwise, we will not know that you completed the survey and will not be able to compensate you.

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APPENDIX C:
INSTRUMENTS FOR STUDY 3

RESEARCH STUDY ON INVESTMENT DECISIONS

You are invited to participate in a research study conducted by Mr. Anis Triki (principal investigator) and Dr. Vicky Arnold (co-investigator) at the University of Central Florida, Kenneth G. Dixon School of Accounting. You will be asked to answer questions that will take about 30 minutes of your time. There are no anticipated potential risks associated with this study. The purpose of the research is to examine non-professional investors' investment decisions.

In this study, we ask you to examine information about Morningblend, Inc. and answer questions pertaining to your analysis. At the end of the exercise, we ask you to provide some general demographic information. The case information is not intended to include all the information that would be available if you were evaluating Morningblend, Inc. However, for purposes of this study, base your judgments on the information provided. As the results of this study will be helpful to accounting research, answering each question in a serious and thoughtful manner is very important. Please make sure to carefully read all the materials presented to you before answering the questions.

Whether you take part is up to you. Your responses will be completely anonymous, your name will not be collected or associated in any way with your responses, and only aggregated data will be included in any publications or presentations resulting from this study. If you decide to participate in this study, please understand that your participation is voluntary and that you have the right to withdraw your consent or discontinue participation at any time without penalty. If you have any questions regarding this study, you may contact the researchers by email at Anis.Triki@ucf.edu or Vicky.Arnold@ucf.edu

You must be 18 years of age or older to take part in this research study.

Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. This agreement shall be interpreted according to United States law

If you consent to take part in this study, please click the "Forward Button" located in the bottom right of the screen to advance.

INSTRUCTIONS:

Please read the following information about Morningblend, Inc. very carefully. You will be asked a series of questions based on the information you read. These questions will relate to the following: (1) The information communicated by Morningblend's CEO, and (2) Morningblend as a potential investment option.

Our research examines individual investment behavior. The study starts with qualification questions to assess whether you have the necessary experience. <u>You will not be able to access the study if you do not meet the qualifications for this study.</u>

If you meet the qualifications for the study, you will be able to access information about Morningblend, Inc. <u>The study will include questions to assess whether you read the information provided to you. Unfortunately, we are only allowed to pay you if you answer these questions correctly (to verify that you read the information) and if you complete the study.</u>

Please do not seek outside information while completing the task - we are interested in your responses to questions that we ask based on the specific information provided. Additionally, it is important that you complete the task in one session, so please ensure that you have approximately 30 minutes before proceeding. As you work through the materials, please do not use your browser's back button to return to previously-viewed pages.

By clicking "yes" you agree to <u>read</u> the following case carefully and answer each question to the best of your ability. If you click "no", you will exit the study.

Yes

No

Have you ever made personal investments in the common stock of a company?

Yes

No

Approximately, how many years of personal investment experience do you have?

[   ]

Approximately, how many times have you purchased common stock of a company as a personal investment?

[   ]

Description of task

Assume that you have accumulated $50,000 of personal savings, and you have decided to invest $10,000 of your savings by purchasing stocks. You want to invest your savings in a company that you believe has potential for growth and will increase the value of your investment in the long term.

When investing in the stock market, there is no guarantee for a good return on your investment. Even the most experienced investors may make poor investment decisions. One of the reasons why poor investment decisions occur is that the investors rely on information reported by management and that information is not necessarily correct. It is up to you as an individual investor to gauge whether a company's disclosure truly represents the economic state of its business and whether the stock is a worthy investment for your personal savings.

In this study, your task is to follow Morningblend, an international coffee manufacturer and retail operator led by Chief Executive Officer, Mark Ray. You will receive both financial and nonfinancial information about Morningblend **as events occur and as information is released**. You will also be able to access an independent forum and see what people are saying about Morningblend. After gathering information about the company, you will be asked to assess the credibility of Morningblend's management and their disclosure, and then to make an investment decision.

Please do not seek outside information while completing the task. There are no correct or incorrect responses - we are interested in your responses to the information provided.

Introduction to Morningblend

Morningblend is a medium-sized, international coffee manufacturer and retail operator in the United States, Canada, and Europe. The company offers an extensive line of premium coffee. Morningblend's 53,000 square-foot facility in the Midwest has the capacity to produce hundreds of different types of coffee for its over 300 worldwide locations. Morningblend is traded on the New York Stock Exchange.

At the beginning of fiscal year 2012, *The Business Journal* published a brief story about the company's CEO, which is presented below

Good Guys, Bad Guys and This Guy

Mark Ray, CEO of Morningblend, for less than 2 years, stands out in the industry as an outstanding executive with bulldog tenacity. This tenacity has had a strong influence on Mark Ray's approaches to financial reporting issues. In addition to reporting information required by the SEC, he has built a reputation in the industry for encouraging additional disclosures about the company. Acknowledging that investors may want more information about the company, his focus is on getting results and telling everyone what he is doing to get them.

Prior to joining Morningblend in 2010, Mark Ray was leading another company, Coffee Inc. While at Coffee Inc., Mark Ray was consistently in agreement with the company's auditor. As a result, the auditor stood for re-election and remained Coffee Inc.'s auditor. During an interview with the press, Mark Ray said ''I believe in conducting our business with transparency. Layers of corporate governance, including the external auditors and the audit committee, create assurance that the controls are working.''

RateFinancials, an independent research firm, gives high marks to Morningblend's earnings quality because of Mark Ray's conservative accounting policy and estimate choices and because of his disclosure policy, which reflects greater forthcomingness with information provided than is required or typical of other companies in the industry.

Analysts seem to have very positive views about Morningblend - a testament to management's reputation for open and honest communication with the investment community.

A sweet victory for Morningblend as NASF announces 2012 award winners

(Business Wire) – October 4, 2012 – Morningblend, a premium coffee manufacturer, won the 2012 Most Outstanding Coffee Award yesterday at the 42nd Annual Product Award sponsored by the National Association for Specialty Foods (NASF). Morningblend's mouthwatering, peppermint-infused coffee was the clear favorite of the distinguished panel of judges who sampled hundreds of coffees before awarding Morningblend the highly coveted prize. In response to the news, analysts revised upward their forecasts of annual earnings for the year ended December 31, 2012.

Morningblend reports 2012 results

(Business Wire) – January 22, 2013 – Earlier today Morningblend released earnings for the year ended December 31, 2012. The company reported increases of approximately 22% from the previous year in both revenues ($7.3 billion) and net income ($551 million). Morningblend's 2012 reported results were consistent with management's guidance and analysts' recently revised forecasts. During today's conference call, Mark Ray, Morningblend's Chief Executive Officer, attributed the spike in fourth-quarter revenues to sales of Morningblend's award-winning peppermint-infused coffee. Sales of the peppermint-infused coffee nearly doubled compared to fourth-quarter sales last year.

Morningblend included the following performance information in their earnings press release:

Income Statement
(In thousands of dollars)

	2012	2011	2010
Net Revenue	$7,261,657	$5,952,178	$4,931,382
Cost of Goods Sold	(3,623,567)	(2,987,993)	(2,490,348)
Gross Profit	$3,638,090	$2,964,185	$2,441,034
Expenses:			
Operating Expenses	(1,946,124)	(1,559,471)	(1,277,228)
Depreciation and Amortization Expense	(394,888)	(337,223)	(287,733)
General and Administrative Expense	(435,699)	(357,131)	(295,883)
Operating Income	$861,379	$710,360	$580,190
Income Tax	(310,096)	(255,730)	(208,868)
Net Income	$551,283	$454,630	$371,322

Morningblend reports 2013 results

(Business wire) – January 24, 2014 – Earlier today Morningblend released earnings for the year ended December 31, 2013. The company reported revenues of $8.8 billion, an approximately 21% increase from the previous year, and net income of $673 million, an approximately 19% increase from 2012. Reported revenues and net income were consistent with management's guidance and analysts' forecasts. In today's conference call, Mark Ray, Morningblend's Chief Executive Officer, attributed the 2% difference between growth in revenues and earnings to the closure of 10 underperforming stores. Mr. Ray reiterated his expectation that these store closures will positively impact Morningblend's long term growth and profitability. He also discussed efforts made to assist employees directly affected by the closures.

Morningblend included the following performance information in their earnings press release:

Income Statement
(In thousands of dollars)

	2013	2012	2011
Net Revenue	$8,801,128	$7,261,657	$5,952,178
Cost of Goods Sold	(4,382,962)	(3,623,567)	(2,987,993)
Gross Profit	$4,418,166	$3,638,090	$2,964,185
Expenses			
Operating Expenses	(2,376,305)	(1,946,124)	(1,559,471)
Depreciation and Amortization Expense	(462,414)	(394,888)	(337,223)
General and Administrative Expense	(528,068)	(435,699)	(357,131)
Operating Income	$1,051,379	$861,379	$710,360
Income Taxes	(378,742)	(310,096)	(255,730)
Net Income	$672,637	$551,283	$454,630

Morningblend announces restatement

(Business wire) – March 10, 2014 – Morningblend, an international coffee manufacturer and retail operator, announced today that it will restate its financial statements. The earning restatement is due to an error in accounting for lease expenses. The error requires Morningblend to restate its 2013 net income to $593 million, a reduction of $80 million.

Please make sure to watch the video below. ***You will exit the survey if you fail to watch the full video!***

Analysts' Forecast for 2014:

Analysts' consensus forecasts of annual earnings reflect growth in Morningblend's revenue and earnings into the foreseeable future. Most analysts expect affordable luxuries, like Morningblend's coffee to remain largely unaffected by weakening macroeconomic conditions. Morningblend's stock price has been increasing for the last four years. Analysts expect the stock price to keep increasing and to show similar performance to the last four years.

[Low Social Identification Condition]

InvestorsTalk Forum

After Mark Ray's announcement of the earnings' restatement, you were trying to gather more information from the internet about Morningblend's earnings' restatement. You came across *InvestorsTalk*, an independent investment discussion forum where people provide their personal views about certain topics. You don't have to be a member to read the forum posts. However, only members can participate and write comments. **You are not a member of this forum and you have never visited this forum before.** Following the earnings' restatement announced by Mark Ray, someone made the following post in the forum:

TechInvest

Hi fellow investors,
I am new to the investment world and I have seen Mark Ray's, CEO of Morningblend, announcement regarding the earnings' restatement. My knowledge of earnings' restatement is somewhat limited and I am not sure how to react to such information. Based on Mark Ray's statement, it seems that the external lease accounting expert screwed up and the company is fixing its mistakes. I am not sure whether this is a logical explanation for an earnings' restatement of $80 million and whether I should invest in this stock. Do you guys have anything to share about his earnings' restatement?

Thank you

[High social identification]

InvestorsTalk Forum

After Mark Ray's announcement of the earnings' restatement, you were trying to gather more information from the internet about Morningblend's earnings' restatement. You logged into *InvestorsTalk*, an independent investment discussion forum where people provide their personal views about certain topics. You don't have to be a member to read the forum posts. However, only members can participate and write comments. **You are an active member of InvestorsTalk: you visit the forum daily, comment often, and have developed relationships with the other members of the forum.** Following the earnings' restatement announced by Mark Ray, someone made the following post in the forum:

TechInvest

Hi fellow investors,
I am new to the investment world and I have seen Mark Ray's, CEO of Morningblend, announcement regarding the earnings' restatement. My knowledge of earnings' restatement is somewhat limited and I am not sure how to react to such information. Based on Mark Ray's statement, it seems that the external lease accounting expert screwed up and the company is fixing its mistakes. I am not sure whether this is a logical explanation for an earnings' restatement of $80 million and whether I should invest in this stock. Do you guys have anything to share about his earnings' restatement?

Thank you

[Text Comment condition: the comments below are presented in random order]

Below are comments made by those who have responded to TechInvest in the forum.

Please make sure to read ALL the comments below through to the end. You will exit the survey if you fail to read all the comments!

CEOpoliceman

"For an earnings' restatement of $80 million, the explanation made by Mark Ray seems inappropriate. So typical, something goes wrong and the CEO finds someone to take the blame. I am very skeptical of the real reasons behind this earnings' restatement and Mark Ray shifting the blame to an external party. I would avoid investing in such stock."

STOCKWatcher

"I am so disappointed with Mark Ray's explanation for the earnings' restatement. I believe that Mark Ray is the reason behind the earnings' restatement and the external lease expert has nothing to do with it. It is very common for people to just shift the blame to someone else. I am not convinced that the earnings' restatement was entirely due to the external lease expert and had nothing to do with Mark Ray. I believe that Mark Ray is hiding the true reason for the earnings' restatement and I would not invest a penny in this stock."

BIGMONEY

"I think that the explanation made by Mark Ray with regard to the earnings' restatement is far from logical…, it is odd that a lease expert made a mistake. It is not uncommon for companies to issue an earnings' restatement, but also, it is not uncommon for CEOs to shift the blame to someone else such as an outside expert. I don't think this stock is worth investing in."

InvestoMan

"I am skeptical about the real reasons behind this earnings' restatement …How can we be sure that it was truly the external lease expert's fault…lease accounting experts have significant training about lease accounts and I am having a hard time believing that a lease accounting expert made a mistake about a lease expense account. I believe that the explanation provided by Mark Ray IS NOT the true cause of the earnings' restatement and something else is going on. I would not recommend this stock to anyone."

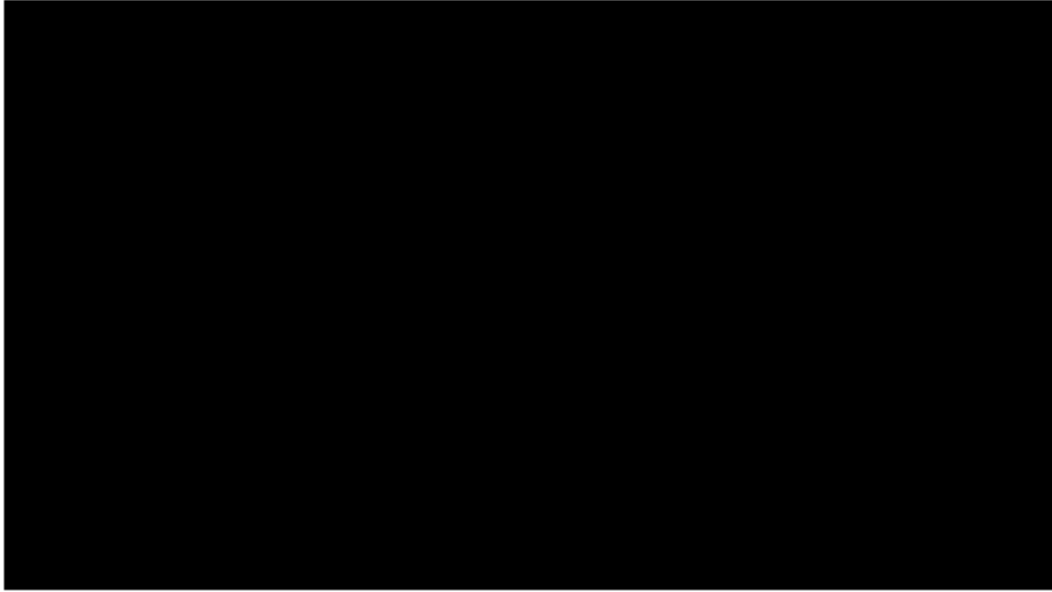[Video Comments condition: the comments below are presented in random order]

Below are comments made by those who have responded to TechInvest in the forum.

*Please make sure to watch **ALL** the videos below through to the end. **You will exit the survey if you fail to watch all the videos!***
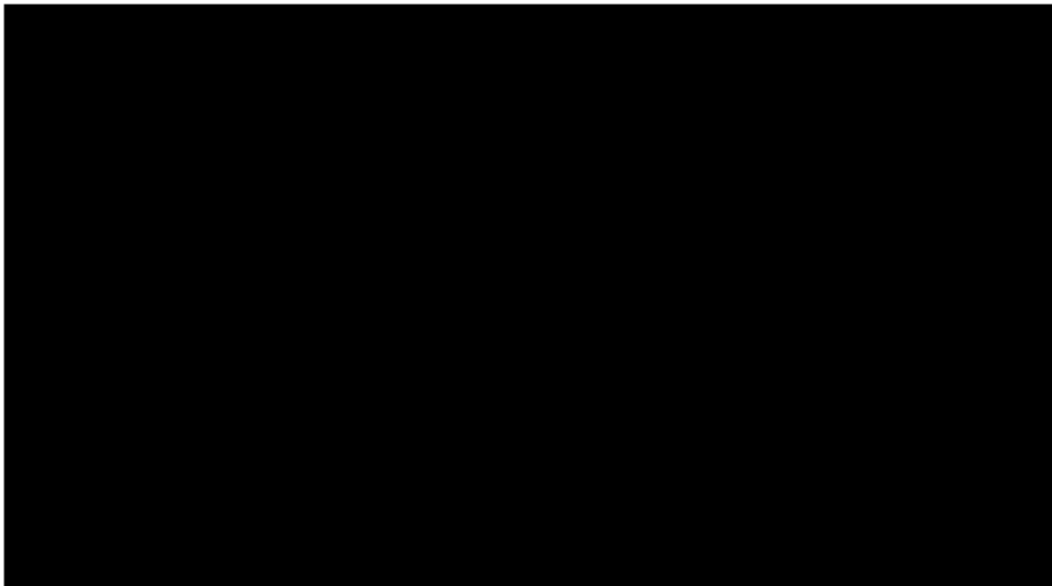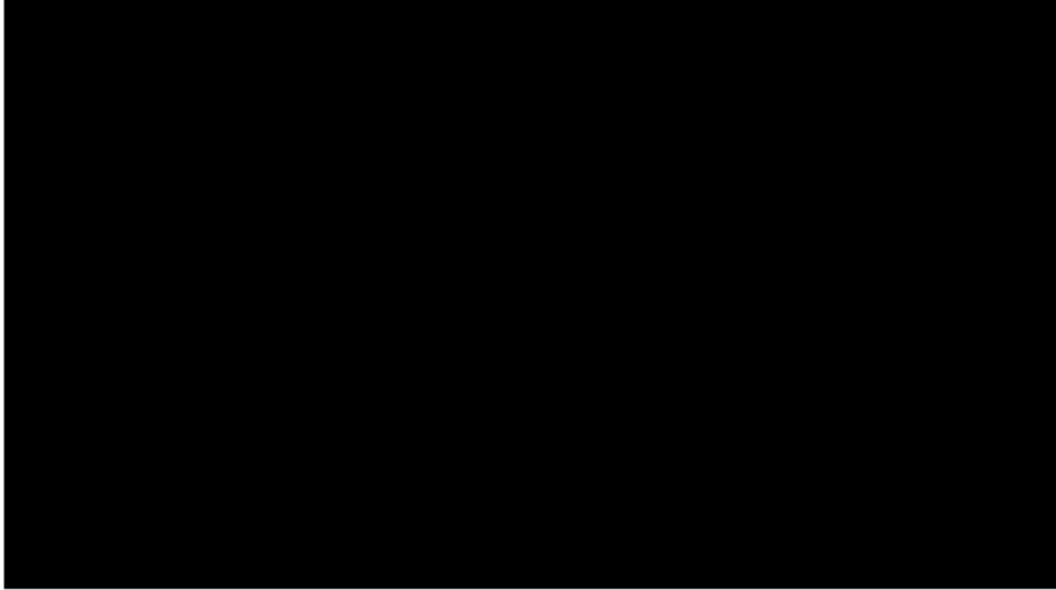
STOCKWatcher
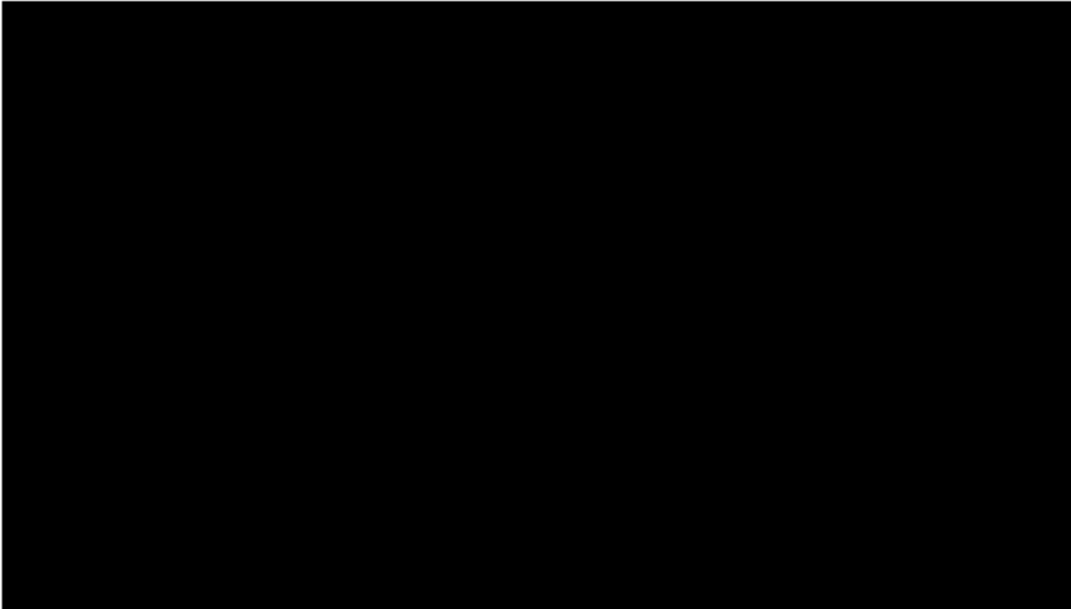
InvestoMan

BIGMONEY

CEOPoliceman

Please answer the following question:

What do you think this study was about?

Research in decision making shows that people, when making decisions and answering questions, prefer not to pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't read questions carefully. If you read this question and have read all the other questions, please select the box marked "other" and type "effort" (do not type the quotation marks) in the box below. Thank you for participating and taking the time to read carefully!

Investment decisions

Earnings restatement

Financial analysis

Other [fill-in-the-blank box provided]

Based on the information provided above, please indicate to what extent you agree with the following statements:

I see myself as a member of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I feel strong ties with the other members of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I identify with the other members of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

285

I share certain traits with the other members of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I share the same interest with the other members of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I can relate to the other members of the forum.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements <u>about the explanation for the earnings' restatement:</u>

The explanation for the earnings' restatement is believable.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings' restatement is accurate.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings' restatement is trustworthy.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

287

The explanation for the earnings' restatement is unbiased.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

The explanation for the earnings' restatement is complete.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

Less than $102

Exactly $102

More than $102

Don't know

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

More than today

Less than today

Exactly the same

Don't know

If the interest rate falls, what should happen to bond prices?

Rise

Fall

Stay the same

Don't know

Please indicate whether this statement is true or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.

True

False

Don't know

Please indicate whether this statement is true or false: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

True

False

Don't know

290

I believe that Morningblend is an attractive investment:

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Morningblend's performance is:

Very Bad	Bad	Somewhat Bad	Neither Good nor Bad	Somewhat Good	Good	Very Good

---

Please slide the bar below to indicate how much of your $10,000 you would like to invest in Morningblend?

0   1000   2000   3000   4000   5000   6000   7000   8000   9000   10000

You would like to invest in US Dollars

How likely are you to recommend Morningblend to a friend?

Very Unlikely	Unlikely	Somewhat Unlikely	Undecided	Somewhat Likely	Likely	Very Likely

I believe that Morningblend is a good investment.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Based on the information provided on previous screens, please indicate to what extent you agree with the following statements about Mark Ray:

I believe that Mark Ray is a competent person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Mark Ray is a knowledgeable person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

---

I believe that Mark Ray is a qualified person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

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I have confidence in Mark Ray's abilities.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is a reliable source of information.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is a truthful person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is an honest person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is a genuine person.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is a person with integrity.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Mark Ray is acting in the best interest of Morningblend's shareholders.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

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According to the information that you received in this study, are you a member of InvestorsTalk?

Yes, I am a member.

No, I am not a member.

Members of the forum communicated information to you via:

Video comments

Text comments

I believe that Morningblend's management is very competent at providing financial disclosures.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that Morningblend's management has little knowledge of the factors involved in providing useful disclosures.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that few people are as qualified as Morningblend's management to provide useful financial disclosures about Morningblend.

| Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |

I believe that Morningblend's management is very trustworthy.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Morningblend's management is very honest.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

I believe that Morningblend's management may not be truthful in their financial disclosures.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Instructions: Please answer a short series of demographic questions. Your responses will remain confidential.

What is your gender?

Male

Female

Prefer not to answer

What is your age?

[⌄]

What is your ethnic background?

Asian

African American

Hispanic

Native American

Caucasian

Others

Prefer not to answer

What is the highest level of education you have completed?

Less than High School

High School / GED

Some College

2-year College Degree

Undergraduate Degree

Masters Degree

Doctoral Degree

[These questions appear only if participants clicked on "Undergraduate Degree" in the previous question]

Is your undergrade degree in:

Accounting

Finance

Other business degree

Non business degree

Are you currently pursuing a master degree?

Yes

No

Have you ever used financial statements to evaluate a company's performance?

Yes

No

Do you plan to invest in the common stock of a company at some time in the future?

Yes

No

How many Accounting courses have you completed (undergraduate + graduate)?

[   ]

How many Finance courses have you completed (undergraduate + graduate)?

[   ]

Do you have any prior business work experience?

Yes

No

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[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of prior business work experience do you have?

[_____]

Do you have any prior work experience in financial analysis?

Yes

No

[If participants clicked on "no" in the previous question, the first question below does not appear]

Approximately, how many years of prior work experience in financial analysis do you have?

IMPORTANT PAYMENT INFORMATION:

In order for us to compensate you for your time and effort, please carefully follow the instructions shown below:

Please make up a 5-digit completion code number (e.g., last 5-digits of your phone number). The number should be between 10000 and 99999. Please do not choose 12345, your zip code, or use the same number five times (e.g., 11111). Please make a note of the number you created. You will need to enter the same number on Mechanical Turk again after submitting this survey in order to get paid.

Please enter the 5-digit code into the box shown below.

Please enter this code on the Mechanical Turk Page after submitting this survey. Otherwise, we will not know that you completed the survey and will not be able to compensate you.

[   ]

APPENDIX D:
IRB APPROVALS

IRB approval for study 1

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

REVISED LETTER 10/6/2014

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
               FWA00000351, IRB00001138

To: **Anis Triki and Co-PI: Vicky Jane Arnold**

Date: **October 06, 2014**

Dear Researcher:

On 10/06/2014, the IRB approved the following minor modifications to human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Modifications	More data will be collected from students taking ACG6636 and ACG4651 for an additional 120 students. In addition, 400 participants will be recruited via Amazon Mechanical Turk. The new total number of study participants is 640 individuals.
Project Title:	Using Deception Detection Software to Improve Non-Professional Investors' Decision Making
Investigator:	Anis Triki
IRB Number:	SBE-14-10592
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Joanne Muratori

IRB Coordinator

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University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Anis Triki and Co-PI: Vicky Jane Arnold**

Date: **February 09, 2015**

Dear Researcher:

On 02/09/2015, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	The Impact of Analyzing the Content of Narrative Disclosure on Nonprofessional Investors' Decision Making
Investigator:	Anis Triki
IRB Number:	SBE-15-11005
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/09/2015 05:59:21 PM EST

IRB manager

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Anis Triki**

Date: **November 19, 2014**

Dear Researcher:

On 11/19/2014, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	The Impact of Social Media on Non-Professional Investors' Decision Making
Investigator:	Anis Triki
IRB Number:	SBE-14-10767
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 11/19/2014 01:25:05 PM EST

IRB Coordinator