# How Facebook Influences Non-Professional Investors' Affective Reactions and Judgments: The Effect of Disclosure Platform and News Valance

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## ABSTRACT

The use of social networking web sites by companies to disclose corporate news and by investors to collect information for investment purposes is increasing rapidly. However, the influence of Facebook, the largest social networking web site, on investors' judgments is under-researched. We conduct an experiment to examine how the disclosure platform (disclosing news on a company's Facebook web page or the corporate investor relations web page) and news valence (positive or negative) jointly influence investors' affective reactions to corporate news and stock price change judgments. Results show that the disclosure platform influences investors' affective reactions and stock price change judgments when the corporate news is negative, but not when the corporate news is positive. In addition, investors' affective reactions mediate the influence of the disclosure platform on investors' stock price change judgments when the corporate news is negative rather than positive. Our theory and findings are timely and important for researchers, investors, and firms given the increasing use of Facebook and other social networking web sites as venues for disclosing corporate news.

## 1. INTRODUCTION

The use of social media, especially social networking web sites, by individuals and companies is increasing rapidly (Fischer and Reuber 2011).[1] Many companies have started using social networking web sites, such as Facebook, to disclose information about their new products and innovations (e.g., Kortekaas and Warwick-Ching 2013), and more recently to share corporate financial information (e.g., Beals 2012; Fuhrmann 2011; Kouri and Needham 2013; Schoeff Jr. 2013; Wang, Lin, and Yen 2016; Zhou et al. 2015). Early adopters of corporate disclosure through social networking web sites include companies like Netflix, General Electric, Dell, DLH Holdings, and Nielson (Mont 2013).[2] In this study, we examine how investors' affective reactions to corporate news and stock price change judgments differ when investors receive corporate news on a social networking web site, (i.e., Facebook), compared to a traditional web site, (i.e., the corporate investor

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[1] According to Kaplan and Haenlein (2010, p. 61), social media is "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content." Further, Kaplan and Haenlein (p. 63) explain that social networking web sites, one type of social media, are "applications that enable users to connect by creating personal information profiles, inviting friends and colleagues to have access to those profiles, and sending e-mails and instant messages between each other; and these personal profiles can include any type of information, including photos, video, audio files, and blogs." In this study, we focus on social networking web sites, but we still cite prior research that discusses social media in general, because the arguments and findings of that research apply to social networking web sites.

[2] We searched a sample of companies' Facebook web pages to identify the types of corporate news disclosed in the most recent two years. Some companies posted news about charitable contributions (e.g., Exxon Mobil, Wells Fargo, Bank of America, Coca Cola), products and ads (e.g., Apple, Walmart, AT&T, Microsoft, Intel, Conoco Phillips), and investments and new projects (e.g., Citi Group, Phillips 66). More recently, some companies have started to post financial news and links to their annual reports (e.g., IBM, Proctor and Gamble, Ford Motor, Conoco Phillips).

relations web page).[3] Further, we examine how this influence of the disclosure platform (Facebook versus corporate investor relations web page) varies according to the valence of corporate news (positive versus negative).

Information disclosed on social networking web sites can exert significant influences on stock prices (Curtis, Richardson, and Schmardebeck 2014). For example, Netflix's stock price increased 6.2% after Netflix's CEO, Reed Hastings, posted on his Facebook web page that the company's monthly video streaming exceeded 1 billion hours for the first time in Netflix's history (Russolillo 2012; Salyer 2012). Further, a false tweet about an explosion at the White House resulted in a 150 points drop in the Dow Jones industrial average (Greenfield 2014), and the billionaire investor Carl Icahn's tweet about owning Apple's shares resulted in a $12.5 billion increase in the company's market value (Pressman 2013).

Using social networking web sites as a disclosure platform allows companies to provide real time information to stakeholders (Aquila and Payne 2013), interact with stakeholders (Fuhrmann 2011; Joyce 2013), and identify reactions to corporate news through comments, likes or dislikes, and the number of times the news is shared. Therefore, companies that communicate with investors via social media platforms, especially social networking web sites, are deemed more innovative (Savio and Raroque 2012), can reach a larger audience (Corbin

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[3] The corporate investor relations web site is a traditional way for companies to disseminate information and establish their presence on the Internet (Bollen, Hassink, and Bozic 2006).

2012), engage and interact with stakeholders (Savio and Roroque 2012), increase transparency (Waters, Burnett, Lamm, and Lucas 2009), and reduce ambiguity (Kaplan and Haenlein 2010). However, despite the widespread use of social networking web sites as venues for corporate disclosure, the costs and benefits of such use are not yet fully understood (see Curtis et al. 2010).

A number of recent studies in Accounting examine the effect of disseminating corporate news through social networking web sites on investors' judgments and decisions (e.g., Cade 2016; Elliott, Grant, and Hodge 2015; Lee, Hutton, and Shu 2015). However, these studies focus mainly on Twitter, because it was one of the earliest social networking web sites that companies used as a disclosure platform, and because the messages posted on Twitter can be easily accessed and analyzed by researchers (e.g., Boyd and Crawford 2012). The use of Facebook by corporations to disseminate corporate news and by investors to collect information for investment purposes, however, has been under-researched.

In this study, we focus on the influence of corporate disclosures on Facebook on investor judgements for a number of reasons. First, many big firms have Facebook web pages that they actively use to disclose financial and non-financial corporate news (e.g., Wang, Lin, and Yen 2016; Zhou et al. 2015). Second, Facebook is the largest social networking website with 1.65 billion monthly active users (Facebook 2016) compared to 310 million monthly active

users for Twitter (Twitter 2016).[4] Third, the average time users spend on Facebook is more than double the time they spend on Twitter (Stewart 2016; Bennett 2014).[5] Fourth, the character limit for Facebook messages is much higher than that for Twitter messages (63,206 characters for Facebook compared to only 140 characters for Twitter) (Buck 2012). Therefore, companies can make more informative disclosures, and these disclosures are more likely to engage users, on Facebook compared to Twitter. Finally, Facebook has a number of features that are likely to make it a more engaging social networking web site compared to Twitter, such as the use of Facebook messenger. These characteristics are likely to influence investors' judgments, especially their affective reactions to corporate news, in ways that may not possible on Twitter.

The previous factors suggest that the influence of corporate disclosures on investor judgments is likely to be stronger and more complex when disclosures are made on Facebook rather than Twitter. Therefore, studies are needed to examine how corporate disclosures on Facebook are likely to influence investor judgments and decisions. These studies have been scarce so far, with the exception of Karabulut (2013), Wang, Lin, and Yen (2016), and Zhou et al. (2015).

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[4] These figures are as of March 31st, 2016.

[5] According to Bennett (2014), a survey of U.S. adults revealed that Facebook is the most heavily used social networking website where users spend an average of 42.1 minutes daily on Facebook, while Twitter is the fifth heavily used social networking website where users spend only an average of 17.1 minutes daily on Twitter. Further, the average daily time spent by users on Facebook increased to 50 minutes as of March 31, 2016 (e.g., Stewart 2016).

We draw on the literature on priming and automatic information processing (e.g., Chen and Bargh, 1997; Srull and Wyer 1980) and the social presence theory (e.g., Short, Williams, and Christie 1976) to suggest that a company's Facebook web page will be more engaging for investors than the corporate investor relations web page. Over time, Facebook users will automatically associate news received on Facebook with strong affective reactions. . As a result, corporate news will be more likely to exert stronger influence on investors' affective reactions and investment judgments, when it is encountered on the company's Facebook web page rather than its corporate investor relations web page. Further, research on negativity bias (e.g. Ito, Larsen, Smith, and Cacioppo 1998) suggests that investors will pay more attention to corporate news when the news is negative rather than positive. Thus, we predict that the effect of disclosing corporate news on the company's Facebook web page, rather than its corporate investor relations web page, on investors' affective reactions and stock price change judgments will be stronger when corporate news is negative compared to positive.

We test our predictions using an online experiment in which 364 members of Amazon's Mechanical Turk web site participated as a proxy for reasonably-informed non-professional investors. Participants read a press release posted by a hypothetical company, on either the company's Facebook web page or its corporate investor relations web page. The press release revealed either positive or negative

news. Next, participants were asked to assess their affective reactions to the press release and the expected changes in the company's future stock price.

Consistent with our predictions, we find that given negative corporate news, investors experience more negative affective reactions, and make more negative stock price change judgments, when they receive the news on the company's Facebook web page rather than the corporate investor relations web page. However, given positive corporate news, investors experience similar affective reactions, and make similar stock price change judgments, regardless of receiving the news on Facebook or the corporate web page. In addition, investors' affective reactions mediate the influence of the disclosure platform on investors' stock price change judgments when corporate news is negative, but not when corporate news is positive.

Our findings are timely, given the dramatic increase in using social networking web sites, especially Facebook, as a venue for disseminating corporate news. These findings should be of interest to researchers, companies, regulators, and investors. Specifically, our study complements a growing body of recent research that focuses mainly on corporate disclosures made on Twitter (e.g., Cade 2016; Elliott, Grant, and Hodge 2015; Jung et al., 2016; Lee, Hutton, and Shu 2015; Snow 2015) by examining how investors react to corporate disclosures made on Facebook. Further, while the prior research that focuses on Twitter examines mainly investors' cognitive reactions to corporate disclosures, our study shows that

the disclosure platform (Facebook versus the traditional investor relations web site) influences investors' affective reactions to corporate news. ).

Our findings, specifically the influence of disclosure platform on investor judgments when corporate news is negative rather than positive and the mediating role of investors' affective reactions to the news, should also be relevant for firms when deciding how to use Facebook and other social networking web sites as disclosure channels.

Further, the Securities and Exchange Commission (SEC) has recently approved the use of social media to disclose corporate information as long as the company reveals to investors what social media platforms are being used (Mont 2013; Schoeff Jr. 2013). Thus, our findings can provide insights relevant to the SEC's current agenda regarding the effect of disclosing corporate information through social media on investors' judgments. Finally, our findings can be useful for investors themselves by drawing their attention to the influence of different disclosure platforms on their own judgments.

In the next section, we discuss the relevant literature and present our hypotheses. Next, the research method section describes the experimental procedures and participants. Finally, the results and conclusions are presented.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### 2.1. Disclosure Platforms

Investors' use of social media, especially social networking web sites, to collect information for investment purposes has been increasing. Tett (2013) suggests that investors' use of diverse sources of information, such as social media and other social groups, is positively related with the performance of their investment portfolios. Investors who use various disclosure platforms to obtain investment-related information performed 10% better than other investors (Tett 2013). A 2013 survey of 472 investors shows that 75% of participants believe that the role of social media, including social networking web sites, is increasing in their future decisions (Brunswick Group 2014). Companies recognize this increasing trend and have increased their social media spending over the past several years (Barnes and Lescault 2012). Thus, Facebook and other social media platforms will remain an important topic of research and discussion in the future.

There is a growing literature that investigates how different disclosure formats influence non-professional investors' judgments and investment decisions. For example, Elliott, Hodge, and Sedor (2012) predict and find that using video rather than text to disseminate corporate news online magnifies the effect of attribution (i.e., accepting or denying responsibility for an accounting restatement) on investors' judgments and investment recommendations. Adelaar et. al. (2003) show that the presentation format influences individuals' emotions and, in turn,

affects individual judgments. In their experimental study, media formats (e.g., text, video, images) elicited different emotional responses from participants, which resulted in different impulse buying intentions.

Recently, accounting research, using both the archival and experimental methodologies, has started studying how investors and market participants react to companies' use of one social networking web site, Twitter, to disseminate financial and non-financial information (e.g., Cade 2016; Elliot, Grant, and Hodge 2015; Jung et al. 2016; Lee, Hutton, and Shu 2015; Snow 2015).

In an experimental study, Cade (2015) examines how investor judgments about a firm's reputation and attractiveness as an investment are influenced by two-way communications between the firm and other investors via Twitter. The study shows that employing an active strategy to address negative comments raised about the firm on Twitter (either by explaining why these comments are unwarranted or by redirecting attention to other positive aspects of the firm's performance) mitigates the influence of these negative comments more than a passive strategy where the firm does not respond to the negative comments.

Elliott, Grant, and Hodge's (2015) experimental study investigates how the message source (CEO or Investor Relations Department) and the disclosure platform (Twitter vs. Corporate Website) influence investor trust and willingness to invest in a firm that reports a negative earnings surprise. Results show that when communicating with investors through the corporate website, the message source

does not significantly influence investor trust or willingness to invest in the firm. Further, when communicating with investors through Twitter, communications lead to the highest levels of trust and willingness to invest when they come from the CEO (higher than all other experimental conditions), and to the lowest levels of trust and willingness to invest when they come from the Investor Relations Department (lower than all other experimental conditions).

Jung et al. (2016) use the archival methodology to examine whether firms strategically disseminate quarterly earnings news through Twitter. Consistent with strategic behavior, the authors find that firms are less likely to disseminate earnings news through Twitter when the news is bad rather than good and as the magnitude of bad news increases. Further, the authors document that tweeting more negative earnings news by the firm, and retweeting that news by its followers, is associated with more negative news articles about the firm being published through traditional media.

Lee, Hutton, and Shu's (2015) archival study examines how the firm's use of different types of social media platforms influence the negative market reactions to product recall announcements. The authors show that in general, corporate presence on social media reduces the magnitude of negative market reactions to product recalls. However, the reduction in negative market reactions decreased recently after the widespread use of interactive social networking web sites (specifically Facebook and Twitter) compared to the non-interactive social media

web sites that were more common in the past (specifically, corporate blogs and Rich Site Summary (RSS) web sites). Further, using data from Twitter, the authors document that the magnitude of negative market reactions to product recalls decreases with the number of related tweets made by the firm and increases with the number of related tweets made by other users.

Snow (2015) investigates how disclosure platform (Twitter / corporate investor relations web page) and news type (good / bad) influence investors' perceptions of the news and investment judgments. Analyses of participants' judgments reveal an insignificant interaction between disclosure platform and news type. However, the main effect of disclosure platform on participants' judgments was significant. Specifically, posting corporate news on Twitter rather than the corporate investor relations web page results in lower assessments of argument quality, lower perceived usefulness, and less favorable attitude towards the news. However, the disclosure platform did not significantly influence perceptions of the source credibility of the news, the attractiveness of the firm as an investment, or investors' investment recommendations.

Few archival studies examine the use of Facebook as a corporate disclosure platform and the association between Facebook and the stock market activity (Karabulut 2013; Wang, Lin, and Yen 2016; Zhou et al. 2015). Karabulut (2013) finds that the Gross National Happiness Index published by Facebook is a valid measure of investor sentiment that can predict daily stock returns and trading

volume in the US stock market. However, additional analyses demonstrate that the association between the Gross National Happiness Index and market activities is temporary and reverses in the subsequent weeks. Wang, Lin, and Yen (2016) show that 58% of the S&P 500 firms have Facebook web pages that they actively use to disclose financial and non-financial corporate news. Further the use of Facebook as a corporate disclosure platform is positively associated with the number of analysts following the firm and negatively associated with individual investors' holdings of the firm's stock.

Zhou et al. (2015) examine the adoption of Facebook and Twitter as corporate disclosure platforms by 9,861 publicly traded firms. Results show that 30 percent of the firms have web pages on both Facebook and Twitter, 6.5 percent of the firms have Facebook web pages only, and 13.1 percent of the firms have Twitter web pages only. Further, corporate disclosures represent a higher percentage of the total number of messages shared by the firms on Facebook compared to Twitter (7.06 percent and 3.45 percent for Facebook and Twitter respectively). In addition, user responses to messages are slower but more engaging (i.e., take longer time) for corporate messages posted on Facebook compared to Twitter.

Our experimental study extends the archival studies on corporate disclosures on Facebook by directly investigating how reasonably-informed non-professional investors react to corporate news posted on Facebook and studying the psychological processes underlying these reactions. Our study also extends the

prior experimental studies that examine investor reactions to corporate news disclosed on Twitter. While the studies that focus on Twitter investigate investors' cognitive reactions to corporate news, such as assessments of the trustworthiness of management and the perceived usefulness and credibility of the news, our study investigates investors' affective reactions to corporate news and how these reactions influence investment judgments. Similar to Adelaar et al. (2003), we predict that the influence of disclosure platform on investors' judgments will be mediated by investors' affective reactions to the corporate news. Further, most of the prior experimental and archival research that focuses on Twitter examines investors' reactions to negative corporate news only. Our study investigates investor reactions to both positive and negative corporate news and how these reactions differ according to the disclosure platform used by the firm (Facebook versus the corporate investor relations web site).

In our study we focus on corporate use of Facebook, rather than Twitter, as a disclosure platform for several reasons. First, Facebook has more than five times the number of users of Twitter, where monthly active users amount to 1.65 billion for Facebook and 310 million for Twitter (Facebook 2016; Twitter 2016). Second, the average time spent by users on Facebook is more than double the time they spend on Twitter. The average daily time that users spend on Facebook is 42.1 minutes according to Bennett (2014) and 50 minutes according to Stewart (2016), while the average daily time that users spend on Twitter is only 17 minutes

according to Bennett (2014). Third, tweets are limited to only 140 characters on Twitter, while posts can be as long as 63,206 character on Facebook (Buck 2012). Longer posts on Facebook are likely to be more informative about corporate news and more engaging for users compared to posts on Twitter. Finally, Facebook has features not available on Twitter, such as the Facebook messenger, which is likely to increase users' general engagement with the website. This increased engagement with the Facebook website can, in turn, strengthen user engagement with, and reaction to, any information they receive on that website.

The previous arguments suggest that investor reactions to corporate disclosures posted on Facebook are not likely to be a mere replication of investor reactions to corporate disclosures posted on Facebook. Compared to receiving corporate news on Twitter, receiving corporate news on Facebook is likely to elicit stronger and more complex reactions from investors. Our study serves as a first step towards understanding how the use of Facebook as a corporate disclosure platform influences investors' judgments and decisions.

In this study, we examine how investors' affective reactions and stock price change judgments will be influenced when they receive corporate news on the firm's Facebook web page rather than its corporate investor relations web page.

**2.2. News Valance**

Prior literature has also established that the valance of corporate news influences investors' judgments and decisions (e.g., Luo 2009). Research has documented negative consequences for companies and investors when the company discloses negative news (e.g., Jones and Weingram 1996; Desai et al. 2006; Files et al. 2009). Many companies choose to release negative news early to warn investors about unfavorable corporate performance (e.g., Kasznik and Lev 1995; Field, Lowry, and Shu 2005).

Firms disclose both positive and negative corporate news on social networking web sites, although disclosing positive news is more common (Jung et al., 2016). While we expect investors' judgments to be more favorable when corporate news is positive rather than negative, it is unclear how news valance will interact with the disclosure platform (Facebook compared to the corporate investor relations web site) to influence investors' judgments.

**2.3. Investors' Affective Reactions and Stock Price Change Judgments**

We argue that corporate news will be more engaging for investors when they encounter corporate disclosures on Facebook rather than the corporate investor relations web page for a number of reasons. First, Facebook allows more social interaction compared to a traditional corporate investor relations web page. Facebook allows a user to interact with other users by exchanging messages, reacting to their posts (i.e., commenting, liking, or sharing their posts), as well as

viewing these users' reactions to someone else's posts in real-time. These social interaction features will increase the effectiveness of communications on Facebook and strengthen users' engagement with the information they receive on Facebook compared to a traditional investor relations web page (see Short, Williams, and Chiristie, 1976). Second, users are likely to spend more time on, and to be more familiar with, Facebook compared to any specific corporate investor relations web page.

Over time, users' reactions to news received on Facebook will become automatic (i.e., non-conscious), such that merely viewing the Facebook web page layout will attract users' attention, increase their engagement with the news, and strengthen their affective reactions to its content (see for example, Bargh et al. 2012; Chen and Bargh 1997; Schneider and Shiffrin 1977; Srull and Wyer 1980). Affective reactions refer to a range of related phenomena including emotions, feelings, and moods (e.g., Wyer and Srull 1986; Frijda 2006). Prior research suggests that individuals may sometimes employ a processing strategy where judgments are more likely to be based on the feelings and sensations prompted by the act of information processing rather than on the content of the information being processed (Strack 1992; Wanke, Bohner, and Jurkowitsch 1997; Mercer 2005).

Similarly, Aspara and Tikkanen (2010) suggest that strong positive affective reactions that an individual has towards a company lead to positive expectations of the financial returns of the company's stock. Also, if investors'

feelings about a company are favorable, they are inclined to perceive the risks as low and returns as high; thus, as Zajonc (1980) suggests, the general affective view of a company will guide perceptions of risk and return. Therefore, affective reactions tend to amplify the implications of relevant information, which in turn, leads to more extreme subsequent judgments (Adaval 2003).

Prior research in psychology has documented that negative information more strongly affects individuals' evaluations than positive information (Kanouse and Hansen 1971; Kahneman and Tversky 1979; Skowronski and Carlston 1989). Further, Taylor (1991) suggests that negative news causes greater use of individuals' cognitive and affective reactions. The instances in which individuals react strongly to negative events and news are termed negativity bias (Ito, Larsen, Smith, and Cacioppo 1998). Investors' relevance ratings of negative information are higher than those of positive information, consistent with the negativity bias (Cianci and Falsetta 2008).

We predict that investors will pay more attention to corporate news when that news is negative rather than positive. Increased investor attention will allow the characteristics of corporate news, such as the platform used to disclose it, to exert stronger influence on investors' affective reactions and judgments. Therefore, when investors receive negative corporate news, they will pay close attention to the news, and their affective reactions and judgments will be strongly influenced by the platform used to disclose the news. More specifically, investors will experience

more negative affective reactions to the news, and will make more negative stock price change judgments, when the news is disclosed on the company's Facebook web page rather than its corporate investor relations web page. In contrast, when investors receive positive corporate news, they will not pay close attention to the news, and their affective reactions and judgments will be less strongly influenced by the platform used to disclose the news.[6]

Based on the previous arguments, we expect the difference in investors' affective reactions to the news and their stock price change judgments, resulting from receiving the news on the company's Facebook web page rather than its corporate investor relations web page, to be greater when the corporate news is negative rather than positive.

Based on the previous discussion, we make the following hypotheses:

**H1**: The influence of the disclosure platform on investors' stock price change judgments (triggering more extreme stock price change judgments when corporate news is disclosed on Facebook rather than the corporate investor relations web page) will be greater when corporate news is negative rather than positive.

**H2**: The influence of the disclosure platform on investors' affective reactions (triggering more extreme affective reactions when corporate news is disclosed on Facebook rather than the corporate investor relations web page) will be greater when corporate news is negative rather than positive.

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[6] An alternative prediction is that investors expect firms to post more positive news on social networking web sites such as Facebook compared to traditional web sites such as the corporate investor relations web page. In this case, investors are expected to discount positive corporate news when it is posted on Facebook rather than the corporate investor relations web page (see Burgoon and Burgoon 2001; Clor-Proell 2009). This would strengthen the effect of disclosure platform given positive corporate news.

**H3**: Investors' affective reactions will mediate the influence of the disclosure platform and news valence on investors' stock price change judgments.

A graphical representation of our predictions is illustrated in figure 1.

*[Insert Figure 1 about here]*

## 3. RESEARCH METHOD

### 3.1. Experimental Design

We use a 2 x 2 between-subjects design. The first manipulated factor is the news valance of the press release where half of the participants received positive news while the rest received negative news. The second manipulated factor is the disclosure platform where half of the participants viewed the press release on the firm's Facebook web page while the rest viewed the press release on its corporate investor relations web page. Participants were randomly assigned to one of four experimental conditions: 1) Positive News – Facebook web page, 2) Positive News – Corporate investor relations web page, 3) Negative News – Facebook web page, 4) Negative News – Corporate investor relations web page.

### 3.2. Participants

To obtain a broad demographic-based sample of nonprofessional investors, we recruited participants using Amazon's Mechanical Turk. Amazon's Mechanical Turk, launched in 2005, allows employers/requesters and workers/participants to meet at an Internet labor market. Workers complete "Human Intelligence Tasks"

(HITs) in return for monetary payments. Mechanical Turk has become a popular participant pool for researchers because it is easily accessible and at least as representative of the U.S. population as more traditional subject pools (Paolacci, Chandler, and Ipeirotis 2010). Also, prior research demonstrates that online workers exert similar or greater effort than workers of other populations (Farrell, Granier, Leiby 2014). We follow prior literature (e.g., Rennekamp 2012) and use participants recruited from Amazon's Mechanical Turk to proxy for reasonably-informed, non-professional investors.

On Mechanical Turk, we restricted access to the experimental task to individuals who live in the United States, have previously completed at least 50 HITs, and have achieved an acceptance rate (by requesters) of at least 95% of the HITs they completed. In addition to these screening criteria we used on Mechanical Turk, individuals responded to a number of qualification questions at the beginning of the experimental task on Qualtrics. Individuals were allowed to proceed with the experimental task only if they met all of the following qualification criteria: 1) having completed or being currently enrolled in at least one business or economics class, 2) having bought or sold the common stock of an individual company in the past, and 3) having one or more years of investment experience.[7] Three hundred

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[7] To reduce the salience of the qualification criteria, the related questions were asked among other questions, concerning the highest degree earned and previous work experience, before participants could start the experimental task.

and sixty-four participants completed the experimental study.[8] They received a payment of $0.75 for an average of 9.5 minutes of their time, resulting in an effective hourly wage of $4.75.

The average participant age is 37.43 years, with an average of 7.31 years of investment experience and 16.17 years of work experience. Two hundred and thirty-eight participants (65.38%) were males, 197 participants (54.12%) have completed a financial statement analysis task, and 268 participants (73.63%) reported buying or selling stocks in the last 12 months. Participants have completed, or were currently enrolled in, an average of 5.13 business and/or economics classes, 2.42 accounting classes, and 2.34 finance classes.

## 3.3. Experimental Procedures

After passing the qualification questions at the beginning of the experimental task, participants were asked to assume the role of a member of a local investment club and to evaluate and make investment judgments regarding one publicly-traded company, Astor, Inc., an online real-estate markets company. Next, participants were provided with the company's background information, which was adapted from a real world company. To ensure that each participant was actively involved with the case materials, a reading comprehension check question was posed after displaying Astor's background information. Only participants who

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[8] Two additional participants quit the study before responding to demographic questions and were excluded from the analysis. If these two participants are included in the analysis, results would be inferentially identical to those reported in the study.

responded correctly to the reading comprehension check question were allowed to continue with the study.

Next, participants were randomly assigned to the experimental conditions. In the Facebook experimental conditions, participants saw the press release posted on Astor's Facebook web page. In the corporate investor relations web page experimental conditions, participants saw the press release posted on Astor's investor relations web page.

To manipulate the disclosure platform, we manipulated the HTML code for a company's Facebook page and a corporate web page to display Astor's name, logo, and press release. The size of Astor's logo, the font size, and the size of the web page were held constant across conditions. In order to eliminate distractions, advertisements were removed from the web pages. In addition, participants saw screenshots of the web pages, rather than the actual web pages, to make sure that the links included in each web page are not clickable. Appendix A includes examples of the screenshots we used.

It is important to note that we do not manipulate the social interaction features available on Facebook such as interacting with other users, reading their comments on the corporate news, or reacting to the corporate news. Participants in our study only see a screenshot of Astor's web page (on either Facebook or the corporate investor relations web site). Rather than manipulating the social interaction features available on Facebook, we focus on examining the associations

created in participants' memories about Facebook. In other words, we wish to investigate whether participants who are primed using the Facebook web page layout will react differently to the corporate news compared to participants who are not primed (i.e., who see the corporate investor relations web page instead). Further, manipulating the social interaction features available on Facebook (i.e., making those features available to participants in the Facebook conditions but not to participants in the corporate investor relations web site conditions) would strengthen the disclosure platform manipulation and help support our hypotheses.

The news valance of the press release was manipulated to be positive or negative. The press release included two news items that were meant to influence participants' expectations about Astor's future performance: the rate of downloading and using Astor's new mobile app by new users (met / fell short of expectations) and the success of negotiations to acquire another online real-estate markets company (successful / unsuccessful). We designed the press release based on a sample of corporate news posted by companies on their Facebook web pages. Further, the press release reminded participants of the company's profile in all four experimental conditions. [9] After reading the press release, participants answered questions about their expectations for Astor's stock price in the future, affective

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[9] We conducted a pilot study with 239 participants, recruited from Amazon's Mechanical Turk's, who did not subsequently participate in the main experiment. The main purpose of the pilot study was to ensure that the experimental manipulations were well understood by participants. Based on the pilot study, we modified the case materials which were used in the main experiment.

reactions, manipulation checks, usage of social networking web sites, and other demographics.

## 3.4. Independent Variables

The two between-subjects factors are the news valence of the press release (positive or negative) and the disclosure platform used to disclose the press release (Facebook or the corporate investor relations web page).

## 3.5. Dependent Variables

We measure participants' *stock price change judgment* by asking them to assess the potential that the company's stock price will appreciate or decline in the near future. The responses are measured on a 15-point Likert scale where 1 represents "extremely like to decline (decrease)", 8 represents "not likely to change", and 15 represents "extremely likely to appreciate (increase)".

## 3.6. Process Variables

We measure participants' *affective reactions* by asking them to what extent they disagree or agree to four statements, "Astor's press release made me feel: 1) good, 2) pleased, 3) bad, and 4) disappointed". Responses are measured on an 11-point Likert scale where 1 represents "strongly disagree" and 11 represents "strongly agree". A factor analysis shows that these four questions load on one

factor which explains 88 percent of the common variance in the four questions. We call this factor *the affect factor*.[10]

## 4. RESULTS

### 4.1. Manipulation Checks

First, to assess whether participants attended to the disclosure platform manipulation we asked them whether the company shared its press release on its Facebook web page or its corporate investor relations web page. Ninety-five percent of participants correctly recalled the platform where the news release was posted. Second, to assess whether participants attended to the news valence manipulation, we asked the question "Astor's press release revealed _____ information about the company's financial performance in the future". Participants responded on an 11-point scale where 1 represents "Extremely Negative", 6 represents "Neutral" and 11 represents "Extremely Positive". Participants in the positive news condition perceived the news to be significantly more positive than participants in the negative news condition (means of 8.85 and 4.27 for the positive

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[10] Results of testing our hypotheses are inferentially identical to the results reported in the next section if we construct the affectfactor based on two questions only (Astor's press release made me feel good / bad) similar to prior research, such as Mercer (2005).

and negative news conditions respectively, t = 23.51, p < 0.01, one-tailed).[11] These

results suggest that our experimental manipulations were effective.[12]

## 4.2. Familiarity of the Disclosure Platform

We argue that investors are likely to be more familiar with Facebook than

any specific corporate investor relations website, and as a result, corporate news

will be more engaging for investors and will trigger stronger reactions when it is

viewed on a Facebook web page rather than a corporate investor relations web page.

To test this argument, we asked participants how often they visit each of Facebook

and companies' investor relations web sites. Participants responded on a 5-point

scale where 1 = Not at all, 2 = Monthly, 3 = Weekly, 4 = Once a day, and 5 =

Multiple times a day. Results reveal that participants visit Facebook significantly

more often than all corporate investor relations web sites (means of 3.65 and 2.11

for Facebook and corporate investor relations web sites respectively, t = 51.17, p

<0.01, one-tailed). These results are consistent with our argument that investors are

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[11] The mean response for each of the positive and negative news conditions is significantly different from the mid-point of the scale, equal to 6, suggesting that participants did not perceive the news included in the press release to be neutral (for the positive news condition: t = 25.14, p <0.01, two-tailed, and for the negative news condition: t = -10.92, p <0.01, two-tailed).

[12] When responses from participants who fail one or both of the manipulation checks are excluded from the analyses, results are inferentially identical to the results reported in this section. Thus, we do not exclude the responses from participants who fail the manipulation checks.

more familiar with Facebook compared to any specific corporate investor relations web site.

## 4.3. Tests of Hypotheses

### 4.3.1. Test of H1

Our first hypothesis predicts that the effect of the disclosure platform (i.e., eliciting more extreme stock price change judgments when corporate news is disclosed on the firm's Facebook web page rather than its corporate investor relations web page) will be greater when the corporate news is negative rather than positive. Panel A of table 1 presents means (standard errors) of investors' stock price change judgments, as well as stock price change judgments adjusted for the effect of having a Facebook account.[13] A graphical representation of adjusted stock price change judgments is illustrated in figure 2.

Since H1 predicts an ordinal interaction between the news valence and the disclosure platform, contrast coding is the most appropriate way to test H1. Using contrast codes enhances statistical power compared to the interaction tested in conventional Analysis of Variance (ANOVA) without increasing the associated Type I error rates (Buckless and Ravenscroft 1990). Consistent with our

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[13] In the demographic questions, we asked participants whether or not they had a Facebook account. Analyses revealed that having a Facebook account had a significant influence on participants' stock price change judgments, as illustrated in panel B of table 1. This finding is consistent with our theory that argues that prior experience with Facebook will influence investors' reactions to corporate news received on that web site. Therefore, we test H1 using participants stock price change judgments adjusted for the effect of having a Facebook account as the dependent variable, as illustrated in panel C of table 1. Results of testing H1 are inferentially identical if we use the unadjusted stock price change judgments as the dependent variable.

predictions, we test H1 using the following set of contrast weights: +2, +2, -3, -1 for Positive News/Facebook, Positive News/Corporate investor relations web page, Negative News/Facebook, and Negative News/Corporate investor relations web page, respectively. These contrast weights predict that the impact of disclosure platform on investors' stock price change judgments will be greater when the news is negative rather than positive. Further, with the use of these contrast weights we predict that the impact of news valence on investors' stock price change judgments will be significant for both Facebook and the corporate investor relations web page.

Panel C of table 1 reveals that the +2, +2, -3, -1 contrast is significant using investors' stock price change judgments, adjusted for the effect of having a Facebook account, as the dependent variable ($F = 436.85$, $p < 0.01$, one-tailed). Further, when the news was positive, disclosing the news on Facebook rather than the corporate web page did not impact investors' stock price change judgments ($F = 0.15$, $p = 0.70$, two-tailed). In contrast, when the news was negative, disclosing the news on Facebook rather than the corporate web page resulted in more negative stock price change judgments ($F = 2.96$, $p = 0.04$, one-tailed). In addition, when the news was positive rather than negative, investors predicted more favorable stock price change for both Facebook ($F = 250.32$, $p < 0.01$, one-tailed) and the corporate web page ($F = 215.30$, $p < 0.01$, one-tailed). Overall, these results support the

ordinal interaction between news valence and disclosure platform predicted in H1.[14]

*[Insert Table 1 about here]*

*[Insert Figure 2 about here]*

### 4.3.2. Test of H2

Our second hypothesis predicts that the effect of the disclosure platform (i.e., triggering more extreme affective reactions to corporate news when it is disclosed on Facebook rather than the corporate investor relations web page) will be greater when the news is negative rather than positive. Panel A of table 2 presents means (standard errors) of the affect factor as well as the affect factor adjusted for the effect of having a Facebook account.[15] A graphical representation of the adjusted affect factor is illustrated in figure 3.

Similar to H1, we test H2 using the +2, +2, -3, -1 contrast. Panel C of table 2 reveals that the +2, +2, -3, -1 contrast is significant using the affect factor, adjusted for the effect of having a Facebook account, as the dependent variable (F

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[14] H1 is also supported using alternative sets of contrast weights such as +3, +2, -4, -1 for Positive News/Facebook, Positive News/Corporate investor relations web page, Negative News/Facebook, and Negative News/Corporate investor relations web page, respectively. This alternative set of contrast weights allows for a significant effect of disclosure platform given positive news.

[15] Consistent with our theory, analyses reveal that having a Facebook account exerts a significant influence on participants' affective reactions (i.e., affect factor), as illustrated in panel B of table 2. Therefore, we test H2 using the affect factor adjusted for the effect of having a Facebook account as the dependent variable, as illustrated in panel C of table 2. Results of testing H2 are inferentially identical if we use the unadjusted affect factor as the dependent variable.

= 415.40, p <0.01, one-tailed). Further, when the news was positive, disclosing the news on Facebook rather than the corporate web page did not impact investors' affective reactions (F = 0.05, p = 0.82, two-tailed). In contrast, when the news was negative, disclosing the news on Facebook rather than the corporate web page resulted in more negative affective reactions (F = 2.90, p = 0.04, one-tailed). In addition, when the news was positive rather than negative, investors experienced more favorable affective reactions for both Facebook (F = 247.72, p <0.01, one-tailed) and the corporate web page (F = 195.46, p <0.01, one-tailed). Overall, these results support the ordinal interaction between then news valence and the disclosure platform predicted in H2.[16]

*[Insert Table 2 about here]*

*[Insert Figure 3 about here]*

### 4.3.3. Test of H3

Tests of our first two hypotheses support the prediction that the impact of the disclosure platform (Facebook vs. Corporate investor relations web page) on investors' affective reactions and price change judgments is greater when the corporate news is negative rather than positive. More specifically, we document that the disclosure platform influences investors' affective reactions and stock price

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[16] H2 is also supported using alternative sets of contrast weights such as +3, +2, -4, -1 for Positive News/Facebook, Positive News/Corporate investor relations web page, Negative News/Facebook, and Negative News/Corporate investor relations web page, respectively. This alternative set of contrast weights allows for a significant effect of disclosure platform given positive news.

change judgments only when the corporate news is negative. Our third hypothesis predicts that investors' affective reactions will mediate the influence of the disclosure platform and news valence on investors' stock price change judgments.

Based on our predictions and the findings of testing our first two hypotheses, we test H3 using a two-group structural equation model that estimates separate regression coefficients for each of the positive and negative news conditions (Elliot et al. 2012; Muller et al. 2005). The model, illustrated in Figure 4, includes our independent variable (disclosure platform), mediator (affect factor), and dependent variable (stock price change judgments). In addition, the model includes a covariate, having a Facebook account, which was found to influence the dependent variable (price change judgments). We have the following predictions for the links in our model.

- Link 1: is expected to be significant and negative in the negative news condition and insignificant in the positive news condition.

- Link 2: is expected to be insignificant in both the negative news and the positive news conditions.

- Link 3: is expected to be significant and positive in the both the negative and positive news conditions.

These predictions are illustrated in figure 4.

*[Insert Figure 4 about here]*

Our model appears to be a good fit ($\chi^2/df = 1.18$ and CFI $= 0.996$).[17] Further, the regression coefficients are consistent with our predictions. Panels A and B of figure 5 present results for the negative and positive news conditions, respectively. Consistent with our expectations, the link between the disclosure platform and investors' affective reactions (i.e., Link 1) is significant and negative in the negative news condition (coefficient $= -0.17$, $p = 0.06$, one-tailed) while that link is insignificant in the positive news condition (coefficient $= 0.17$, $p = 0.84$, two-tailed). In addition, the link between investors' affective reactions and their stock price change judgments (i.e., Link 3) is significant and positive in both the negative news condition (coefficient $= 2.49$, $p < 0.01$, one-tailed) and the positive news condition (coefficient $= 2.14$, $p < 0.01$, two-tailed). Further, as expected, the relation between the disclosure platform and investors' stock price change judgments (i.e., Link 2) is insignificant for both the negative news condition (coefficient $= -0.21$, $p = 0.52$, two-tailed), and the positive news condition (coefficient $= -0.22$, $p = 0.38$, two-tailed).[18] These results support our prediction that investors' affective reactions

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[17] In order for a model to be a good fit, $\chi^2/df$ should be less than 3 and CFI should be at least 0.95 (Elliott, Hodge, and Sedor 2012; Iacobucci 2010; Marsh, Hau, and Wen 2004).

[18] Results of testing H1 reveal that when corporate news is negative, the (total) effect of the disclosure platform on investors' stock price change judgments is significant. Further, results of testing H3 show that when investors' affective reactions (i.e., the mediator) are included in the model, the (residual) effect of the disclosure platform on investors' stock price change judgments becomes insignificant in the negative news condition. These findings reveal that investors' affective reactions mediate the influence of the disclosure platform on investors' stock price change judgments when corporate news is negative. Mediation cannot be established, however, when corporate news is positive because, as revealed by the results of testing H1 and H2, the disclosure

mediate the influence of the disclosure platform and the news valence on investors' stock price change judgments.[19,20]

*[Insert Figure 5 about here]*

## 4.4. Supplemental Analysis

### 4.4.1. Credibility of Corporate News

One potential alternative explanation for our results is that the news valence and the disclosure platform may jointly influence investors' perceptions of the credibility of the corporate news rather than investors' affective reactions to the corporate news. To examine this alternative explanation, we asked participants to complete the statement "Astor's press release is _____" using an 11-point scale where 1 represents "not at all believable" and 11 represents "extremely believable". Untabulated analyses reveal that participants' ratings of the credibility of the corporate news did not differ significantly between the experimental conditions (Analysis of Variance (ANOVA) model's overall $F = 1.50$, $p = 0.21$). Also, the +2,

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platform does not influence investors' affective reactions or stock price change judgments when corporate news is positive.

[19] In addition, panels A and B of figure 5 show that the link between having a Facebook account and investors' stock price change judgments is significant and negative when corporate news is negative (coefficient = -1.30, $p < 0.01$, two-tailed) while that link is insignificant when corporate news is positive (coefficient = 0.08, $p = 0.84$, two-tailed). This finding provides further support to our prediction that the influence of disclosure platform on investors' judgments will be stronger when corporate news is negative rather than positive.

[20] Results of testing H2 show that having a Facebook account influences investors' affective reactions. If we modify our SEM model by adding a link between having a Facebook account and the affect factor, results would be inferentially identical to the results reported in this section.

+2, -3, -1 contrast for Positive News /Facebook, Positive News/Corporate investor relations web page, Negative News/Facebook, and Negative News/ Corporate investor relations web page, respectively, is insignificant (F = 0.25, p = 0.61, two-tailed).[21] Therefore, we conclude that investors' perceptions of the credibility of the corporate news cannot explain our observed results.

## 4.4.2. Investor Expectations about the Valence of News Shared on Specific Platforms

Another alternative explanation for our results is that investors form expectations about the valence of news that firms are likely to share on certain platforms and react more strongly when these expectations are violated rather than confirmed (for a discussion of the expectancy violations theory see for example Burgoon and Burgoon 2001; Clor-Proell 2009). Investors may recognize that, consistent with Jung et al.'s (2016) findings, firms are more likely to disclose positive rather than negative corporate news on social networking web sites, such as Facebook and Twitter. Therefore, investors are likely to react more strongly to negative news when it is disclosed on Facebook rather than the corporate investor relations web page because sharing negative news on Facebook violates investors' expectations.

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[21] We obtain inferentially identical results when controlling for the effect of having a Facebook account on perceptions of the credibility of corporate news: the Analysis of Covariance (ANCOVA) model is insignificant (overall F = 1.25, p = 0.29), and the +2, +2, -3, -1 contrast is insignificant (F = 0.29, p = 0.59, two-tailed).

We argue that if investors form expectations about the valence of corporate news disclosed on different platforms, these expectations are not likely to drive our observed results for two reasons. First, Expectancy Violations Theory would predict that investors will react less strongly to positive corporate news when it is disclosed on Facebook rather than the corporate investor relations web site, because investors expect corporate news posted on Facebook, but not the corporate web site, to be mainly positive. However, our results are not consistent with this prediction, as we find that the disclosure platform does not influence investor reactions to positive news. Second, investor reactions to the violations of their expectations are mainly mediated by their cognitive reactions, such as their assessments of the credibility of the firm's management and investors' perceived need to acquire additional information (Clor-Proell 2009). In our study, investors' reactions to the combination of disclosure platform and news valence are mediated by their affective reactions to the news. For these reasons, we argue that our study's results are not likely to be driven by investors' expectations about the valence of the news that firms disclose through specific disclosure platforms.

## 5. CONCLUSION

In this study, we investigate the joint influence of the disclosure platform (the company's Facebook web page versus the corporate investor relations web page) and the valence of corporate news (positive versus negative) on investors'

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affective reactions to corporate news and their stock price change judgments. Results show that the disclosure platform influences investors' affective reactions and stock price change judgments only when corporate news is negative. Further, results reveal that investors' affective reactions mediate the influence of the disclosure platform on investors' stock price change judgments when corporate news is negative, but not when corporate news is positive.

Our study extends recent research on the influence of social networking web sites on investor judgments and decisions (e.g., Cade 2016; Elliott, Grant, and Hodge 2015; Snow 2015) in a number of ways. First, while the recent research focuses mainly on Twitter as a disclosure platform, our study focuses on Facebook. Second, while the recent research investigates the cognitive processes that underlie investor reactions to corporate disclosures made on social networking web sites, our study explores the influence of investors' affective reactions to these disclosures on their investment judgments. Our findings are relevant for firms that use social networking web sites, especially Facebook, as disclosure platforms, and for regulators as they issue guidance for corporate disclosures on social networking web sites. Our theory and results are also informative for researchers and investors who use social networking web sites to collect information for investment purposes.

Our findings are timely given the rapid growth in the use of social networking web sites, such as Facebook, by companies to disclose corporate news, and by investors to collect information for investment purposes. Prior finance

research demonstrates that investors rely on information from Internet message boards (Das and Chen 2007), customer feedback (Luo 2009), and online chatter (Tirunillai and Tellis 2012) to make investment judgments and decisions. We present one study that extends this literature stream by examining how the largest social networking web sites, Facebook, influence investors' judgments given that the corporate news posted is negative or positive.

Our finding that investors react more unfavorably to negative news when it is disclosed on Facebook rather than the corporate investor relations web site provides one potential reason for firms' tendency to disclose  more positive, compared to negative, news on social networking web sites (Jung et al. 2016).   In addition, the finding that investors' unfavorable reactions to negative news are mediated through their affective reactions can help firms select appropriate disclosure platforms and identify ways to attenuate investors' reactions to negative corporate news.

Our results are also of interest for regulators, such as the SEC, who are currently planning new regulations for the use of social media, including social networking web sites, as a venue for corporate disclosures. In addition, investors themselves are likely to be interested in our study as its findings draw investors' attention to the influence of different disclosure platforms on their judgments and decisions.

Finally, our study and results raise interesting questions that can be examined in future research. For example, future research can examine the influence of the disclosure platform on other types of investment judgments, such as the perceived riskiness of the company. Further, future studies can examine factors that are likely to influence investors' reactions to corporate news disclosed on social networking web sites such as the source of the news (the company itself versus third parties). Also, future research can examine the influence of investors' affective reactions to corporate news disclosed on other social networking web sites, such as Twitter, on investors' judgments and decisions.

# REFERENCES

Adaval, R. (2003). How good gets better and bad gets worse: Understanding the impact of affect on evaluations of known brands. *Journal of Consumer Research*, 30: 352-367.

Adelaar, T., Chang, S., Lancendorfer, K.M., Lee, B., and Morimoto, M. (2003). Effects of media formats on emotions and impulse buying intent. *Journal of Information Technology*, 18: 247-266.

Aspara, J., and Tikkanen, H. (2010). The role of company affect in stock investments: Towards blind, undemanding, noncomparative and committed love. *The Journal of Behavioral Finance*, 11: 103-113.

Aquila, F., Payne, S., & Sullivan & Cromwell LLP (2013, March 13). Investor relations in the social media age. *Bloomberg BNA*. Retrieved from http://www.bna.com/investor-relations-in-the-social-media-age/

Bargh, J. A., Schwader, K. L., Hailey, S. E., Dyer, R. L., and Boothby, E. J. (2012). Automaticity in social-cognitive processes. *Trends in Cognitive Sciences*, 16: 593-605.

Barnes, N., & Lescault, A. (2012). Social media adoption soars as higher-ed experiments and reevaluates its use of new communication tools. University of Massachusetts Dartmouth Web Page/Publication. Retrieved from http://www.umassd.edu/cmr/studiesandresearch/socialmediaadoptionsoars/

Beals, R. K. (2012, Jan. 31). Investors increasingly tap social media for stock tips. *U.S. News*. Retrieved from http://money.usnews.com/money/personal-finance/mutual-funds/articles/2012/01/31/investors-increasingly-tap-social-media-for-stock-tips

Bennett, S. (2014, November 18). This is how much time we spend on social networks every day. Retrieved from http://www.adweek.com/socialtimes/social-media-minutes-day/503160

Bollen, L., Hassink, H., and Bozic, G. (2006). Measuring and explaining the quality of Internet investor relations activities: A multinational empirical analysis. *International Journal of Accounting Information Systems*, 7: 273-298.

Boyd, D., and Crawford, K. (2012). Critical questions for big data. Provocations for a cultural, technological, and scholarly phenomenon. *Information, Communication & Societ*y, 15: 662-679.

Brunswick Group. (2014, February, 26). 2014 Brunswick investor use of digital and social media survey. Retrieved from http://www.brunswickgroup.com/publications/surveys/2014-brunswick-investor-use-of-digital-and-social-media-survey/

Buck, S. (2012, January 4). 10 things you can fit into your 63,206-character Facebook status. Retrieved from http://mashable.com/2012/01/04/facebook-character-limit/#zH.KTPGmkZq1

Buckless, F.A. and Ravenscroft, S.P. (1990). Contrast Coding: A refinement of ANOVA in behavioral analysis. *The Accounting Review*, 65(4): 933-945.

Burgoon, J. K., and Burgoon, M. (2001). Expectancy theories. In W. P. Robinson, and H. Giles (Eds.): *The New Handbook of Language and Social Psychology* (pp. 77-99). London, U.K.: John Wiley & Sons, Ltd.

Cade, N. (2016). Corporate social media: how two-way disclosure channels influence investors. Working paper, University of Pittsburgh.

Chen, M., and Bargh, J.A. (1997). Nonconscious behavioral confirmation processes: The self-fulfilling consequences of automatic stereotype activation. *Journal of Experimental Social Psychology*, 33: 541-560.

Cianci, A.M. and Falsetta, D. (2008). Impact of investors' status on their evaluation of positive and negative, and past and future information. *Accounting and Finance*, 48: 719-739.

Clor-Proell, S. M. (2009). The effects of Expected and Actual Accounting Choices on Judgments and Decisions. *The Accounting Review*, 84: 1465-1493.

Corbin, J. (2012, September 24). Social media's place in investor relations. Retrieved from http://thesocialmediamonthly.com/social-medias-place-in-investor-relations/

Curtis, L., Edwards, C., Fraser, K. L., Gudelsky, S., Holmquist, J., Thornton, K., and Sweetser, K. D. (2010). Adoption of social media for public relations by nonprofit organizations. *Public Relations Review*, 36(1), 90-92.

Curtis, A., Richardson, V.J., and Schmardebeck, R. (2014). Investor attention and the pricing of earnings news. Working paper, University of Washington, University of Arkansas at Fayetteville, and University of Arkansas.

Das, S.R., and Chen, M.Y. (2007). Yahoo! For Amazon: Sentiment extraction from small talk on the Web. *Management Science*, 53(9): 1375-1388.

Elliott, W.B., Hodge, F.D., and Sedor, L.M. (2012). Using online video to announce a restatement: Influences on investment decisions and the mediating role of trust. *The Accounting Review*, 87(2): 513-535.

Elliott, W.B., Grant, S.M., and Hodge, F.D. (2015). Investor reactions to $Firm or #CEO use of social media for negative disclosures. Working paper, University of Illinois at Urbana-Champaign and University of Washington.

Facebook (2016). Company info. Retrieved from http://newsroom.fb.com/company-info/

Farrell, A.M., Grenier, J.H., and J. Leiby. (2014). Scoundrels or stars? Theory and evidence on the quality of workers in online labor markets. Working paper, Miami University of Ohio and University of Florida.

Field, L., Lowry, M. and Shu, S. (2005). Does disclosure deter or trigger litigation? *Journal of Accounting and Economics,* 39 (3): 487-507.

Fischer, E., and Reuber, A.R. (2011). Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing*, 26: 1-18.

Frijda, N. H. (2006). *The Laws of Emotion*. Mahwah, NJ: Lawrence Erlbaum Associates.

Fuhrmann, R. C. (2011, April 25). The 5 biggest investors in social media. Retrieved from http://www.investopedia.com/financial-edge/0411/the-5-biggest-investors-in-social-media.aspx

Greenfield, D. (2014). Social media in financial markets: The coming of age. Retrieved from
http://stocktwits.com/research/social-media-and-markets-the-coming-of-age.pdf

Iacobucci, D. (2010). Structural equations modeling: Fit indices, sample size, and advanced topics. *Journal of Consumer Psychology*, 20(1): 90-98.

Ito, T.A., Larsen, J.T., Smith, N.K., and Cacioppo, J.T. (1998). Negative information weighs more heavily on the brain: The negativity bias in evaluative categorizations. *Journal of Personality and Social Psychology*, 75(4): 887-900.

Jones, C.L., Weingram, S.E. (1996). The determinants of 10b-5 litigation risk. Unpublished paper, Stanford University, Palo Alto, CA.

Joyce, S. (2013). Public company use of social media for investor relations. Q4 systems whitepaper. Retrieved from http://go.q4websystems.com/rs/q4websystems/images/Q4%20Web_2013 %20Blog%20Whitepaper_FINAL.pdf?mkt_tok=3RkMMJWWfF9wsRou vqzIZKXonjHpfsXx4ugpT%2Frn28M3109ad%2BrmPBy93osCWp8na% 2BqWCgseOrQ8mF8BV9ayUc0Qqq0%3D

Jung, M.J., Naughton, J.P., Tahoun, A., and Wang C. (2016). Do firms strategically disseminate? Corporate use of social media. Working paper, New York University, Northwestern University, and London Business School.

Kahneman, D., and A. Tversky. (1979). Prospect theory: an analysis of decision under risk, *Econometrica* 47, 263–291.

Kanouse, D.E, and Hansen, L.R., Jr. (1971). Negativity in evaluations. In E.E. Jones, D.E. Kanouse, H.H. Kelley, R.E. Nisbett, S. Valin, and B. Weiner (Eds.), *Attribution: Perceiving the Causes of Behavior* (pp. 47-62). Morristown, NJ: General learning Press.

Kaplan, A., & Haenlein, M. (2010). Users of the world, unite: The challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68. doi:10.1016/j.bushor.2009.09.003

Karabulut, Y. (2013). Can Facebook predict stock market activity? Working paper, Goethe University Frankfurt.

Kasznik, R., and Lev, B. (1995). To warn or not to warn: Management disclosures in the face of an earnings surprise. *The Accounting Review,* 70 (1): 113-134.

Kortekaas, V., & Warwick-Ching, L. (2013, March 29). Wealth managers sign up to social media. *Financial Times*. Retrieved from http://www.ft.com/intl/cms/s/0/09fadc9c-8d75-11e2-a0fd-00144feabdc0.html#axzz3KWC1exAV

Kouri, L., & Needham, J. (2013). Financial professionals social media adoption study. Retrieved from https://www.americancentury.com/content/dam/americancentury/direct/rd/pdf/Financial_Professionals_Social_Media_Adoption_Study_2013.pdf

Lee, L.F., Hutton, A., and Shu, S. (2015). The role of social media in the capital market: evidence from consumer product recalls. Journal of Accounting Research, 53(2): 367-404.

Luo, X. (2009). Quantifying the long-term impact of negative word of mouth on cash flows and stock prices. *Marketing Science*, 28(1): 148-165.

Marsh, H.W., Hau, K.T., and Wen, Z. (2004). In search for golden rules. *Structural Equation Modeling*, 11(3): 320-341.

Mercer, M. (2005). The fleeting effects of disclosure forthcomingness on management's reporting credibility. *The Accounting Review*: 80(2): 723-744.

Mont, J. (2013, May 07). Companies prepare for disclosure on social media. *Compliance Week*, Retrieved from http://www.complianceweek.com/news/news-bulletin/companies-prepare-for-disclosure-on-social-media

Muller, D., Judd, C.M., and Yzerbyt, V.Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, 89(6): 852-863.

Paolacci G, Chandler J, Ipeirotis P. (2010). Running experiments on Amazon Mechanical Turk. *Judgment Decision-Making* 5(4): 11–9.

Pressman, A. (2013, August 13). Carl Icahn's multibillion-dollar tweet boosts Apple stock. Retrieved from http://finance.yahoo.com/blogs/the-exchange/carl-icahn-multibillion-dollar-tweet-boosts-apple-stock-205938760.html

Rennekamp, K. (2012). Processing fluency and investors' reactions to disclosure readability. *Journal of Accounting Research*, 50(5): 1319-1354.

Russolillo, S. (2012, July 5). Netflix Shares Surge; Option Activity Jumps. *The Wall Street Journal*. Retrieved from http://blogs.wsj.com/marketbeat/2012/07/05/netflix-shares-surge-option-activity-jumps/

Salyer, K. (2012) The Facebook post that got Netflix CEO Reed Hastings in trouble with the SEC. Retrieved from http://www.bloomberg.com/news/articles/2012-12-07/the-facebook-post-that-got-netflix-ceo-reed-hastings-in-trouble-with-the-sec.

Savio, C., & Raroque, J. (2012). Social media's growing influence among high net worth investors. *Cogent Research and LinkedIn.* Retrieved from https://business.linkedin.com/content/dam/business/marketing-solutions/global/en_US/site/pdf/cs/linkedin_hnw_investor_research_us_en_130314.pdf

Schneider, W., and Shiffrin, R. M. (1977). Controlled and automatic human information processing: I. Detection, search, and attention . *Psychological Review*, 84: 1-66.

Schoeff Jr. M. (2013, July 15). Firms are getting 'social'. (2013). *Investment News*, 17(27).

Short, J. A., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: Wiley.

Skowronski, J. J., and D. E. Carlston. (1989). Negativity and extremity biases in impression formation: a review of explanations, *Psychological Bulletin* 105, 131–142.

Snow, N. (2015). Retail investors' perceptions of financial disclosures on social media: an experimental investigation using Twitter. Working paper, University of South Florida.

Srull T. K., and Wyer Jr., R. (1980). Category accessibility and social perception: some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology*, 38: 841-846.

Stewart, J.B. (2016, May 5). Facebook has 50 minutes of your time each day. It wants more. Retrieved from http://www.nytimes.com/2016/05/06/business/facebook-bends-the-rules-of-audience-engagement-to-its-advantage.html?_r=4

Strack, F. (1992). "The different routes to social judgments: experiential versus informational strategies," in *The construction of social judgments*, Leonard L. Martin and Abraham Tesser eds. Hillsdale, NJ: Lawrence Erlbaum Associates, 249-76.

Taylor, S. E. (1991). Asymmetrical effects of positive and negative events: the mobilization minimization hypothesis, *Psychological Bulletin*, 110, 67–85.

Tett, G. (2013, April 18). Markets insight: wake up to the #Twitter effect on markets. *Financial Times*. Retrieved from http://www.ft.com/intl/cms/s/0/0aacf78c-a801-11e2-b031-00144feabdc0.html#axzz3LERxcCeh

Tirunillai, S., and Tellis, G. (2012). Does chatter matter? The impact of online consumer generated content on a firm's financial performance. *Marketing Science*, 31(2): 198-215.

Twitter (2016). Retrieved from https://about.twitter.com/company

Wang, T., Lin, H.L., and Yen, J.C. (2016). How do investor relations related disclosures on Facebook contribute to a company's information environment? Working paper, University of Hawaii at Manoa, National Taipei University, and National Taiwan University.

Wanke, M., Bohner, G., and Jurkowitsch, A. (1997) There are many reasons to drive a BMW: Does imagined ease of argument generation influence attitudes? *Journal of Consumer Research*, 24: 170-177.

Waters, R., Burnett, E., Lamm, A., & Lucas, J. (2009). Engaging stakeholders through social networking: How nonprofit organizations are using Facebook. *Public Relations Review*, 35(2), 102-106. doi:10.1016/j.pubrev.2009.01.006

Wyer, R.S., Jr., and Srull, T.K. (1986). Human cognition in its social context. *Psychological Review*, 93(3): 322-359.

Zajonc, R.B. (1980). Feeling and thinking preferences need no inferences. *American Psychologist*, 35(2): 151-175.

Zhou, M. J., Lei, L. G., Wang, J., Fan, W. P., and Wang, A. G. (2015). Social media adoption and corporate disclosure. *Journal of Information Systems*, 29: 23-50.

# Figure 1

## Predictions – Investors' Stock Price Change Judgments and Affective Reactions
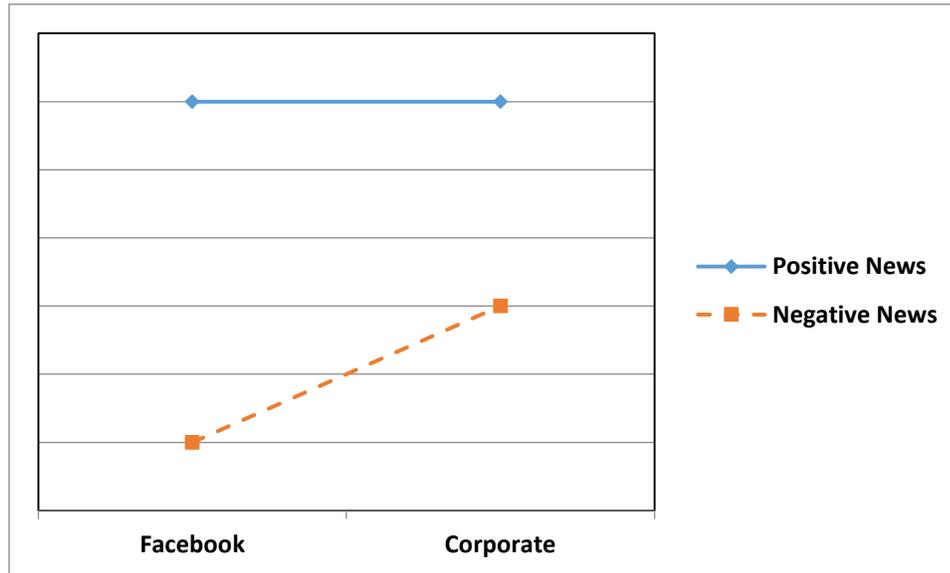


Figure 1 displays the predicted effects of the news valence and disclosure platform on investors' stock price change judgments (H1) and affective reactions (H2). H1 (H2) predicts an ordinal interaction that can be tested using contrast weights such as +2, +2, -3, -1 for positive news/Facebook, positive news/Corporate web page, negative news/Facebook, and negative news/corporate web page, respectively. This interaction predicts that the influence of the disclosure platform on investors' affective reactions and stock price change judgments will be stronger when corporate news is negative compared to positive.

# Figure 2

## Results – Adjusted Stock Price Change Judgments
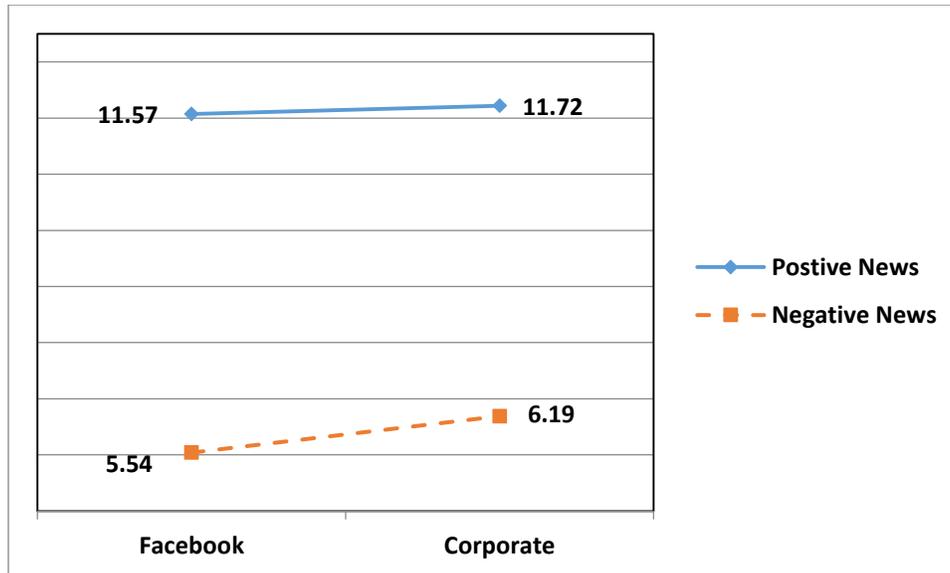


Figure 2 displays the observed pattern of adjusted least square means of participants' stock price change judgments (see panel A of table 1). This pattern is tested using the planned contrasts presented in panel C of table 1. See table 1 for a description of the measurement of participants' stock price change judgments.

**Figure 3**
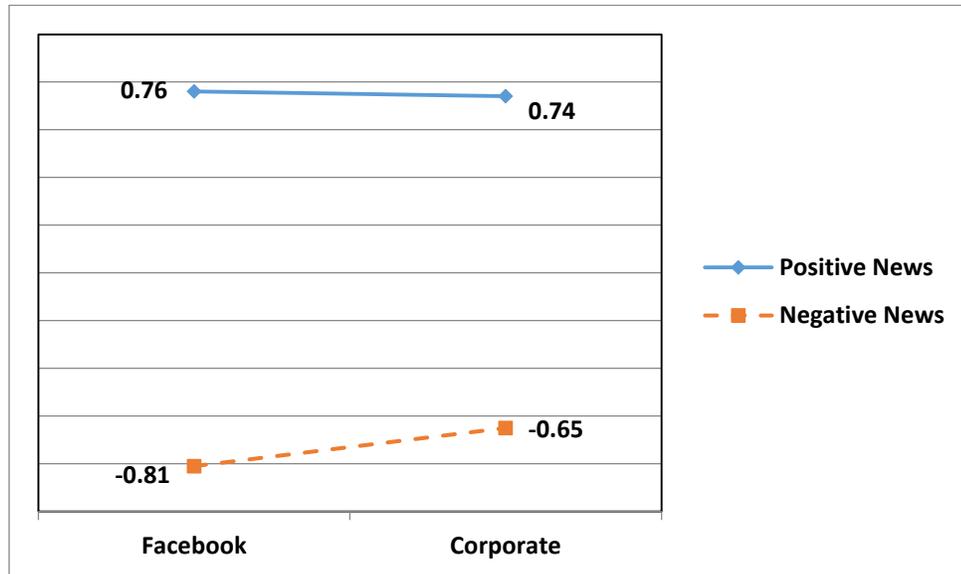
**Results – Affective Reactions (Adjusted Affect Factor)**



Figure 3 displays the observed pattern of adjusted least square means of participants' adjusted affective reactions (i.e., the adjusted affect factor) (see panel A of table 2). This pattern is tested using the planned contrasts presented in panel C of table 2. See table 2 for a description of the measurement of the adjusted affect factor.
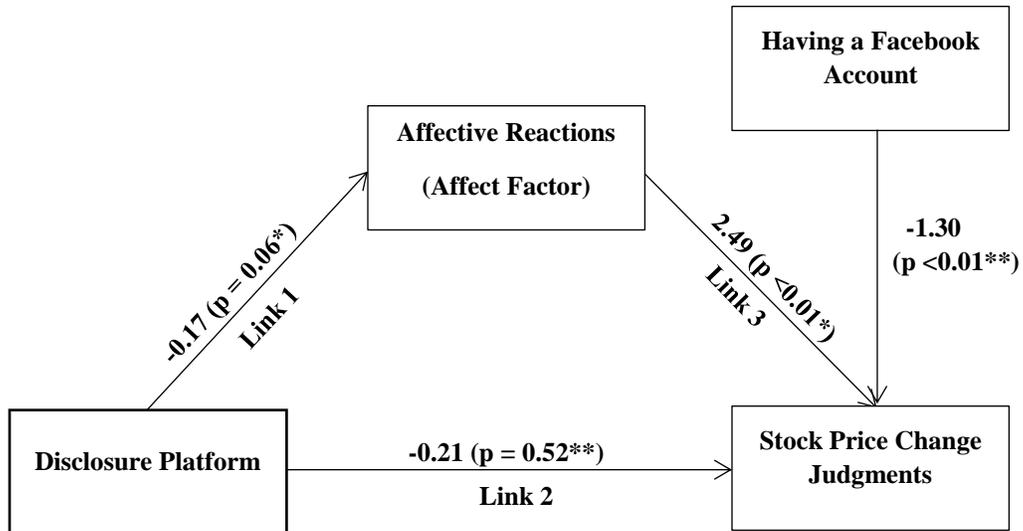
**Figure 4**

**H3 – Predictions**

Having a Facebook Account

Affective Reactions (Affect Factor)

− / [n.s.]
Link 1

+ / [+]
Link 3

− / [?]

Disclosure Platform

n.s. / [n.s.]
Link 2

Stock Price Change Judgments
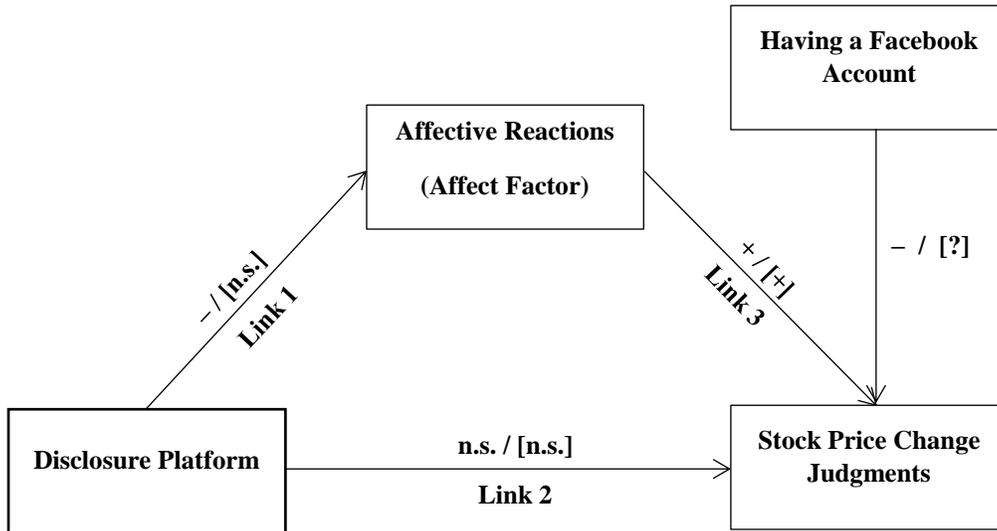
Figure 4 presents the structural equations model used to test H3. For each link, the predicted sign in the negative news condition is listed first, followed by the predicted sign in the positive news condition listed in parentheses.

**Figure 5**

**H3 – Results**

**Panel A: Negative News**



Having a Facebook Account

Affective Reactions (Affect Factor)

-0.17 (p = 0.06*)
Link 1

2.49 (p <0.01*)
Link 3

-1.30
(p <0.01**)

Disclosure Platform

-0.21 (p = 0.52**)
Link 2

Stock Price Change Judgments

**Figure 5 - continued**

**H3 – Results**

**Panel B: Positive News**
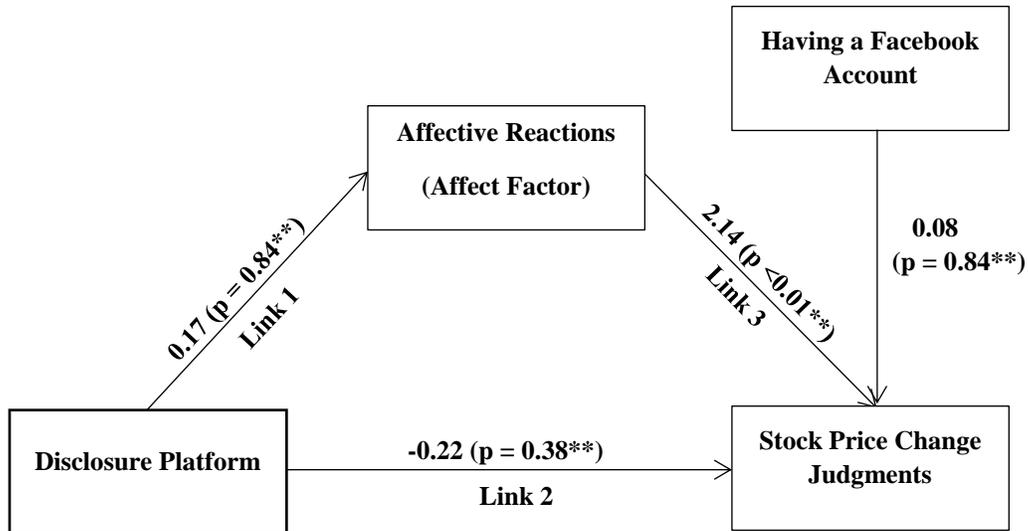


Figure 5 presents the observed coefficients, followed by the p-values in parentheses, for the structural equations model used to test H3. Panel A (B) presents the results for the negative (positive) news condition. See table 1 for a discussion of the news valence and disclosure platform manipulations. In addition, table 1 (2) presents descriptive statistics for investors' stock price change judgments (affective reactions).

\* One-tailed p-values given our directional hypotheses.
\*\* Two-tailed p-values.

# TABLE 1

## Test of H1 – Investors' Stock Price Change Judgments

**Panel A: Means [Standard Errors] of Investors' Stock Price Change Judgments and Stock Price Change Judgments Adjusted for the Effect of Having a Facebook Account**

| News Valence | Disclosure Platform | n | Stock Price Change Judgments | Stock Price Change Judgments – Adjusted |
|---|---|---|---|---|
| Positive | Facebook | 88 | 11.57 [0.28] | 11.57 [0.27] |
| Positive | Corporate | 92 | 11.75 [0.27] | 11.72 [0.27] |
| Negative | Facebook | 92 | 5.51 [0.27] | 5.54 [0.27] |
| Negative | Corporate | 92 | 6.18 [0.27] | 6.19 [0.27] |

**Panel B: Analysis of Covariance of Investors' Stock Price Change Judgments Adjusted for the Effect of Having a Facebook Account**

| Source of Variation | SS | dF | MS | F-Statistic | p-value |
|---|---|---|---|---|---|
| News Valence | 3027.81 | 1 | 3027.81 | 464.67 | <0.01 |
| Disclosure Platform | 14.41 | 1 | 14.41 | 2.21 | 0.14 |
| News Valence * Disclosure Platform | 5.65 | 1 | 5.65 | 0.87 | 0.35 |
| Facebook Account | 58.42 | 1 | 58.42 | 8.97 | <0.01 |
| Error | 2339.27 | 359 | 6.52 | | |

**TABLE 1 - continued**

**Test of H1 – Investors' Stock Price Change Judgments**

**Panel C: Planned Contrast Coding for H1 and Follow-up Simple Effect Tests Using Investors' Stock Price Change Judgments Ajusted for the Effect of Having a Facebook Account**

| Source | df | F-statistic | p-value |
|---|---|---|---|
| Overall Test [H1]: | | | |
| The effect of disclosing corporate news on Facebook rather than on the corporate investor relations web page (i.e. more extreme stock price change judgments) will be stronger when the news is negative compared to positive. | 1 | 436.85 | <0.01* |
| Contrast weights [2, 2, -3, -1] | | | |
| Follow-up Simple Effect Tests | | | |
| Effect of disclosure platform given positive news | 1 | 0.15 | 0.70** |
| Effect of disclosure platform given negative news | 1 | 2.96 | 0.04* |
| Effect of news valence given Facebook | 1 | 250.32 | <0.01* |
| Effect of news valence given corporate web page | 1 | 215.30 | <0.01* |

Participants received a press release that revealed either positive or negative news about the company. The press release was disclosed either on the company's Facebook web page or its corporate investor relations web page. After reading the press release, participants were asked to make stock price change judgments by assessing the potential that the company's stock price will appreciate or decline in the future. The responses were measured on a 15-point scale where 1 represents "extremely likely to decline (decrease)", 8 represents "not likely to change", and 15 represents "extremely likely to appreciate (increase)". We use stock price change judgments, adjusted for the effect of having a Facebook account, to test H1.

* One-tailed p-values given our directional hypotheses.
** Two-tailed p-value.

# TABLE 2

## Test of H2 – Investors' Affective Reactions

**Panel A: Means [Standard Errors] of Investors' Affective Reactions and Affective Reactions Adjusted for the Effect of Having a Facebook Account**

| News Valence | Disclosure Platform | n | Affect Factor | Affect Factor – Adjusted |
|---|---|---|---|---|
| Positive | Facebook | 88 | 0.76 [0.07] | 0.76 [0.07] |
| Positive | Corporate | 92 | 0.74 [0.07] | 0.74 [0.07] |
| Negative | Facebook | 92 | -0.82 [0.07] | -0.81 [0.07] |
| Negative | Corporate | 92 | -0.65 [0.07] | -0.65 [0.07] |

**Panel B: Analysis of Covariance of the Affect Factor Adjusted for the Effect of Having a Facebook Account**

| Source of Variation | SS | dF | MS | F-Statistic | p-value |
|---|---|---|---|---|---|
| News Valence | 198.02 | 1 | 198.02 | 441.46 | <0.01 |
| Disclosure Platform | 0.48 | 1 | 0.48 | 1.07 | 0.30 |
| News Valence * Disclosure Platform | 0.83 | 1 | 0.83 | 1.85 | 0.17 |
| Facebook Account | 1.93 | 1 | 1.93 | 4.29 | 0.04 |
| Error | 161.03 | 359 | 0.449 | | |

**TABLE 2 - continued**

**Test of H2 – Investors' Affective Reactions**

**Panel C: Planned Contrast Coding for H2 and Follow-up Simple Effect Tests Using the Affect Factor Adjusted for the Effect of Having a Facebook Account**

| Source | df | F-statistic | p-value |
|---|---|---|---|
| Overall Test [H1]: | | | |
| The effect of disclosing corporate news on Facebook rather than on the corporate investor relations web page (i.e., more extreme affective reactions) will be stronger when the news is negative compared to positive. | 1 | 415.40 | <0.01* |
| Contrast weights [2, 2, -3, -1] | | | |
| Follow-up Simple Effect Tests | | | |
| Effect of disclosure platform given positive news | 1 | 0.05 | 0.82** |
| Effect of disclosure platform given negative news | 1 | 2.90 | 0.04* |
| Effect of news valence given Facebook | 1 | 247.72 | <0.01* |
| Effect of news valence given corporate web page | 1 | 195.46 | <0.01* |

See table 1 for a description of the news valence and disclosure platform manipulations as well as the stock price change judgments.

After reading the press release and making stock price change judgments, we measured participants' affective reactions to the news included in the press release by asking them to what extent they disagree or agree to four statements, "Astor's press release made me feel: 1) good, 2) pleased, 3) bad, and 4) disappointed". Responses were measured on an 11-point scale where 1 represents "strongly disagree" and 11 represents "strongly agree".
 A factor analysis reveals that these four questions load on one factor, which we call the affect factor. We use the affect factor, adjusted for the effect of having a Facebook account, to test H2.
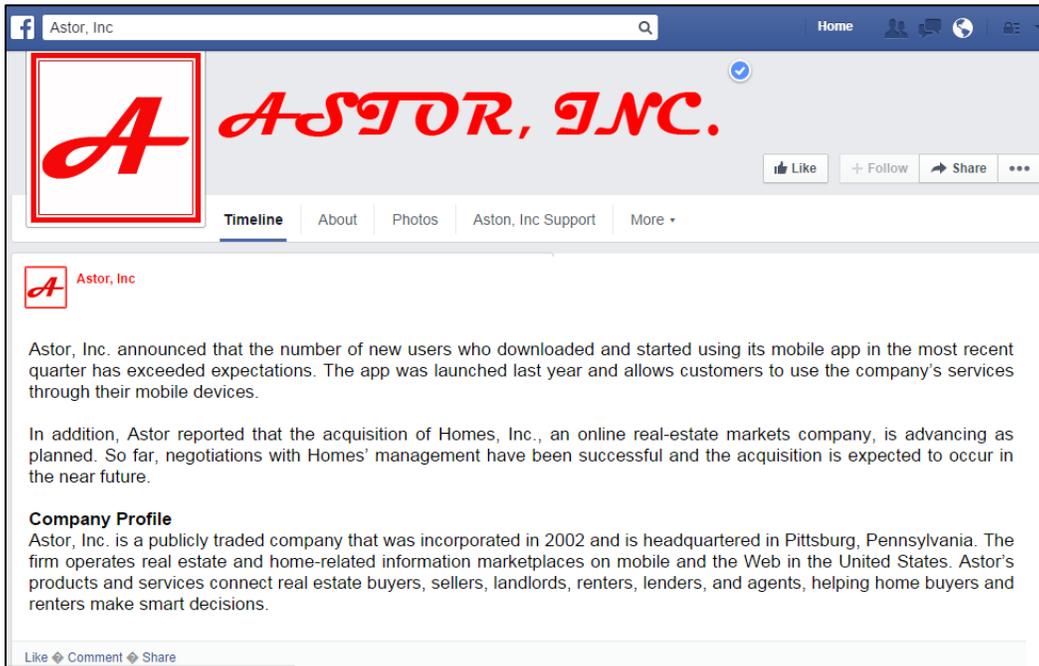
* One-tailed p-values given our directional hypotheses.
** Two-tailed p-value.

# APPENDIX A

## Screenshots of experimental treatments

### 1. Positive News – Facebook web page

## 2. Negative News – Corporate investor relations web page



**ASTOR, INC.**

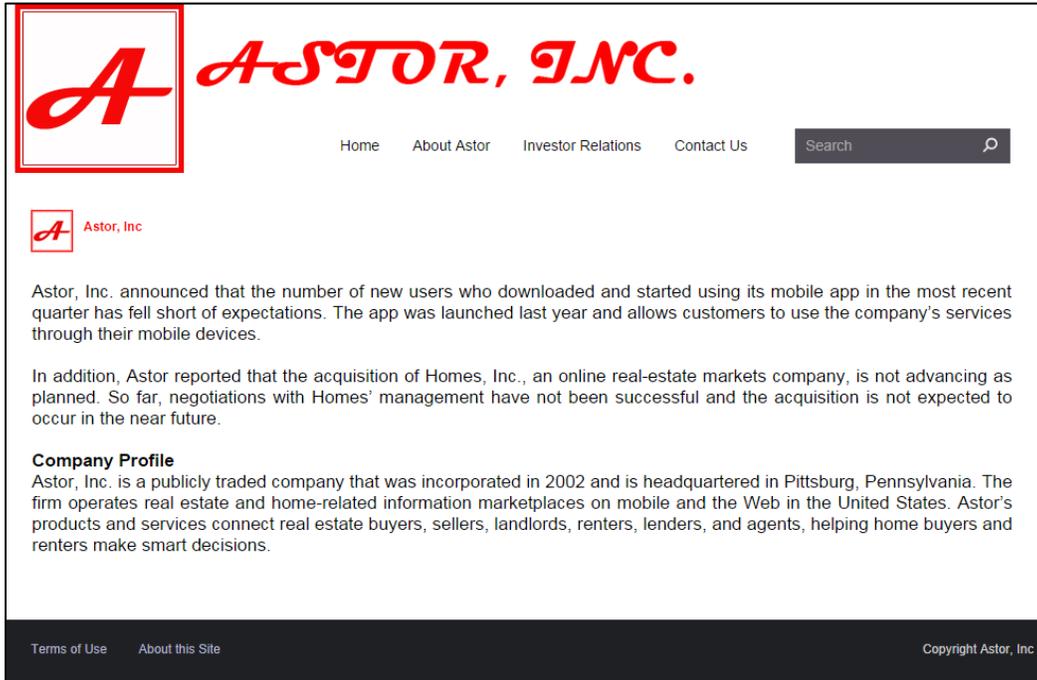Home    About Astor    Investor Relations    Contact Us    Search

**Astor, Inc**

Astor, Inc. announced that the number of new users who downloaded and started using its mobile app in the most recent quarter has fell short of expectations. The app was launched last year and allows customers to use the company's services through their mobile devices.

In addition, Astor reported that the acquisition of Homes, Inc., an online real-estate markets company, is not advancing as planned. So far, negotiations with Homes' management have not been successful and the acquisition is not expected to occur in the near future.

**Company Profile**
Astor, Inc. is a publicly traded company that was incorporated in 2002 and is headquartered in Pittsburg, Pennsylvania. The firm operates real estate and home-related information marketplaces on mobile and the Web in the United States. Astor's products and services connect real estate buyers, sellers, landlords, renters, lenders, and agents, helping home buyers and renters make smart decisions.

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