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Retail Investors' Perceptions of Financial Disclosures on Social Media: An Experimental Investigation Using Twitter

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Retail Investors' Perceptions of Financial Disclosures on Social Media:

An Experimental Investigation Using Twitter

by

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DEDICATION

To my parents, Gawain and Addie Snow.

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ABSTRACT

Historically, companies disseminated financial information via the press release. The ability to disseminate information now exists on multiple “new media” channels beyond just the press release, with each channel reaching a different audience. With the different channels of communication come different connotations and associations that people have about the channels, which may affect the interpretation of the message, thereby altering management’s ability to effectively communicate with stakeholders. I investigate whether retail investors’ processing of financial information disclosures is dependent upon the fit between the channel and the type of information sent on the channel. Using the Elaboration Likelihood Model, I experimentally test how good and bad financial information posted on a social media channel, Twitter, compares to a more traditional channel, a company investor relations page where financial information is traditionally posted. I find that Twitter is associated with investors processing financial information unconsciously on the peripheral route while conscious or central route processing is associated with information coming from the company’s investor relations page. Additionally, I find that investors have lower perceptions of management credibility after viewing financial disclosures on a company’s Twitter feed than after viewing the same disclosures on the company’s investor relations page.

1.0 INTRODUCTION

1.1 Research Questions and Motivation

Disseminating financial information is a traditional function of the investor relations departments of public companies. Investor relations activities involve posting announcements of quarterly and annual financial results, management forecasts, and more recently, live tweeting of CEO and CFO comments from conference calls. Firms are now allowed, under recent SEC rulings, to disseminate financial disclosures that fall under Regulation Financial Disclosure (Reg FD) across multiples channels, such as Twitter, Facebook, YouTube, and SlideShare, as long as the channel is disclosed to investors before the announcement. In a study of 807 companies, Jung et al. (2014) finds that over 50 percent of the S&P 1500 firms use Twitter or Facebook and 35.2 percent used social media at least once to release earnings announcements. Although companies use social media for investor relations, they are unsure of how best to leverage the technology (Barnes and Lescault 2012, Evans 2011). Therefore, it is important to understand whether a firm's use of social media for investor relations has a positive or negative influence on investors. In this study, I investigate whether the use of Twitter by companies for releasing financial information affects retail investors' perceptions of management credibility and the consequences thereof. Furthermore, I investigate whether the effects of releasing financial information on Twitter varies by news valence (i.e., good news versus bad news).

The trend to use social media for business is not limited to companies. A recent survey of buy-side investors and sell-side analysts found that 12 percent had made an investment decision after initially sourcing information from Twitter, and 28 percent had investigated a business issue based on something seen on Twitter (Brunswick Group 2012). Of those polled, 56 percent responded that the role of blogs, micro-blogging services (i.e. Twitter) and social networking sites in the investment decision process was increasing (Brunswick Group 2012). Brunswick also found that information sourced directly from companies has the most influence on the investment decisions of professional investors. Reg FD was enacted in 1999 by the SEC to ensure that all investors received material information at the same time. The implicit (untested) assumption of the regulation is that financial disclosures are interpreted in the same manner by investors, regardless of channel.

The efficient market hypothesis argues that prices reflect new information, regardless of where and how the information is disclosed. However, the ability to disseminate information now exists on multiple channels beyond just the press release, with each channel reaching a different audience. With the different channels of communication come different inherent strengths, along with connotations and associations that people have about the channels. Product channel fit theory posits that when the strengths of the channel and the characteristics of the product align or fit together, consumers are best able to achieve their consumption goals (Bang et al. 2013). The strengths of the channel combined with the associations and connotations that investors have about a channel may not always fit with the characteristics of the message being disseminated on the channel. The lack of fit between channel and

message could interfere with investors' processing of the information sent. Social media, as a channel, has experienced rapid growth, and generally refers to activities integrating electronic technologies with social interactions. It is unclear whether the use of social media to disseminate financial information would be viewed positively, negatively, or not any differently from traditional sources. Investors could view a company as forward thinking, innovative and transparent upon adoption of social media for financial information dissemination. Alternatively, the same action could be viewed as an ill-advised attempt at using a medium intended for social interactions for the serious business of conveying information about financial performance. Incorrect use of the medium could be attributed to the company's ignorance of the medium, the medium's intended audience, and potentially, what the company itself is and who its true customers and investors are. Finally, investors may view social media adoption for financial information as merely one more outlet in the cornucopia of outlets that has emerged with the advent of the internet, due to familiarity with the media, the company, or overall desensitization to news events.

Jensen and Meckling (1976) argue that a company is a "nexus of contracts," in which a contract is defined as a legal agreement between two parties. A contract can specify in what circumstances an individual is to be social on behalf of the company, but the contract itself inherently lacks the qualities necessary to be social. Yet companies attempt to be seen as social actors by being on platforms dedicated to increasing social interaction. The message discrepancy, caused by lack of fit, of a non-social actor on a social platform could cause unintended cognitive dissonance for the message receiver, causing the message to be processed unconsciously (Petty and Cacioppo 1986). The

same information could be processed consciously if message discrepancy is absent and the scenario is viewed positively or even indifferently. The scenario could then be viewed as an argument rather than a cue, and per the Elaboration Likelihood Model the information would be processed consciously along with all the other information participants use to make their decision (Petty and Cacioppo 1986). Thus, the research question is whether investors interpret financial information from different disclosure platforms the same or whether their interpretations vary across platforms.

I address the research question by conducting an experiment in which I manipulate disclosure platform, between a company's Twitter feed or investor relations page, and whether the company beats (good news) or misses (bad news) analyst forecasts. I extend product-channel fit theory from the product domain to the information domain and test the idea that the channel a corporation uses to disseminate financial information influences investors' perceptions of management credibility, and ultimately their judgment and decision about investing in the firm. Using the Elaboration Likelihood Model (Petty and Cacioppo 1986), I am able to explain how good and bad financial information through a company's Twitter feed compares to the same information posted on the company's investor relations page, where financial information is traditionally posted.

Research is mixed on the influence of news valence. Mercer (2005) predicts and finds that increased transparency, especially around negative news, increases management credibility, at least in the short term. Yet Jung et al. (2014) find that firms rarely release negative news on social media, even when they commit to releasing financial information on the channel. Lee et al. (2015) finds that firms have to

substantially increase the number of posts on social media after experiencing a product recall to have the same influence as a post on the company website or RSS feed. Liu et al. (2014) find that firms with negative news are more likely to release positive news releases to counter the negative news, indicating that firms bundle good and bad news together (Dye 2013).

The Elaboration Likelihood Model (ELM) explains why a perceptual difference could occur across these disclosure channels via the constructs of routes: peripheral and central. The central route is the cognitive route taken when a decision is made consciously, such as assessing the merits of a specific action. For example, the decision of whether or not to invest in a stock, bond or mutual fund would be processed on the central route. The peripheral route is the cognitive route taken when a decision is made unconsciously, such as when one is prompted by a positive or negative cue or cues. Two people can arrive at the same conclusion to a problem though one uses the central route and the other the peripheral route. However, those decisions, perceptions or attitudes that occur because of central route processing are, in general, more stable, enduring and more predictive of long term behavior compared to those behaviors arising from peripheral route processing (Petty and Cacioppo 1986).

For my experiment, evidence of central route processing was measured using perceptions of argument quality and disclosure credibility, while evidence of peripheral route processing was measured using perceptions of perceived usefulness and attitude, all latent constructs, following Bhattacharjee and Sanford (2006). Participants in the experiment were shown only one disclosure bundle, starting either at the company's Twitter feed (low fit) or investor relations page (high fit), on which headlines for press

releases were seen. In the good and bad news conditions, the press releases were viewed, followed by a Reuters article on the annual report and information about whether the company missed or beat forecasts. Participants then answered questions that measure the latent variables. I argue that, compared to the company's investor relations page, financial disclosures made via Twitter are less persuasive as measured by the latent constructs of argument quality and disclosure credibility for central route processing and perceived usefulness and attitude for peripheral route processing. Furthermore, I posit that there is an interaction of bad news or missing forecasts with Twitter that further decreases investors' perception of management credibility rather than raising it as predicted by Mercer (2005). Additionally, such an interaction would explain why Lee et al. (2015) find that firms must issue more social media posts than company blog posts during product recalls.

To test the research hypotheses, I use 807 participants recruited from Amazon Mechanical Turk. As proxies for retail investors, participants take on the role of a member in a hypothetical investment club that had purchased 1000 shares of Lafarge S.A., a company headquartered and traded on the Paris Stock exchange and active on social media. Participants were randomly assigned to see Lafarge press releases announced either on the company's Twitter feed or investor relations web page followed by a Reuters article that Lafarge had missed or beat analyst forecasts for the 2012 fiscal year followed by the press release of the 2012 annual report. Participants then judged the attractiveness of Lafarge as an investment, recommended the number of shares to buy or sell to the club, how long to hold the shares and provided perceptions of management credibility followed by questions related to ELM. Structural equation

modeling was used to determine the extent to which participants used either the central route or the peripheral route in making their management credibility assessment. ANOVA was used to determine if management credibility varied by platform and news valence.

I find that investors process financial information posted on Twitter via the peripheral or unconscious route more so than the central or conscious route. Furthermore, I find that financial disclosures on social media are associated with lower overall investor belief of management credibility, which I show to significantly influence investor judgment and decisions about the company. Additionally, I find that retail investors seeing financial disclosures on social media have significantly lower perceptions of the disclosures' argument quality, credibility and usefulness, along with overall lower perceptions of the usefulness of the channel. These findings are robust to whether the investors received good or bad news about the company. Investors seeing good news had higher perceptions of argument quality, credibility and usefulness and a more positive attitude towards the channel than those that saw bad news.

This is the first study to investigate how information is perceived and processed across different communication channels. The findings of this study suggest that when making financial disclosures, management needs to ensure that there is a strong fit between message characteristics and the strengths of the channel used to disseminate the information, as doing so will enhance management credibility. Additionally, management should not rely upon social media as the sole avenue for financial

information dissemination until there is a higher fit[1] between the channel and its use for disclosing financial information. Instead, companies should use as many channels as possible, preferably more established channels, such as news wires and corporate websites to issue announcements in compliance with Reg FD. Additionally, the findings validate the SEC's trend of allowing Reg FD compliance via new channels, such as the April 2013 ruling on allowing Reg FD disclosures on new communication channels and the 2009 ruling to allow Reg FD disclosures on corporations' blogs. My findings suggest that continuance of the policy of encouraging transparency regardless of channel should be supported. The findings suggest that rather than being a catalyst for investor hype, new communication channels are viewed skeptically by retail investors. Additionally, the findings inform academics seeking to understand the effects of new communication channels on retail[2] investors. The study contributes to the academic literature by extending product-channel fit beyond physical products to include information. Another contribution is the use of the well-established Elaboration Likelihood Model in the context of financial disclosures on social media to show how the fit between channel and message influences investor processing of the message and the subsequent effect on management credibility.

In the next section, I frame the background to this study and discuss related literature. Next, I discuss the Elaboration Likelihood Model and hypotheses. Thereafter, I explain the experimental design and method. Finally, I discuss the results of the experiment and conclusions.

[1] It is outside the scope of this dissertation to investigate the conditions necessary for there to be a higher fit between social media and their use for releasing financial. However, my results show that five years after the majority of firms adopted Twitter (in 2009) there is low fit between the channel and financial disclosures.

[2] The synonymous term "nonprofessional investor" is often used in the literature.

2.0 BACKGROUND & PRIOR LITERATURE

This chapter begins by covering a brief history of social media. Corporations use of social media for both Regulation Financial Disclosure and other purposes are then covered. Retail investor use of financial information released by companies is covered next, followed by retail and professional investor use of social media. Finally, disclosure strategies of companies for good and bad news is discussed along with the empirical evidence surrounding said strategies.

2.1 Brief History of Social Media

Before discussing the history of a phenomenon, one should first define the phenomenon. The same logic holds when discussing the history of social media. Safko (2012) argues in *The Social Media Bible* that "social media is the media we use to be social (p. 3)." The first part of the term, social, refers to the interaction of organisms, homo sapiens and others, with other organisms. The second part of the term, media, refers to the technologies we use to make those connections. Being social through media is then not as novel a phenomenon as the popular press makes the term out to be, as various media through time have been used to communicate between individuals and groups. In various regions of the world one can find communication via drums, bells, the written word, the printed word, cans and string, telegraph, telephone, radio, television, paintings, photographs, websites, mobile technologies, and text messages, to name a few.

Standage (2011) points out that even the idea of something going "viral," or an idea taking on a life of its own beyond the original creator's control, goes at least as far back as Martin Luther, when on October 31st 1517 he nailed his "95 Theses on the

Power of Efficacy of Indulgences" to a church door in Wittenberg in present day Germany. By December, pamphlets and broadsheets of the theses appeared in three cities in Germany, Leipzig, Nuremberg and Basel, financed by Luther's friends that had received copies from him. The original pamphlets were in Latin, but German translations quickly followed and, Standage argues, spread through social networks. Standage quotes Luther's friend Friedrich Myconius who wrote that "hardly 14 days had passed when these propositions were known throughout Germany and within four weeks almost all of Christendom was familiar with them," to support the notion that Luther's message had spread rapidly. Standage argues that the 95 Theses spread in a way that would be familiar even now, as the message spread through decentralized systems whose members decided which messages were important by sharing them. This could happen in Luther's time because the cost of creating printed material had dramatically decreased since the introduction of Gutenburg's press in 1450. Since the cost of obtaining a pamphlet was low (about the price of a chicken,) printers were able to obtain monetary gain by reprinting and selling more pamphlets, usually in batches of 1,000. Reprints served as an indicator of an item's popularity similar to "Likes" and retweets today. By the reprints indication, Luther was extremely popular. In the first decade of the Reformation, over 6 million pamphlets were published; over a quarter of those were written by Luther. Others joined in the debate started by Luther, either for or against, by also having pamphlets published, notably Sylvester Mazzolini with his "Dialogue Against the Presumptuous Theses of Martin Luther." What would now be familiar to viewers in almost any comments sections of popular websites, Luther and Mazzolini exchanged blows like argumentative bloggers. The sparring of two writers via the printed words

would play out centuries later on the American continent in what is now compiled as the Federalist papers.

Standage points out that the written word was not the only tactic used. The news ballad was also used to inform the illiterate and to have them spread it. Woodcuts, a combination of bold graphics and text were used to inform the masses and served as visual aids for preachers. The tactics worked and Luther's enemies likened the spread of his ideas to the spread of a disease that even the excommunication of Luther could not stop. Luther's message had gone viral, to use the modern idiom for the phenomenon.

The Internet was originally established to provide a decentralized communication network infrastructure. Several university professors and research departments were investigating how to send messages electronically in the early 1970s. One the earliest uses of the Internet was in 1979, when Tom Truscott and Jim Ellis at Duke University created Usenet. Usenet was a worldwide discussion system that allowed those that knew about it and had access to it to post messages that could be seen by everyone that had access to Usenet. Out of Usenet and similar websites came Bulletin Board Systems (BBS), which allowed users to post code, download games and were generally hosted locally by technology hobbyists who encouraged the social aspect of the BBS, which resulted in members of the BBS meeting up in a decidedly social manner. Compuserve, created in the 1970s for businesses, expanded to consumers in the 1980s and allowed members to not only use email, but to also access thousands of discussion forums. American Online (AOL) sped up the acceptance of the computer connectivity

and its member-created communities, including innovations such as member profiles, which exist today in other social networks.

One of the earliest social networking sites was Classmates.com, founded in 1995. It sought to link old classmates together. A few years later, in 1997, SixDegrees.com was established and was one of the very first to allow user profiles, invite friends, organize groups, and view other profiles. In 1998, Bruce and Susan Ableson created Open Diary, with the intent of bringing online diary writers into one community, or social network. Open Diary was the first site to allow comments on individual entries and to allow public and private diaries. At the same time the term "blog," short for web log, came into being. Combining the idea of an online diary and social network, Friendster.com was established in 2002 and a similar site Myspace.com followed in 2003. The wildly successful Facebook.com was launched in 2004, with the business network oriented site LinkedIn.com established in 2003.

While still in their infancy, Facebook, and Myspace, and similar sites were creating what is referred to as Web 2.0. Web 1.0 was the platform whereby an author, usually a single person, created static content. Web 2.0 refers to how both developers and end users utilize the World Wide Web as a platform where content and applications are continuously updated and modified by all users in a participatory and collaborative fashion (Kaplan and Haenlien 2010). Blogs and wikis are such examples. Web 2.0 sites are generally more interactive, having animation, interactivity, and audio/video streams enabled by Adobe Flash or other languages such as HTML5, Really Simple Syndication (RSS) that allows for frequently updated content to be pushed to subscribers, and Asynchronous Java Script and XML (AJAX) that allows the update of web content in

real time but doesn't interfere with the display or behavior of the whole page. Web 2.0 is a technical framework that allows for the synthesis of all ways that people make use of social media, known as User Generated Content (UGC), as argued by Kaplan and Haenlien (2010). UGC emerged in 2005 and was defined by the Organisation for Economic Cooperation and Development (OECD) in 2007 to have three main requirements: (1) content has to be published on a publicly accessible website or social network site, (2) content has to show a certain amount of creative effort, and (3) it needs to have been created outside of professional routines and practices. Such a definition excludes email or instant messaging (IM) or copying and pasting a newspaper article or retweet, and all content that has been created with a commercial market context in mind. Kaplan and Haenlien (2010) argue that "social media is a group of internet-based applications that build on the idealogical and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content (p. 61)".

Social media platforms are not monolithic, as each platform offers similar, though distinct, functions and users may not subscribe to all platforms. The number of individuals who use social media continues to grow rapidly; Facebook reported over one billion active users in 2012 as compared to 845 million users in 2011 and 350 million users in 2010 (Tam 2013). Despite common misperceptions that most social media users are relatively young, the average age of Facebook users is approximately 40 years old, with all age groups reporting Facebook use greater than 35 percent (Pew 2013; Pingdom 2012). Twitter users' average age is approximately 3,7 but has a smaller reach with only 16 percent of all internet users using the service (Pingdom 2012; Pew 2013). Twitter users are skewed away from those internet users age 65 or older (2

percent) compared to 27 percent use among 18 to 29 year olds and 16 percent use among 30 to 49 year olds (Pew 2013). Overall, over 60 percent of all American adults are now engaged on at least one social media platform (Pew 2013).

Twitter was originally envisioned as a mobile status updating service between individuals that answered the question, “What are you doing?” (Twitter 2009). The prompt changed to “What’s happening?” after organizations and businesses started using the service to share anything and everything on the network (Twitter 2009). However, the service is still primarily individual focused, with the top ten followed Twitter users being prominent individuals in the media, entertainment, and political spheres, specifically Katy Perry, Justin Bieber, Barack Obama, YouTube, Taylor Swift, Lady Gaga, Britney Spears, Rihanna, Instagram, and Justin Timberlake, in that order. Katy Perry has over 54 million followers and Justin Timberlake has a little over 33 million (Twittercounter retrieved 7/25/14). Similarly, the most retweeted or shared Tweets are also entertainment based, with Ellen Degeneres’s “selfie” with attendees at the 2014 Oscars currently holding the top spot with over 3.4 million retweets (Favstar 2014). Before Ellen’s Oscar “selfie,” Barack Obama’s tweet of “Four more years” after winning the 2012 Presidential election was with 78l thousand retweets. More broadly, a random sample of two thousand tweets in 2009 found that 40.55 percent and 37.55 percent of the tweets were classified as pointless babble and conversational, with only 8.7 percent considered to carry any pass-on value. News from mainstream news organizations was 3.6 percent of total tweets, with spam and self-promotion rounding out the sample with 3.75 and 5.85 percent of total tweets respectively (Kelly 2009). When Twitter users were asked how often they use the site to post their own content and what content they post,

the Pew Internet and American Life Project (2010) found that 72 percent posted updates related to their personal life, 62 percent shared content related to their work life, with 55 percent sharing links to news stories and 54 percent retweeting material posted by others. Sharing photos, videos and location information were the least likely to be shared.

2.2 Corporations' Use of Social Media

2.2.1 Determinants

Previous research has investigated determinants of corporations' use of conference calls (Tasker 1998, Frankel et al. 1999, Bushee et al. 2003), corporate websites (Ettredge et al. 2002, Debreceny et al. 2003, Kelton and Yang 2008), press releases (Bamber and Cheon 1998), analyst meetings (Bamber and Cheon 1998), restated versus standalone 8-K filing (Myers et al. 2013) and conference presentations (Bushee et al. 2011). Only one study, Jung et al. (2014), has empirically investigated the determinants of financial reporting via social media, in particular via Facebook and Twitter. Investigating firms on the S&P 1500, the authors find a positive association between firm size and Twitter use, and a negative association between firm size and Facebook use for earnings news. The finding of larger firms using Twitter is contrary to the argument put forth by Blankespoor et al. (2014) that smaller firms benefit more than larger firms from Twitter use. Jung et al. (2014) do find that firms with low analyst followings are more likely to use social media platforms for earnings dissemination, similar to the argument by Blankespoor et al. (2014). The size of the firms' social media presence, which Jung et al. (2014) proxy using the number of "followers" on Twitter or Llikes" on Facebook was found to be negatively associated with firm use of the

platform(s) for earnings news, indicating that large firms with large social media presence are using the platforms more for advertising or other marketing purposes and not to reach investors. Whereas prior literature on voluntary adoption of disclosure platforms had found market-to-book (MTB), firm performance (ROA) and growth to be positively associated with adoption of the disclosure channel, these findings do not hold in the adoption of social media platforms. Looking at firms that commit to earnings releases on social media, Jung et al. (2014) find that none of the traditional measures hold for committed disclosure on Facebook and only size is statistically significant for firms' commitment to disclose on Twitter. Overall, Jung et al. (2014) find that a large social media presence, as measured by Twitter and Facebook followers, is positively associated with reporting earnings on Facebook and Twitter. This finding is interesting as it implies that knowledge of the media and the firm's audience, as shown by the ability to build a social presence, is more important to the decision to release financial information on social media than financial resources or future prospects.

2.2.2 Use of social media for non-Reg FD disclosures

One of the earliest and most comprehensive surveys of 2,847 executives by McKinsey in 2007, asked how executives are using Web 2.0 technologies. 70 percent of the McKinsey respondents were using some combination of technologies to interface with customers. Fifty-one percent were using Web 2.0 to interface with suppliers and/or partners, with 75 percent using the technologies to manage collaboration internally with half using it for knowledge management and the remainder using it for product design and development.

In 2010, Culnan et al. found that 53 percent of the Fortune 500 companies had adopted Twitter, 46 percent had adopted Facebook, 20 percent were using blogs and 11 percent were using client-hosted forums. Rybalko and Seltzer (2010) investigate dialogic communication among 93 randomly sampled Fortune 500 companies with active Twitter accounts (i.e. those that have posted within one month). They classified 61 percent of firms as dialogic (or two-way communication) firms with the remainder, 39 percent, as non-dialogic (or one-way communication) firms. Gathering ten tweets from each firm, they find that the most common two-way communications were the companies' responses to specific users posts, 58.1 percent tweeted newsworthy information about the company, while 30.1 percent attempted to create a dialog by tweeting a question. In general, 74.5 percent of the tweets surveyed by Rybalko and Seltzer were directed at a general audience, followed by 23.7 percent of tweets directed at specific users and 0.9 percent to 'other' audiences, with only 0.4 percent directed at employees. Mirzoyan (2013) sampled 166 Fortune 500 firms, finding slightly different results than Rybalko and Seltzer (2010), with 49 percent of sampled firms using non-dialogic communication and up to 70 percent of all posts representing one-way communication. Only 24 percent of firms had balanced strategies of one-way and two-way communication. Only 27 percent of firms had mostly two-way communication.

In a study of the 100 largest nonprofit organizations' utilizations of Twitter, Lovejoy and Saxton (2012) find that the 58.6 percent of the tweets are one-way communication classified as information, 25.8 percent of tweets are around community with the largest percentage (13.2) dealing with giving recognition and thanks. They also found that 14.3 percent of tweets were two-way communication such as responses to

reply messages (8.2) or response solicitation (4.1). The remainder of tweets (15.6 percent) dealt with calls for action, such as promoting an event (7.8) or a donation appeal (3.1), which were the two highest, respectively.

Meske and Stieglitz (2013), investigating the adoption of social media *inside* German corporations via an online survey, find improved communication, faster access to in-house information and knowledge, and improved collaboration access are the main drivers of adoption across small, medium and large enterprises. Positive influence on corporate culture, faster access to in-house experts, reduction of travel costs, and no goal or no added value are the lowest ranking objectives of adopting social media such as wikis, blogs and internal social networks.

2.2.3 Use of social media for Reg FD disclosures

In regards to firm use of social media for financial information, Barnes and Lescault (2012) find both Fortune 500 and Inc. 500 companies are keenly aware of social media, expending considerable financial resources to engage users across various social media platforms. A study of 807 publicly traded companies found that 63 percent use Twitter, 40 percent use Facebook, 29 percent use YouTube, and 18 percent use their corporate blogs to disseminate investor-related material (Joyce 2012). Currently, 23 percent of Fortune 500 companies engage in blogging to communicate with social media users, while 44 percent of Inc. 500 companies do so (Barnes and Lescault 2012). Additionally, in a 2012 survey of 170 Inc. 500 executives, 44 percent responded that their company intended to increase social media spending, while 41 percent intended to maintain current spending levels. Firms' social media spending has consistently increased over the past eight years (Barnes and Lescault 2012).

Jung et al. (2014) investigated the use of Facebook and Twitter for earnings releases by the S&P 1500 firms and find that 35.2 percent of firms (232 total) had released earnings news at least once on Facebook, but only 18.53 percent of those firms who had released earnings on Facebook continued to do so (43 total firms or 2.87 percent of S&P 1500 firms). The numbers are better for the 1500 largest corporations' adoption of Twitter for earnings news, with 57.3 percent (406 total) using the platform. Additionally, 22.17 percent (90 total) out of the 406 firms continue to do so, representing six percent of the S&P 1500 firms.

In the largest study to date, Zhou et al. (2015) studied 9,861 firms' use of social media and find that 49 percent of firms have adopted either Facebook or Twitter, with 30 percent adopting both, and the largest number of firms adopting in 2009. Collecting 1,140,382 posts from Facebook and 3,433,846 tweets from Twitter, Zhou et al. use a support vector machines learning algorithm to classify the posts and N-fold cross validation test to evaluate the classification performance of the algorithm. They find that 92.94 (7.06) and 96.55 (3.45) percent, respectively all of Facebook posts and tweets are non-disclosure (disclosure) messages. Of those message that are related to disclosures, only Twitter is the preferred platform for financial disclosures, with 30.24 percent of tweets versus 16.8 percent of posts dealing with financial disclosures, of which segment information made up 7.14 percent of disclosure tweets (8.33 percent of Facebook posts), 22.47 percent of tweets (7.33 percent of Facebook posts) were related to financial reviews of the company with a small percentage (0.54) of tweets dealing with stock price information versus 1.15 percent of Facebook posts. Of those disclosure tweets not classified as financial disclosures, 3.6 percent were about general

corporate information, 2.02 percent on corporate strategy, 2.72 percent on acquisitions and disposals, 10.6 percent on research and development and 0.52 on future prospects for a total of 19.46 percent overall dealing with strategic disclosure messages. The majority of disclosure tweets dealt with either information about directors (23.86 percent) or social policy and value added information (18 percent), with the remainder (8.44 percent) related to employee information. Zhou et al. (2015) find that financial disclosures messages are the fastest-growing type of disclosure messages on Twitter between 2009 and 2013, while non-financial disclosure messages are the fastest growing disclosures on Facebook for the same time period.

2.3 Investors' Use of Social Media

Companies can and do use social media in a variety of ways, from advertising to soliciting feedback from customers. The purpose of this study is to investigate how different communication channels influence retail investors. Prior literature has shown that retail investors can influence stock prices (Barber and Odean 2008, Barber et al. 2009, Burch et al. 2014, Hvidkjaer 2008, Kaniel et al. 2008, Kumar and Lee 2006). Small investors have been found to be net buyers of stocks after both good and bad earnings news, especially when the magnitude of the news is large (Hirschleifer et al. 2008). Experimental research on different information channels and their influence on investors is limited, in particular on the influence of social media. Trinkle and Crossler (2014) find that investors' reactions to good and bad news communicated over social media is influenced by the attached comments and that comments can change the valence of the news to the point where bad news disclosures were perceived as good news.

There are a few articles, mostly working papers, that investigate the role of social media in information dissemination and how investors are using the channels. Jung et al. (2014) show that trading volume increases after earnings announcement tweets and that trades greater than $50,000 are the primary drivers of the increased trading volume, indicating that larger investors are reacting to the news via Twitter rather than small investors. Jung et al. (2014) argue that counter to the belief that social media "levels the playing field" for small investors, firms' use of the platform for financial disclosures actually increases information asymmetry, since it is large investors that appear to be taking advantage of the earnings announcement tweets.

Curtis et al. (2014) find that abnormally high levels of investor attention, as measured by social media activity, are associated with higher sensitivity to market returns to earnings news. In particular, high levels of attention increase sensitivity of returns by 234 percent for positive news and 91 percent for negative news. While low levels of investor attention are associated with significant post-earnings-announcement drift, but not for firms with normal to high levels of investor attention. These results are robust to traditional measures of attention to earnings announcements. Additionally, high investor attention is found to increase the sensitivity of returns to earnings when firms announce earnings pre-market opening, along with decreasing the post-earnings announcement drift. The opposite effect is found for firms that announce after the market closes. Looking at the sentiment of tweets, the authors find higher market returns for the group with the highest optimism on the day of the earnings announcement; these results are robust to the inclusion of media attention, proxied for by Dow Jones Newswires, financial blogs, and Google searches.

Helms and Werder (2013), analyzing the compositions of social networks around Europe's twenty-five largest software vendors, find that firms have a small internal audience but a large external audience, and the followers of the companies are distinct and unique from each of the other companies analyzed. An AMO Global Survey (2014) of 105 institutional investors from 12 countries reports that corporate websites are more respected and used than corporate social media sites. Thirty-three percent of the investors surveyed indicated that they use social media as a "heads up" and in exceptional situations. Possibly the reason institutional investors do rely on social media is that 85 percent of surveyed investors said social media sites are not reliable, similar to the finding by Oh et al. (2013) with only 17 percent responding that social media is usually reliable. Institutional investors did believe that social media would grow in importance for financial communications. The AMO survey revealed that professional investor use of social media varied widely by region, with 40 percent of USA based investors consulting social media very frequently compared to France and Poland where 80 percent of the surveyed investors never consult social media. However, 37 percent of institutional investors regarded social media in financial communications as a welcome innovation, with 82 percent expecting the use of social media to grow in financial communications in coming years. Newswires were consulted very frequently by 76 percent of the respondents and was found to be always reliable 30 percent of the time and usually reliable 57 percent of the time. Newspapers are the second most widely consulted and slightly less trustworthy in the institutional investor with 61 percent consulting them frequently with 13 percent finding them always reliable and 66 percent rating them as usually reliable. Corporate websites were considered the most reliable,

with 42 percent of respondents rating them as always reliable and 50 percent rating them as usually reliable. However, corporate websites are consulted less frequently, with only 36 percent doing so very frequently and 31 percent frequently visiting globally. However, 90 percent of institutional investors in the United States consult corporate websites very frequently, with 70 percent considering the websites as usually reliable and 20 percent finding the sites as always reliable. Investors in the United States lead in relying on Twitter professionally, with 40 percent doing so regularly and another 40 percent doing so occasionally. Fewer US based investors consult Facebook professionally with 72 percent never doing so and only 10 doing so occasionally.

Prior literature has shown that even small changes to how financial information is presented can impact investors. Hodge et al. (2010) experimentally show that the presentation of related financial information in close proximity on a page has a positive influence on investors, and that the presentation of related financial information on different pages has a negative effect.

In similar vein, Maines and McDaniels (2000) find that nonprofessional investors' judgments of management performance only reflect the volatility of comprehensive income when comprehensive income is disclosed in its own statement and not in the statement of stockholders equity. Elliot et al. (2012) find that investors recommend investing different amounts in a company after a financial restatement, depending on whether the CEO announces the restatement via text or video. The Elliot et al. (2012) experiment simulated an investor getting all their information from the company's investor relations website, by providing participants with financial press releases only from the company and then having them read the text of the announcement or watch a

video of it. It is unclear what investors' responses would have been had Elliot's information been posted on less traditional media, such as Twitter and Facebook, and investors had to process the additional cues inherent to social media. The additional cues may cause investors to assess the disclosure credibility of press releases differently, which in turn could lead participants to make different decisions.

2.4 Firm Strategies around Good and Bad News

Prior research has investigated company disclosure of two types of financial information--positive and negative. Empirical evidence suggests that managers disclose bad news to reduce litigation and reputational costs (Skinner 1994, Suijs 2005, 2007, Ge and Lennox 2011). Since large investors do not like to be surprised, managers can mitigate loss of institutional ownership and analyst coverage by releasing bad news early (Skinner 1994). Soffer et al. (2000) find that managers in possession of bad news release all the information at the preannouncement date versus managers with good news who only release a portion of the good news at the preannouncement date. Firms with negative earnings surprises have lower excess returns both before and after the earnings announcement (Soffer et al. 2000). The finding of negative earnings surprises having lower excess returns is consistent with managers' having differential disclosure strategies for good and bad news and Soffer et el. (2000) posit that *how* information is presented to the market can influence the reaction to the information.

Suijs (2007) proposes an analytical model of voluntary disclosure showing that a partial disclosure equilibrium is possible when firms disclose negative or bad information to the market and find support for proprietary costs influencing disclosure decisions. Although managers tend to disclose negative information, they still resist doing so until it

is necessary (Kothari et al. 2009, Dye 2010), as compared to good news where they disclose up to half of it early (Ge and Lennox 2011). Additionally, the market is aware of managers' resistance to full disclosure and responds accordingly to predictable managerial bias in forecasts (Rogers and Stocken 2005).

Empirical research finds that firms are more likely to tweet good earnings news than bad earnings news (Jung et al. 2014). However, most firms use social media inconsistently, with only 6 percent of S&P 1500 firms consistently doing so. Additionally, Jung et al. (2014) find that the market responds to the news, as evidenced by the three-day signed returns being higher, the absolute return being lower, and the bid-ask spread being higher for firms releasing earnings announcements via social media. Additionally, the market responds positively to firms that consistently release earnings news over social media (Jung et al. 2014).

Bhagwat and Burch (2014) find that firms whose frequency of tweets is greater than the median number of tweets earn higher post-earnings announcement returns than before they joined Twitter. When the positive surprise from a firm is small, increased tweets, both in general and financial specific, are associated with higher post-announcement returns for all periods investigated by Bhagwat and Burch, that is the before, during and after earnings announcements windows. It is only for the small positive surprises that they find the association and it is particularly pronounced for low visibility firms, as proxied by size and analyst following. The authors also find that firms with small earnings surprises have greater financial tweet intensity in the post-announcement window, suggesting that firms attempt to strategically focus investor

attention when efforts are more likely to influence returns. The authors find that strategic tweeting is more pronounced for firms that more often engage in earnings management.

Investigating press releases related to product and services (P&S), Liu et al. (2014) find that firms with market capitalizations below the median are more likely to release P&S press releases during the earnings announcement window. The likelihood of a P&S press release is 80 percent higher if the firms' reported earnings are in the bottom decile of firms. If the firm is small, the odds increase to 90 percent that the firm will release P&S information during the earnings announcement window. Over 80 percent of P&S press releases announce the signing of new business contracts or the release of new products, suggesting that firms time the release of good news, albeit not earnings related, in an attempt to mitigate the effect of negative earnings news. The authors find that firms releasing non-earnings information benefit the firm, especially when it comes to garnering media attention, with the media three times more likely to cover a P&S press release during the earnings announcement window and is four times more likely to cover the P&S press release if the earnings news is extremely negative. Additionally, if the press picks up the P&S news, even if only one media article is produced on the P&S for the firm, then announcement returns are 6 percent higher for firms in the bottom quintile of negative earnings surprises. The positive response does reverse over 60 days showing that investors overreact to the good media coverage. Overall, the findings of Liu et al. (2014) are concentrated in smaller cap firms. This finding indicates that firms strategically bundle good news with the bad earnings news, similar to Dye (2013), but that the strategy works especially well if the media covers the good news.

Other studies have looked at the role social media has played in product recalls and how firms use social media to disseminate information around the event. Lee et al. (2015) find that stock price reaction around firms with a social media presence, which they broadly define as corporate blogs, RSS, Facebook or Twitter accounts, is less pronounced than without a social media presence. Additionally, the authors find the attenuation benefits from social media are significantly lower from Facebook and Twitter than from those provided by corporate blogs and RSS feeds. Lee et al. argue that the lower attenuation benefits from Facebook and Twitter is due to the firms' diminished control over the content on those platforms. Lee et al. (2015) show that negative market reactions to a recall can be exacerbated by the number of tweets about the recall by other users but attenuated by the number of tweets by the firm, indicating that firms still have some credibility with the public even after a recall when credibility is low.

However, while Jung et al. and Blankespoor et al. (2014) find that the market responds positively to firms' use of social media as measured by abnormal returns, they find contrary evidence around bid-ask spreads. Both studies are archival studies and cannot explain why the use of social media by firms results in their findings, nor how social media platforms are perceived as financial disclosure platforms absent good or bad news. In particular, the studies above cannot explain why small investors are not responding to earnings announcement via social media but larger investors are (Jung et al. 2014) nor why Twitter and Facebook do not have the same attenuating influence on the market as corporate blogs and RSS feeds (Lee et al. 2015).

The evidence is mixed on the use of social media for financial information disclosure. Joyce (2012), Barnes and Lescault (2012) and Brunswick Group (2012) find

that companies and investors are using social media for various uses including dissemination and aggregation of financial information. However, Barnes and Lescault (2012) find that companies are unsure of how best to leverage social media. Jung et al. (2014) report that little over half of the S&P 1500 firms have either a corporate Facebook page or Twitter account, but only 6 percent regularly release quarterly earnings announcements. I propose that the reason firms are unsure of how to use social media, especially for financial disclosures, is that retail investors perceive financial information posted on social media sites differently from the same information posted on more traditional sites and thereby respond in a manner that firms are not accustomed to. I test this theory using the Elaboration Likelihood Model.

3.0 DEVELOPMENT OF HYPOTHESES

3.1 Product Channel Fit

The theory of product-channel fit was proposed by Bang et al. (2013) as an extension of the marketing theory of channel capabilities attributed to Avery et al. (2013). A channel capability is "an enabling characteristic of channel that allows consumers to accomplish their shopping goals" (Avery et al. 2013 p.96-97). Testing the addition of a mobile channel to an established online channel for an e-retailer in Korea, Bang et al. (2013) find that the performance impact of an additional channel depends upon the product characteristics and the subsequent product-channel fit. A characteristic of a company investor relations web page is that it is a Web 1.0 technology, in that it only allows one-way flow of information, from the company to the consumer. Twitter and other social media technologies employ Web 2.0 technology, in which sociality between the company and the customer, between customer and customer, or three-way conversations between participants around user-generated content is possible.

Communication is a core dimension of both Web 1.0 and 2.0 platforms, but not all platforms are equal in information, collaboration, and relationships (Fauser et al. 2011). For example, social networks are mostly used to maintain relationships whereas wikis are mainly for collaboration. Microblogs, such as Twitter, have the characteristic of being highly effective in terms of reach and timeliness, but are ineffective for in-depth

consumer information (Fauser et al. 2011). Consequently, not all platforms are equally suitable, i.e. a "good fit," for all information available to post on the web. I extend product-channel fit theory from the context of fit between physical products and purchase channels to the fit between information and communication channel. I argue that investors who view a communication channel as being highly relevant and a good fit for the information disseminated on the channel will incorporate that information into their decision making. Compared to investors that view a communication channel as being irrelevant, or a poor fit, for obtaining information will not use the information in their decision making process. Furthermore, investors who find the platform a good fit, for the dissemination of financial information are less likely to experience message discrepancy between the channel and the information. By contrast, investors who perceive the channel to be a poor fit for spreading financial information are more likely to experience message discrepancy. Message discrepancy may in turn cue or prompt the investor to process the information unconsciously. One way to measure if investors process information consciously or unconsciously is through the use of dual process theories (Chaiken and Trope 1999, Evans 2008), such as the elaboration likelihood model. I test whether product-channel fit influences retail investors' perceptions of the release of financial information and use Elaboration Likelihood Model for explaining how good fit and poor fit manifest themselves in the way the information is processed by the investor.

3.2 Elaboration Likelihood Model

The elaboration likelihood model (ELM) is a dual processing theory, which posits that influence travels through two routes—the central route and the peripheral route.

The route is based on the type of information processed by a user, so that task-relevant arguments follow a central or conscious route, while secondary (less-relevant) cues follow the peripheral or unconscious route. The central and peripheral routes are different in at least two ways. First, different types of information are processed on each route. Arguments or information relevant to an individual's particular decision, such as whether to invest in a particular stock, are processed on the central route. Information that is irrelevant to the decision but still influences the decision represent tangential cues that get processed on the peripheral route. Secondary irrelevant cues foster message discrepancy and as such influence peripheral route processing (Petty and Cacioppo 1986). Second, the central route requires higher cognitive effort, due to the information processing that is required, compared to the peripheral route.

The central route is akin to how we expect a strictly rational human (e.g. homo economicus) to approach a problem: thoughtful comprehension of the arguments, their quality evaluated, followed by a synthesis of conflicting arguments to form an overall judgment. The peripheral route only requires associations with salient positive or negative cues related to the object (Petty el al. 1981). Finally, perception/attitude changes that occur via the central route are, in general, more stable, more enduring, and are more predictive of long-term behavior (Petty and Cacioppo 1986). Changes that occur via the peripheral route are less persistent, open to counter influence, and less predictive of future behavior.

ELM explains the circumstances under which information consumers may be more influenced by one route than the other, and posits that there are different long-term effects of each route (Petty and Cacioppo 1986). Prior research has assumed that

investors process information on the central route as they seek to determine the fundamental value of a firm. Further, research has shown that the presentation format of financial information results in different investment decisions, which contradict the wealth maximizing/rational man hypotheses and lend support to dual process theory at work in investing decisions (e.g. see Hodge et al. 2008, Maines and McDaniels 2000, Elliot et al. 2012). However, prior research on the topic of investor decision making has not provided a theory for the observed behavior. ELM appears to be uniquely suited to the exploration of the "black box" of influence within a financial reporting context, and may provide an explanation to prior observations.

There has been little research in accounting using ELM or dual process theories, the notable exception being Farrell et al. (2014) where the effect of performance-based incentive contracts versus a fixed pay contract is investigated when managers are in a high affective state using the dual process theories' general terms of System 1 and System 2 (Kahnemean and Frederick, Stanovich 1999). The authors find that in an emotional context, performance-based contracts invoke more System 2 processing than fixed wage contracts and decrease the proportion of economically costly choices. Much more accounting research has focused on the role affect plays in other accounting settings, such as managerial decision making (Kida et al. 2001, Moreno et al. 2002, Ding and Beaulieu 2011), management credibility (Mercer 2005), memory (Kida et al. 1998, Rose 2001, Rose et al. 2004), ethical judgments of auditors (Cianci et al. 2009), and stock price judgments (Victoravich 2010).

Information systems research has primarily investigated the role of ELM in technology acceptance (Bhattacharjee and Sanford 2006, Lee and Xia 2011, Li 2013),

website privacy (Lowry et al. 2012), web personalization (Tam and Ho 2005, Ho and Bodoff 2014), information system continuance (Chuang, et al. 2011), online content influence on attitudes and buying intentions (Kumi and Limayem 2012), ERP systems (Jung et al. 2013), promotion of enterprise social networks (Abdulrahman and Darshana 2014), and social media marketing (Chang et al. 2015).

Affect does play a role in ELM but not in the way suggested by Farrell et al. (2014), who argue that System 1 or automatic processes are reliant upon affect and intuition. Petty et al. (1998) argues that affect is a *variable* in ELM. Variables, such as affect, can influence individuals in four ways: (1) as a persuasive argument, (2) as a peripheral cue, (3) by influencing the extent or direction of argument processing, and (4) by biasing the elaboration (Petty and Wegener 1999). Variable have been theorized to serve in all four roles but no studies have shown this to be the case.

Variables, such as affect, are then able to influence attitudes by different processes and take on different roles depending on where the variables are along the elaboration continuum. Variables play the role of peripheral cues when they are on the low end of the elaboration continuum, and as arguments or bias information processing when they are high on the elaboration continuum. Variables are most likely to influence the amount of thinking when they are in the middle of the elaboration continuum. Based on the multiple roles that variables, such as affect, play in ELM, it is unknown what route participants used in Mercer's (2005) study, in which she finds that affective reactions significantly influence investors to change their perceptions of management's reporting credibility in the long term but not in the short term. In fact, information processing on the central route is in general more, stable, enduring, and predictive of long-term

behavior. In Mercer's (2005) study participants indicate that they processed the affective information via the central route as it influenced their long-term perceptions of management credibility. The findings are contrary to what Farrell et al. (2014) argue should happen.

3.3 Hypotheses

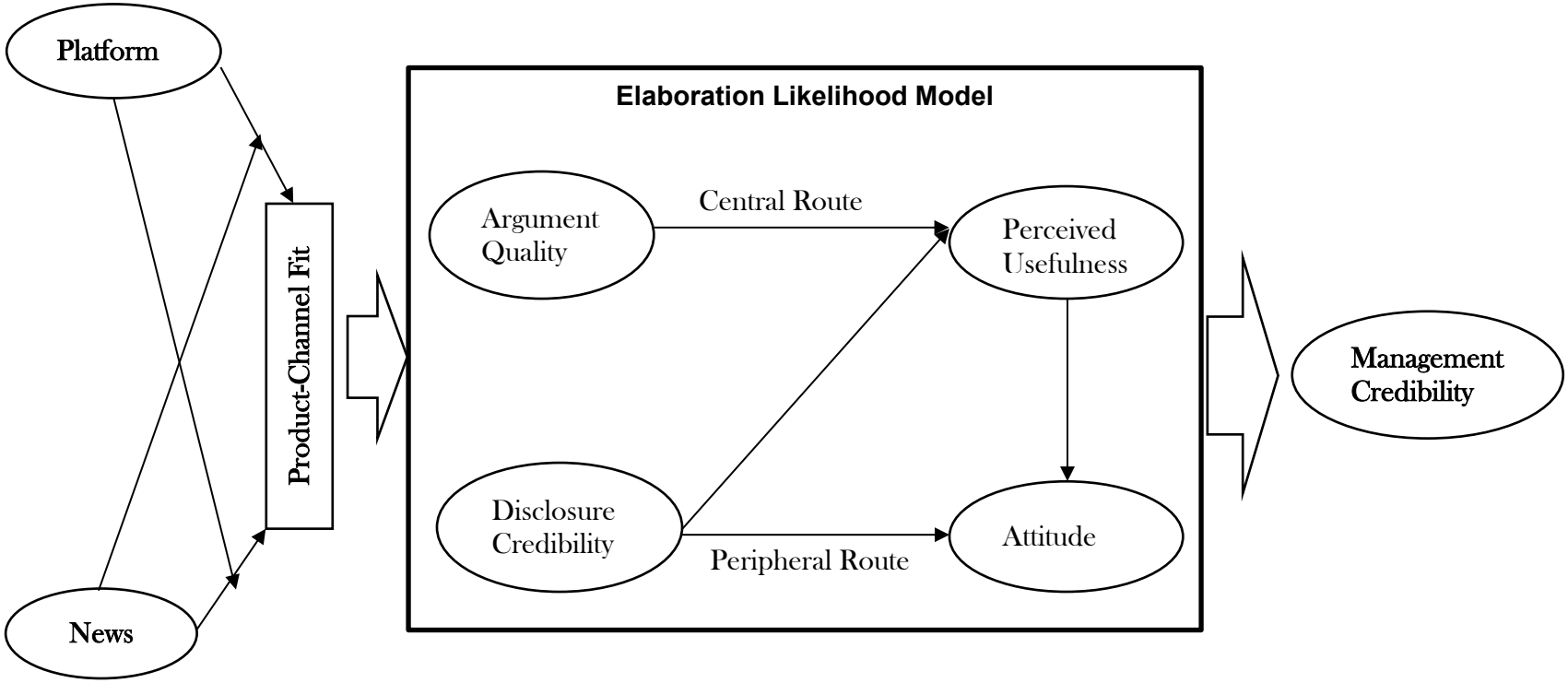
Social media generally refers to activities integrating electronic technologies with social interactions. A face-to-face social interaction is a multi-sensory experience, in which verbal, non-verbal and contextual signals are simultaneously processed by the communicating parties. The multiplicity of signals holds true in social media, with words, pictures, audio and even video now capable of being transmitted across various social media platforms intended either for all interested parties or to only one person. Jensen and Meckling (1976) argue that a company is a "nexus of contracts." Following logically from the aforementioned definition, it would be inherently difficult, if not impossible, for a nexus of contracts to be social. A combination of a non-social actor, such as a company, being on platforms dedicated to increasing social interaction, could be an inconsistency associated with the message source (i.e., the company). Inconsistencies between the message and the receiver's beliefs and knowledge are referred to as message discrepancy. Message discrepancy is a cue that could cause the message to be processed on the peripheral route by the message receiver. Following ELM, message discrepancy cues lead to cognitive dissonance which causes the message to be processed on the peripheral route instead of the central route. In my experiment, I test whether a low product-channel fit is associated with message discrepancy, as

measured by the degree to which financial information released on Twitter is processed by participants on the peripheral route.

ELM suggests that argument quality (via the central route) and peripheral cues (via the peripheral route) directly influence attitude and belief change. Argument quality refers to the persuasive strength of arguments that are embedded in a message. Peripheral cues refer to the message source but do not refer to the message's embedded arguments. Peripheral cues used in the ELM literature often rely on the environmental characteristics of the message, such as perceived credibility of source, quality of presentation, attractiveness of the source, or in the case of marketing, if the slogan is easily remembered (i.e., "catchy"). Disclosure credibility is defined as the extent to which a disclosure is perceived to be believable by information recipients (Mercer 2004, 2005). Following Bhattacherjee and Sanford (2006), I measure disclosure credibility and attitude to establish whether social media causes messages to be processed using the peripheral route.

To establish the extent to which participants use the central route, I measure argument quality and perceived usefulness. Argument quality refers to the ability to persuade or the strength of the argument embedded in a message. Perceived usefulness refers to the degree to which a person believes using a specific system would enhance job performance (Davis 1989). Message arguments are intended to be processed rationally by users rather than emotionally, argument quality is expected to influence perceived usefulness of an information channel in financial reporting situations where the information is relevant to an individual's investing decision.

Figure 1 Research Model



Likewise, my measure of peripheral cue--disclosure credibility of a message--is expected to influence attitude, as both cues appeal to human affect rather than rational judgment. Both measures are expected to be influenced by the message discrepancy of companies, who are non-social actors, posting information to a social site.

Companies that post financial information on social media channels must utilize a disclosure bundle since Facebook and Twitter have inherent limitations. For example, in the case of Twitter only 140 characters are allowed. Accordingly, company financial announcements on Twitter are generally headlines with a link to the full press release about the announcement on the company's investor relations page. Using the ELM theoretical framework, I test for differences between Twitter and the corporate investor relations web page in links between constructs indicative of central route processing or peripheral route processing. In the ELM research model (Figure 1), evidence of central route processing stems from argument quality, influencing perceived usefulness which in turn influences the eventual judgment or decision. By contrast, evidence of peripheral route processing stems from disclosure credibility influencing attitude which in turn influences the eventual judgment or decision. I predict that retail investors viewing press releases on Twitter will exhibit stronger peripheral route processing, while retail investors viewing press releases on the investor relations web page will exhibit stronger central route processing. Formally, I hypothesize as follows:

H1: Participants viewing financial disclosures on Twitter (IR web page) will exhibit stronger peripheral (central) route processing than central (peripheral) route processing.

Financial reporting credibility can be decomposed into disclosure credibility and management credibility (Mercer 2004, 2005). Disclosure credibility has been defined as

the believability of a particular disclosure as perceived by investors. Disclosure credibility is appraised independently for each disclosure, and thus may vary by different disclosures within the same firm. Management credibility is defined as managers' competence and trustworthiness as perceived by investors. ELM does not make any predictions about the influence different routes will have on an individuals' end decision. Rather, ELM only predicts that the route does influence the final decision or judgment. In this study, participants' judgment is management credibility. The cognitive dissonance caused by the message discrepancy of a non-social actor (i.e., the company) posting information to a social platform is expected to influence participants' judgments of management competence and trustworthiness. The formal hypothesis follows:

H2: Participants will judge management as less credible when viewing financial disclosures posted on the company's Twitter feed than on the company's investor relations web page.

The elaboration likelihood model argues that the influences of argument quality and disclosure credibility are contingent upon potential users' motivation and ability to elaborate on informational messages (Petty and Cacioppo 1986). Following Bhattacherjee and Sanford (2006), I operationalize the motivation dimension of the ELM as relevance. Relevance is defined as investors' perceptions of the relevance of using either a company's Twitter feed or company investor relations web page to obtain financial information. I operationalize the ability to elaborate on financial information as investors' investing experience. Expert or experienced investors are more skeptical of new information related to companies and identify key information quicker and with less cognitive effort than less experienced investors. Experienced investors will be less

swayed by peripheral cues compared to inexperienced investors, since experienced investors tend to be more aware of the possibility of inaccuracy or management bias. Expert investors' superior knowledge, formed over time and with experience, reduces the influence of peripheral cues, since they know that they can form more accurate perceptions of the company by critically examining the press releases. In comparison, novice or less expert users are more prone to the influence of peripheral cues such as disclosure credibility, rather than the facts or message arguments contained in the communication, in framing their attitude and perceptions that form their perceived usefulness judgments.

Prior literature has mainly focused on the credibility of the disclosure from management and the consequences a credible disclosure has on the market (Williams 1996, Hirst et al. 1999). Jennings (1987) finds that the reaction of investors to earnings forecasts is dependent upon how unexpected the forecast is and how credible or believable it is. Jennings finds that forecasts with the same level of surprise but with different levels of credibility will elicit different responses from investors, with the more credible forecast causing greater investor belief changes, revisions to portfolios, and changes to security prices. Hutton et al. (2003) find that bad news earnings forecasts are always considered informative by the market but that good news forecasts are informative only if they include credible forward looking statements. Kothari et al. (2009) conclude that prior studies have interpreted the evidence of positive and negative news as either managers accelerating the release of bad news or the market viewing bad news disclosures as more credible. Kothari et al. (2009) posit that market participants may find disclosures of bad news to be more credible than disclosures of good news, as

management has various incentives to embellish news (Rogers and Stocken 2005). Additionally, prior literature has documented that companies are hesitant to release negative information on social media platforms, even if doing so would increase their credibility (Jung et al. 2014). Alternatively, the interaction of negative news with the cognitive dissonance caused by a non-social entity posting to a social platform could cause participants (both experienced and less experienced investors) to perceive disclosure credibility as low, as they seek to alleviate the dissonance, and the negative news would provide further justification for doing so. On the other hand, information on social media has been shown to be subject to rumors and misinterpretations (Oh et al. 2013). Consequently, good and bad news posted on social media could be perceived as being less useful to retail investors and thus influence their attitude towards the use of the media for releasing financial information. Investors, especially those investors with more investing experience, should have more negative associations with the platform since they are accustomed to seeing financial information released on more traditional platforms, such as the company's investor relations web page. The decrease in argument quality, and subsequent reduction in perceived usefulness, could temper investor judgments and decisions. I argue that social media moderates investors' responses to both good and bad news, as disclosure credibility influences multiples constructs, which in turn influence judgments and decisions. To test the aforementioned argument, I compare the overall models for each news condition against all other news conditions. The formal hypothesis is as follows:

H3: Social media (Twitter) will moderate the effect of positive or negative financial news attenuating the judgments of retail investors, compared to the same news released on traditional media (IR web site).

Following the research model proposed by Bhattacherjee and Sanford (2006), I test each model for differences across the following conditions: Twitter and good news, Twitter and bad news, company investor relations web site with good news, and company investor relations web site with bad news. Empirical testing of the hypotheses is described in the next section.

4.0 METHOD

I test the hypotheses using an experiment employing a 2 x 2 disclosure channel by news type between-subjects design. The first factor of disclosure channel has two conditions: Twitter feed or company investor relations site. The second factor is news type and is operationalized as whether the company beats (good) or misses (bad) analyst forecasts for the annual report.

4.1 Experimental Participants

The participants were 807 retail investors recruited through Amazon Mechanical Turk (average years investing was 6.00, average age was 33.11 years, average work experience was 11.85 years) living in North America. Each was paid $1 to participate in the study[3]. Participants could not participate in the study unless they answered in the affirmative that they had bought or sold stocks in the past 12 months. Recent studies have found that data collected through online crowdsourcing applications, such as Amazon Mechanical Turk, does not differ substantially from the more traditional methods of data collection of panels and student proxies (Steelman et al. 2014, Farkas and Murthy 2013, Farrell et al. 2014). I randomly assigned participants to experimental conditions, and participants in all conditions completed the experiment online.

[3] Participants on average took 14 minutes and 15 seconds to complete the study. The compensation of $1 thus equates to an average hourly wage of $4.20.

4.2 Case Materials and Procedures

Modifying the case from Elliot et al. (2012), I instructed participants to assume the role of a member of a local investment club and that they had been asked at the last club meeting to monitor, evaluate, and make a recommendation to the club regarding one company, Lafarge S.A.[4] Lafarge is a real world publicly traded company on the Paris stock exchange under the ticker symbol LG, and is an international producer of cement, gypsum wallboard, and related products. Lafarge S.A., was chosen due to its extensive posting on Twitter of investor-related links, financial information, and non-investor related material. The company also has a Facebook page and investor relations page on the company website. Lafarge stock is not traded on any North American stock exchange and is primarily a business-to-business enterprise, so participant familiarity with the company is expected to be similar to a fictitious company, despite being the world's largest cement manufacturer. A post-experiment questionnaire shows that participants were not familiar with Lafarge with an overall average of 1.73 on a 7 point Likert scale, where 1 equals "Not at all familiar," and 7 equals "Very familiar."

Following Elliot et al. (2012), I informed participants that they would view press releases that the company had released on popular investor relation sites during 2012 and 2013. They were then to use this information to make and justify a recommendation to the club of whether it should increase or decrease its investment in Lafarge. Lafarge's actual press releases were shown as screenshots to participants. The HTML code for each page used in the study (press releases, Lafarge Twitter and Facebook pages, and

[4] Elliott et al. (2012) used executives M.B.A. students for participants and had simulated participants working for an investment firm. The participants for the current study are retail investors so the use of a local investment club is more appropriate while still providing the benefits of following a previously published study.

the investor relations page) was first downloaded then altered to reduce the complexity of the web pages. For example, ads were removed from the Reuters page, and the current stock price of the company from the investor page. The Twitter page for the company was altered to show only eight posts from the company from the thousands of tweets that the company had posted up to that time[5]. Screenshots were then taken of each page to increase external validity, but also to remove the possibility that participants would click on hyperlinks and not complete the study. Longer press releases were built by taking multiple screenshots of the press release, and then stitching them together using Adobe Photoshop. Participants were shown all five press releases in the same order.

4.3 Initial Exercise

Participants began by reading a profile of Lafarge. Taken from Bloomberg Business Week, the profile stated that Lafarge is a worldwide company, founded in 1833, and is traded on the Paris Stock Exchange. The profile also provided financial ratios for Lafarge versus the industry average, number of employees and the countries in which Lafarge operates. Next, participants viewed either Lafarge's Twitter feed or the company's investor page. Eight posts from Lafarge's verified Twitter feed about press releases were shown on each page. Twitter and Facebook pages had the hashtags #Press #release, in front of each headline and a shortened URL at the end of the message that took them to the press release on the company investor relations page. For example, #Press #release 2012 full year results http://t.co/4cL7xsZn. For the company investor relations page, the hashtags and the shortened URL, items that are

[5] As of 3/11/15 Lafarge S.A. Twitter handle @LafargeGroup had 6,335 tweets.

unique to social media platforms, were removed to maintain internal validity. The removed information was visible elsewhere on the page; the slight wording differences in the headings are not expected to have a significant effect on the results. Although the complete headlines are not exactly the same, the primary headlines are the same. The choice not to include platform specific information, such as hashtags and URLs, was made to strengthen the internal validity of the experiment.[6] Specifically, the additional information would only increase mundane realism[7] and could increase the complexity of the experiment for participants, potentially biasing against finding results (Hodge et al. 2008).

After viewing the page of press release headlines, participants in the good and bad news conditions saw the press release from 7/27/2012 announcing Lafarge Q2 2012 results from the companies' investor relations page was shown. Participants were then shown the press release headlines page. The pattern of headlines page followed by the press release on the company investor relations page, was repeated for three more press releases, one announcing a sale of assets in the United States, one announcing construction materials company. A Reuters story on the Lafarge's fourth quarter results was then shown. The press release announced that earnings had either beat or missed analyst expectations. The press releases for quarters two and three do not mention analyst expectations and whether they are met or not, so the announcement of beating or missing expectations was meant as a surprise to the

[6] See Appendix A for example of headlines shown in both conditions.
[7] Peecher and Solomon (2001) argue that increasing "mundane" realism in experiments can be detrimental to internal validity if it distracts the participants from the constructs in question.

investors. Participants were then shown the press release from Lafarge for the fourth quarter, and were asked to make a recommendation to the investment club.

4.4 Management Credibility

I informed participants that the club's current investment in Lafarge was 1,000 shares. Following Tan and Koonce (2011), I asked "How attractive is Lafarge as an investment?" for the judgment question. For the decision question, I asked "By what number of shares do you recommend the club change its current 1,000 share investment in Lafarge S.A.?" following Elliott et al. (2011). Participants indicated their recommendation on a slider scale with a floor of -1,000 and a ceiling of 1,000. Participants were next asked, "How long do you recommend the investment club hold its investment in Lafarge S.A.?" Participants indicated their recommendation on a slider scale with a floor of 0 months and a ceiling of 120 months with 12 month intervals. Participants were then asked to list between one and three key factors supporting their recommendations. Finally, management credibility was assessed using the following questions from Nelson and Rupar (2014). I asked "I think Lafarge S.A.'s management has the **competence** necessary to make clear and unbiased financial disclosures on Twitter/the company's website." Then I asked, "I **trust** Lafarge S.A.'s management to make clear and unbiased financial disclosures on Twitter/the company's website." Competence and trustworthiness have been shown to be the main factors that make up management credibility in prior literature (Mercer 2005).

4.4 ELM Measures and Post-Experimental Questions

After making their recommendations, participants answered one manipulation check question (a recall question). All participants then responded to a series of

questions designed to measure attributes that make up the ELM. Questions and their theoretical basis are described in the next section. Finally, participants answered how frequently they used the platform that displayed the press release headings, what broker they use to trade with, how much the broker charges per trade, and provided demographic information.

4.5 Dependent Variables

Management credibility is the main variable of interest and was measured using two questions, one related to management's credibility the other related to management's trustworthiness. Both questions were measured on an 11 point Likert scale, on which 1 equaled "strongly disagree" and 11 equaled "strongly agree."

I am using ELM as a lens in this study to determine how retail investors process financial information from different channels and how those processes influence investor's perception of management credibility. However, it is also important to determine what consequences investor's perception of management credibility has. Mercer (2005) finds a link between cognitive reactions and change in management's reporting credibility in the short term, while affective reactions have a strong link to changes in management's reporting credibility in the long term. In both determinants models change in management's reporting credibility significantly influences investors' willingness to rely on subsequent disclosure (a judgment). I measure investor judgments and decisions using three measures. Investor judgment was measured using the question regarding the attractiveness of Lafarge as an investment, on an 11 point Likert scale, on which 1 equaled "very unattractive" and 11 equaled "very attractive," matching the terms and scale used by Tan and Koonce (2011). Investor

decisions were measured using two questions. First, by the number of shares by which participants recommended to the club to either increase, up to 1000 shares, or decrease, down to 0 or -1000 shares, in its investment in Lafarge. Second, by participants recommendation of how many months the investment club should hold Lafarge's stock. Length of investment was measured on a slider scale, starting at 0, with a maximum of 120 with 12 month intervals in between.

4.6 Process Variables

The ELM identifies the route through which individuals process persuasive messages. Central route processing is measured using argument quality and perceived usefulness. Peripheral route processing is measured using disclosure credibility and attitude. Argument quality was measured using four Likert scaled items validated by Bhattacherjee and Sanford (2006), which measured the extent to which participants believed the information provided by each platform was informative, helpful, valuable, and persuasive. Disclosure credibility was assessed using a modified version of Bhattacherjee and Sanford's (2006) four-item Likert scale for source credibility. Two items from the original scale that examined participants' perception of the disclosure's trustworthiness and credibility were retained. The terms "knowledgeable" and "appeared to be an expert" were dropped and replaced with "honest" and "reliable." The latter change was necessary since Bhattacherjee and Sanford's experiment dealt with the persuasiveness of an individual, while this experiment deals with the credibility of an organization's financial statements. Therefore, the original questions were not logical in that context. Perceived usefulness was measured using four Likert scaled items developed and validated by Davis et al. (1989) that asked for participants' perceptions

of productivity, performance, and effectiveness gains from venue acceptance, and overall usefulness. Attitude was measured using Taylor and Todd's (1995) four-item semantic differential scale anchored between "bad…good," "foolish…wise," "unpleasant…pleasant," and "like…dislike" adjective pairs for the question, "using (Twitter, company investor website) for the task performed is a...." Relevance was assessed using a modified version of Bhattacherjee and Sanford's (2006) two-item Likert scale. An additional term "necessary" was added to the terms "important" and "relevant (appropriate)" and the wording "from my job" was dropped from each term. Validation of the aforementioned scales above is described in the next section.

User experience was measured using the average of investing experience, work experience and age. The investing experience variable is participants' open ended response to the question of how many years of investing experience they had. The work experience variable measured how many years of professional work experience the participants had. Participants entered their age in years in a text box for the age variable. The variable Platform is a categorical variable where Twitter equals 1 and company website equals 0. The News type variable is a categorical variable where good news equals 1 and bad news equal 0.

4.7 Control Variables

Participant familiarity with the disclosure platform was measured with the question, "How often do you visit (use) company websites/Twitter feed?" using a 7 point Likert scale anchored by "Never" and "A great deal." Accounting knowledge was measured by the number of accounting classes participants had taken post high school. General business knowledge was measured as a continuous variable of the number of

business classes taken post high school. I measured participants' familiarity with Lafarge using a 7 point Likert scale anchored between “Not at all familiar” and “Very familiar.”

5.0 RESULTS AND DISCUSSION

5.1 Memory Test

To assess participants' attention levels, I asked, "Did Lafarge S.A., meet, beat or miss analyst forecasts in the fourth quarter?" Sixty-six percent (532 out of 807) of participants correctly answered this question before answering the fifteen latent variable measure questions, but after the five questions related to the recommendation to the investment club and management credibility, and reading the company's fourth quarter press release. The announcement that Lafarge missed or beat earnings was in the headline of the Reuters article and was also in the second headline of the article. The moderately high correct response rate is acceptable considering the number of distracting items of information between the manipulation information and the question. Similar results were found when participants were asked the multiple choice question "Assets = Liabilities + _____" and had to choose from either Stockholder's Equity, Revenue, Net Income, Long Term Liabilities at the end of the post experiment questionnaire. Out of 807 responses, 491 people correctly answered the question for a 60.84 percent correct response rate. Participants also paid little attention to how many followers the Lafarge S.A. had on their Twitter feed (7,713). Only 233 out of 406, or 57.25 percent, viewed the Twitter feed correctly and answered that Lafarge had between 5,000 and 10,000 followers. Westerman et al. (2012) finds that Twitter users with approximately 7,000 followers had the highest credibility estimates from

participants. Thus, indicating that Lafarge S.A. had 7,713 followers, within the range specified by Westerman et al. (2012), biases against finding results for disclosure credibility and the construct's subsequent influence on attitude. Excluding participants who failed one or more of the memory checks does not materially change any of the results reported below. In section 5.9, I report results using a reduced sample of only participants who passed the manipulation check questions.

5.2 Scale Validation

The Cronbach's standardized alpha of the two item measure of management credibility was 0.846. For the 4-item measure of argument quality the Cronbach's standardized alpha was 0.913. For the 4-item measure of disclosure credibility Cronbach's standardized alpha was 0.954. Perceived usefulness was measured with four items with a standardized Cronbach's alpha of 0.936. Attitude was measured on a 4-item measure with a standardized Cronbach's alpha of 0.912. Relevance was measured on a 3-item measure with a standardized Cronbach's alpha of 0.915. User experience was measured with three items with a standardized Cronbach's alpha of 0.896. All measures have an alpha greater than 0.9 except User Experience which has an alpha that is 0.004 below 0.9, which constitutes excellent internal consistency (Kline 2000). Therefore, the conditions for reliability are met. Table 1 presents the means, standard deviations, minimum and max for each measure along the unstandardized alpha score.

TABLE 1 Validation of Instrument

Panel A: Question Used

MANCR	I think Lafarge S.A.'s management has the competence necessary to make clear and unbiased financial disclosures on the company's (Twitter feed, company website).
MANTR	I trust Lafarge S.A.'s management to make clear and unbiased financial disclosures on the company's (Twitter feed, website).
Financial information provided through the company's (Twitter feed, website) is/was…	
AQ1	Informative
AQ2	Helpful
AQ3	Valuable
AQ4	Persuasive
Financial information provided through the company's (Twitter feed, website) is/was…	
SCR1	Trustworthy
SCR2	Credible
SCR3	Honest
SCR4	Reliable
Using the company's (Twitter feed, website) to obtain financial information (will)…	
USE1	Increase/Increased my productivity (e.g., make my work faster).
USE2	Increase/Increased my performance (e.g., make my work better).
USE3	Make (Made) me more effective (e.g., help me make better decisions).
USE4	I found the company's (Twitter feed, website) to be useful for obtaining financial information.
ATT1	Using the company's (Twitter feed, website) to obtain financial information is/was a (Bad, Good) idea.
ATT2	Using the company's (Twitter feed, website) to obtain financial information is/was a (Foolish, Wise) idea.
ATT3	Using the company's (Twitter feed, website) to obtain financial information is/was a (Unpleasant, Pleasant) idea.
ATT4	Overall, I (Dislike, Like) the idea of obtaining financial information from the company's (Twitter feed, website).
Using the company's (Twitter feed, website) to obtain financial information was…	
REL1	Important
REL2	Relevant (appropriate)
REL3	Necessary
AGE	How old are you?
EXP	How many years of professional work experience do you have?
INVEST	How many years of investing experience do you have?

Panel B

Scale Item	N	Item Mean	Item S.D.	Min	Max	Standardized Alpha
AQ1	807	5.27	1.42	1	7	0.883
AQ2	807	5.12	1.44	1	7	0.872
AQ3	807	5.07	1.46	1	7	0.874
AQ4	807	4.62	1.54	1	7	0.919
Argument Quality						0.913
DCR1	807	4.88	1.38	1	7	0.935
DCR2	807	5.01	1.37	1	7	0.941
DCR3	807	4.96	1.32	1	7	0.945
DCR4	807	4.95	1.37	1	7	0.939
Disclosure Credibility						0.954
USE1	807	4.55	1.61	1	7	0.918
USE2	807	4.56	1.59	1	7	0.907
USE3	807	4.73	1.64	1	7	0.915
USE4	807	4.97	1.56	1	7	0.929
Perceived Usefulness						0.936
ATT1	807	5.03	1.57	1	7	0.862
ATT2	807	4.94	1.52	1	7	0.878
ATT3	807	4.82	1.50	1	7	0.929
ATT4	807	4.86	1.74	1	7	0.874
Attitude						0.912
REL1	807	4.96	1.63	1	7	0.945
REL2	807	5.13	1.56	1	7	0.892
REL3	807	4.67	1.78	1	7	0.896
Relevance						0.915
INVEST	807	6.00	6.45	0	42	0.951
EXP	807	11.85	9.37	0	52	0.797
AGE	807	33.12	10.35	18	73	0.793
User Expertise						0.896

5.3 Descriptive Statistics

Table 2 presents the means of the dependent and independent variables discussed above, along with the Pearson correlations. Platform is a categorical variable coded as 1 if participants were shown the Twitter feed and 0 if shown the investor web page. News is a categorical variable coded as 1 if participants were shown the Reuters page announcing that Lafarge beat forecasts and 0 if Lafarge missed forecasts. Of particular interest is the negative correlation between the dependent variable management credibility and the process variables of attitude, disclosure credibility, perceived usefulness, argument quality, and relevance with platform. Also of interest is the positive and significant correlation between the dependent variables. The correlations partially support the hypotheses.

5.4 Assumption Testing

5.4.1 Assumptions for Hypothesis One

Hypothesis one is tested using structured equation modeling (SEM). This section presents the analysis of structured equation modeling assumptions. The analysis will be performed in SEM using the maximum likelihood (ML) estimation method. The ML estimation method is a normal theory method in that ML assumes multivariate normality of continuous outcome variables. Three criteria must be met for multivariate normality: (1) all variables individual univariate distributions are normal, (2) the joint distribution of any pair of the variables is bivariate normal, (3) all bivariate scatterplots are linear, and the distribution of the residuals is homoscedastic.

Table 2 - Pearson Correlations

	Variable[1]	Mean	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	AQT	20.08																
2	SCRT	19.80	**0.68**															
3	USET	18.81	**0.77**	**0.65**														
4	ATTT	19.65	**0.69**	**0.65**	**0.79**													
5	RELT	14.75	**0.72**	**0.60**	**0.80**	**0.79**												
6	MANSCR	15.00	**0.53**	**0.65**	**0.53**	**0.54**	**0.45**											
7	REC	342.56	**0.28**	**0.29**	**0.23**	**0.25**	**0.24**	**0.42**										
8	ATTRACT	7.36	**0.41**	**0.42**	**0.35**	**0.34**	**0.31**	**0.55**	**0.68**									
9	TIMEREC	38.24	**0.17**	**0.17**	**0.16**	**0.11**	**0.12**	**0.20**	**0.25**	**0.21**								
10	USER	4.41	**0.31**	**0.25**	**0.36**	**0.38**	**0.39**	**0.16**	0.06	**0.10**	0.01							
11	FAMIL	1.74	**0.08**	**0.11**	**0.13**	**0.08**	**0.10**	**0.09**	-0.01	0.05	**0.12**	**0.14**						
12	ACCT	2.77	0.06	0.04	0.06	0.02	0.01	0.00	0.03	0.00	0.01	**0.16**	**0.20**					
13	BUS	2.36	0.03	-0.01	0.02	0.00	0.03	0.00	0.05	0.02	-0.02	**0.20**	0.05	**0.65**				
14	REVIEW	2.96	**-0.10**	**-0.11**	**-0.12**	**-0.10**	-0.11	-0.05	**-0.06**	**-0.07**	-0.02	**-0.19**	**-0.18**	**-0.20**	**-0.20**			
15	NEWS	0.50	**0.15**	**0.16**	**0.10**	**0.13**	**0.08**	**0.15**	**0.25**	**0.28**	0.03	**0.09**	-0.02	0.00	-0.01	0.01		
16	PLATFORM	0.50	**-0.32**	**-0.15**	**-0.31**	**-0.28**	**-0.42**	**-0.10**	-0.01	0.04	-0.05	**-0.26**	-0.05	-0.03	-0.05	-0.03	0.00	
17	USER EXP	16.99	-0.01	-0.01	-0.05	-0.01	-0.03	**0.10**	0.04	**0.08**	-0.05	-0.06	**-0.08**	-0.06	0.01	**0.10**	0.03	-0.01

Coefficients in bold are significant at p < .10. Pearson correlations are below diagonal.

[1]Variables are defined as follows: AQ = summed scores of four questions on argument quality, SCR = summed scores of four questions on source credibility, USE = summed scores of three questions on source credibility, ATT = summed scores of four questions on attitude, RELT **=** summed scores of three questions on perceived relevance, REC = number of shares recommended to purchase, ATTRACT = attractiveness of Lafarge S.A. as an investment measured using a 11 point Likert scale, TIMEREC = number of months recommended to hold the stock, USER = frequency of use of platform measured using a 7 point Likert scale, FAMIL = participant's familiarity with Lafarge S.A. measured using a 7 point Likert scale, ACCT = number of accounting classes taken post high school, BUS = number of business classes taken post high school, REVIEW = participant's frequency of reviewing company financial information measured using a 7 point Likert scale, NEWS = 1 if the participant saw information on the Reuters website about Lafarge beating analyst expectations, 0 if the participant saw information on the Reuters website about Lafarge missing analyst expectations, PLATFORM = 1 if the participant saw information on the Lafarge Twitter feed, 0 if the participant saw information on the Lafarge investor relations page, USER EXP = the average work and investing experience and age .

The first criteria was examined by plotting the factor scores computed using a varimax rotation for argument quality, perceived usefulness, disclosure credibility, attitude and management credibility, along with attractiveness, recommendation and time recommendation. The normality assumption for each variable was tested using the Shapiro-Wilks test for each variable. The test revealed that the variables were not normally distributed. However, the Shapiro-Wilks test has been shown to be sensitive to slight departures from normality (Mendenhall and Sincich 2012). So variables were plotted against the normal probability plot and verifying that the output for each variable is a straight diagonal line. The plots reveal that there is positive kurtosis in most of the variables. However, none of the variables have kurtosis values greater than 1 which is well below the absolute value of 10 suggested as a problem level by Kline (2011). To test for multivariate normality the factor scores from all five factors were added to together then plotted against the normal probability plot and verifying that the output is a straight diagonal line. The plot reveals that there is positive kurtosis. However, the kurtosis is small at 0.5 well under the absolute value of 10 proposed by Kline (2011). A Shapiro-Wilks test confirms that the data is not perfectly multivariate normal but the plots show that the data is very close. The ML estimation technique has been shown to be robust to departures from normality (Savalei 2010, Bagozzi and Yi 2012, Yuan et al. 2012). Therefore, despite the variables failing the assumption of normal distribution, I will rely on the robustness of the ML estimation technique.

5.4.2 Assumptions for Hypotheses Two and Three

Hypotheses two and three are tested using the analysis of variance (ANOVA) test. ANOVA has three main assumptions: (1) independence of observations, (2) that

the dependent variable is normally distributed, (3) and equality of variance across groups . Independence of observations is ensured by no one participant taking the survey twice and participants being randomly assigned to the conditions. The dependent variable for hypotheses two and three is the sum of the two management credibility questions. The sum of the two values was plotted against the normal probability plot, and I verified that the output was a straight line. In addition, a Shapiro-Wilks test was performed on the variable. The tests show that management credibility is not normally distributed due to positive kurtosis. However, the positive kurtosis is small at 0.06 and is negatively skewed at -0.48 and Shapiro-Wilks test is sensitive to slight departures normality (Mendenhall and Sincich 2012). As kurtosis and skewness is quite small, the data is arguably normally distributed but not perfectly so.

To test the second assumption of constant variance, a scatterplot of the residuals versus the predicted dependent variable, using a continuous independent variable (age), was created. There appeared to be no patterns to indicate unequal variance in the scatterplot. In addition to the scatterplot, Levene's test was conducted. Levene's test revealed the assumption of constant variance was not satisfied ($p=0.0257$). However, ANOVA is robust to departures from normality and variance if the cell sizes are approximately equal. My cells have slightly over 200 to 203 observations each, so I will rely on the robustness of ANOVA in my testing of hypotheses two and three.

5.5 Test of Hypothesis One

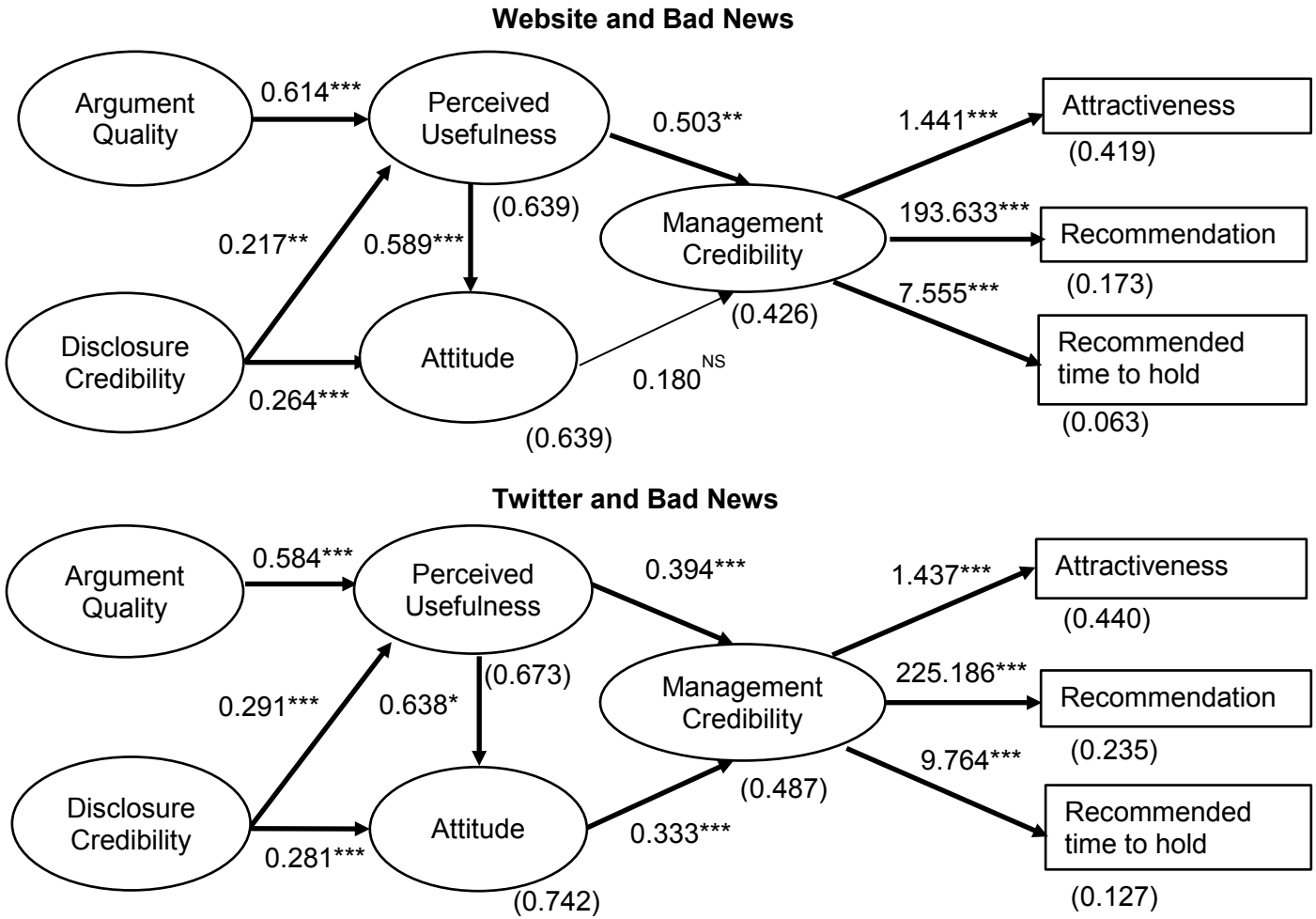
The first hypothesis predicts that participants viewing press releases on Twitter will exhibit stronger peripheral route processing than central route processing, while participants viewing press releases on the company's investor relations web page will

exhibit stronger central route processing than peripheral route processing. I test these predictions by conducting four structured equation model (SEM) analyses. The analyses test how participants' process financial information released on different communication channels, and how the route the participants use affects participant's perceptions of management credibility. The first SEM analysis examines participants' route processing for information from the company's investor relations page and the company missing analyst forecasts for the fourth quarter or bad news (Figure 2 Top Panel A). The second SEM analysis examines the routes processing for information from the company's Twitter feed and the company missing forecasts (Figure 2 Bottom Panel A). The third SEM analysis shows the route processing for information from the company's investor relations web page and the company beating analyst forecasts (Figure 2 Top Panel B). The fourth SEM analysis examines the route processing for information from the company's Twitter feed and the company beating analyst forecasts (Figure 2 Bottom Panel B).

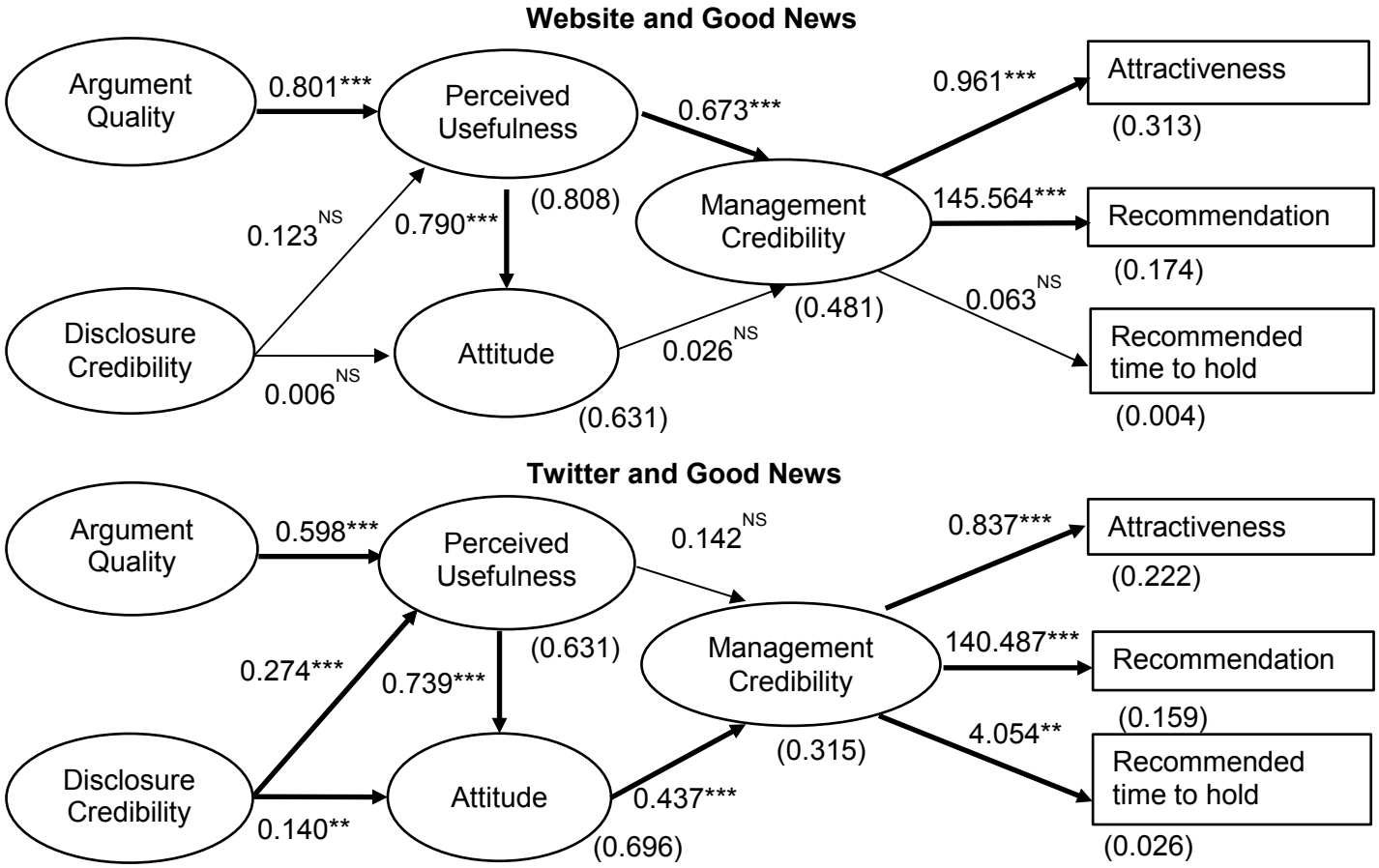
The data appear to fit the model well. For all models, the comparative fit indices (CFIs) are all greater than 0.93, suggesting good model fit (Hu and Bentler 1999). Following the methods outlined in Loehlen (2004), I compared the constrained model for each condition to each unconstrained model and using a χ^2 difference test to determine if the models are statistically different, I find that all models are statistically different from each other (χ^2 min = 57.161, max = 92.075, two-tailed $p < .01$).

Figure 2 Processing Routes of Retail Investors by Platform and News Valence with Consequences

Panel A: Platform by Bad News



Panel B: Platform by Good News



***, ** Indicates p < .01, .05 two-tailed respectively. NS indicates p > 0.10 two-tailed. Bold links are significant at p < .05. Parentheses indicate R^2 values. Figure 2 reports the standardized regression coefficients for four structured equation model analyses examining (1) whether retail investors process financial information on the central route of argument quality and perceived usefulness or the peripheral route of source credibility and attitude, and (2) whether changes in management's reporting credibility affect investors' view of the attractiveness of the stock, how many shares of the stock they recommend buying and how long they recommend the shares be held. Participants' responses to argument quality, perceived usefulness, source credibility, attitude, and management credibility were measured using the questions outlined in Table 1.

Overall, H1 predicts that the links for the two models in the Twitter condition will have a significant link between the latent construct of attitude and management credibility, but not a significant link between perceived usefulness and management credibility. The opposite is predicted for the two models in the investor relations web page condition, with significant links expected between perceived usefulness and management credibility, but missing significant links between attitude and management credibility. Figure 2 shows all four conditions. The Twitter and good news model (Panel B) shows a significant link on the peripheral route between attitude and management credibility ($\beta = 0.437$, two-tailed $p < 0.01$), but not a significant link between perceived usefulness and management credibility ($\beta = 0.142$, $p > 0.10$). Compared to the investor relations web page and good news model that shows a significant link on the central route between perceived usefulness and management credibility ($\beta = 0.673$, $p < .01$), but not a significant link on the peripheral route between attitude and credibility.

The Twitter and bad news model shows a significant link on the peripheral link between attitude and management credibility ($\beta = 0.333$, $p < 0.01$) and a significant link on the central route from perceived usefulness to management credibility ($\beta= 0.394$, $p < 0.01$). By contrast, in the investor relations web page and good news model, the link from the central route from perceived usefulness to management credibility is significant ($\beta = 0.503$, $p < 0.05$) but the link from the peripheral route to management credibility is not significant ($\beta = 0.180$, $p > 0.10$). Interestingly, investor relations web page and good news is the only condition in which there is not a significant link between disclosure credibility and perceived usefulness and attitude, indicating that retail investors process good news from a company's investor relations page almost entirely on the central

route. Overall, H1 predicts that participants in both news valence conditions in the Twitter condition will exhibit stronger peripheral route processing than central route processing, while participants in the investor relations page condition will exhibit stronger central route processing. The results partially support H1, suggesting that retail investors receiving financial information via Twitter process the information at a more unconscious level. Additionally, the results suggest that investors who go to the company's investor relations page to get financial information process the information on the central or conscious route. Overall, the results suggest that the channel through which management chooses to release financial information matters in determining investors' beliefs about management credibility.

5.6 Consequences of Reporting Channel on Management Credibility

The structured equation model analyses also examine the consequences of different communication channels to management's reporting credibility. Prior literature has found that management reporting credibility influences management's ability to communicate with investors, and investors' willingness to rely upon management's information (Williams 1996, Hirst et al. 1999, Mercer 2005). All participants were asked three questions: how attractive the stock was, how many shares they would recommend the investment club to buy, and how many months they would recommend holding the stock. Panels A and B in Figure 2 show the links in the models between participants' management credibility score and their rating of how attractive the stock is as an investment, how many shares they recommend buying and how long to hold the recommended shares. All links are significant in the models except the link between credibility and recommended time to hold in the investor relations page and bad news

condition which is insignificant at $p > 0.10$. The results suggest that the choice of disclosure channel does indeed influence investors' judgments and decisions via investors' beliefs about managements' credibility. The next section discusses the differentiate effects of platform and news valence on management credibility.

5.7 Supplemental Analysis of Latent Variables

Section 5.5 results show that that SEM models are different between platform and news valence. In this section, using ANOVA, I compare the means of the four latent variables: argument quality, perceived usefulness, disclosure credibility and attitude, to determine whether they vary by platform and news valence. Additionally, I analyze the latent variables of relevance and investing experience as ELM posits that participants must have the motivation and ability to elaborate on the message. The sum of the measured variables for each latent variable was used in the analysis. Assumptions for normality and constant variance were checked for each variable and were found not to hold but only varied slightly from normal, as ANOVA is robust to slight departures from normality and when the cell sizes are balanced is robust to departures from constant variance, I will rely upon the robustness of ANOVA in the following tests.

Argument quality is measured using the sum of four questions. The overall model is significant ($F=39.04$, $p<.0001$). Table 3, Panel B shows that platform and news has a significant effect on argument quality at $p < 0.0001$ and $p < 0.0001$ respectfully, while Panel A shows that the means for Twitter are significantly lower from the company website means. A planned comparison of means by news and platform condition finds that the Twitter good news mean is significantly lower at -3.3596 difference from the

Website bad news mean significant at p <0.0001, similar finding is found for the bad news condition by platform with a difference of -3.3045 significant at p <0.0001.

TABLE 3
How Platform Affects Argument Quality
Panel A: Argument Quality, LSMean [Standard Error], n = 807(a)

	News	**Platform**		
	Twitter	Website	Difference p-value	Overall News
Bad	17.6354	20.9400	-3.3596	19.2877
	[0.3428]	[0.3454]	<0.0001	[0.2433]
Good	19.1773	22.5920	-3.3045	20.8846
	[0.3454]	[0.3445]	<0.0001	[0.2430]
Overall Platform	18.4064	21.7660		
	[0.2424]	0.2439]		

Panel B: ANOVA Model of Argument Credibility (b)

Source of Variation	**DF**	**Type III SS**	**MS**	**F-statistic**	**p-value**
NEWS	1	514.4952	514.4952	21.56	<.0001
PLATFORM	1	2277.0616	2277.0616	95.43	<.0001
NEWS x PLATFORM	1	0.6121	0.6121	0.03	0.8728

(a)This table reports the effects of platform and news valence on argument quality. A composite measure of argument credibility was computed by summing the four argument quality questions presented in Table 1.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Perceived usefulness is measured using the sum of four questions. The overall model is significant (F=31.97, p<.0001). Table 4, Panel B shows that platform and news has a significant effect perceived usefulness at p < 0.0001 and p = 0.0026 respectfully, while Panel A shows that the means for Twitter are lower from the company website. A planned comparison of means by news and platform condition finds that the Twitter good news mean is significantly lower at -3.8247 difference from the Website bad news mean significant at p <0.0001, similar finding is found for the bad news condition by

platform with a difference of -3.8247 significant at p <0.0001.Usefulness of information has a long history in accounting research, starting with Ball and Brown (1968) and Beaver (1968). The information approach to financial reporting argues that market participants want to make their own predictions about future security returns. The logic then follows that any information that is useful to predicting future security returns will be desired by market participants. The finding that the participants perceive the social media platforms as less useful when either good or bad news is posted on them compared to when the same information is posted on the company website implies that participants do not find the platform useful for financial disclosures, and thereby companies would not benefit from using the platforms for financial disclosures.

TABLE 4
How Platform Affects Perceived Usefulness
Panel A: Argument Quality, LSMean [Standard Error], n = 807(a)

	News	**Platform**		
	Twitter	Website	Difference p-value	Overall News
Bad	16.3152	20.1400	-3.4496	18.2276
	[0.3899]	[0.3928]	<0.0001	[0.2767]
Good	17.6847	21.1343	-3.8247	19.4095
	[0.3928]	[0.3918]	<0.0001	[0.2763]
Overall Platform	17.0000	20.6371		
	[0.2757]	[0.2774]		

Panel B: ANOVA Model of Perceived Usefulness (b)

Source of Variation	**DF**	**Type III SS**	**MS**	**F-statistic**	**p-value**
NEWS	1	281.8071	281.8071	9.13	0.0026
PLATFORM	1	2668.8325	2668.8325	86.47	<.0001
NEWS x PLATFORM	1	7.0973	7.0973	0.23	0.6317

(a) This table reports the effects of platform and news valence on perceived usefulness. A composite measure of perceived usefulness was computed by summing the four perceived usefulness questions presented in Table 1.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Table 5 presents the results of the analysis of disclosure credibility. The overall model is significant (F=12.80, p<.0001). Table 5, Panel B shows that platform and news has a significant effect on disclosure credibility at p < 0.0001 and p < 0.0001 respectfully, while Panel A shows that the means for Twitter are lower from the company website means for both good and bad news conditions. A planned comparison of means by news and platform condition finds that the Twitter good news mean is significantly lower at -1.4642 difference from the Website bad news mean significant at p = 0.0146, similar finding is found for the bad news condition by platform with a difference of -1.5109 significant at p = 0.0201.These findings are interesting as the

company disclosing, Lafarge S.A., was the same for participants and all participants saw the same press releases but via different channels or disclosure bundles (Mayew 2012).

TABLE 5
How Platform Affects Disclosure Credibility
Panel A: Argument Quality, LSMean [Standard Error], n = 807(a)

	News	**Platform**		
	Twitter	Website	Difference p-value	Overall News
Bad	18.2807	19.7450	-1.5109	19.0128
	[0.3505]	[0.3531]	0.0201	[0.2487]
Good	19.8472	21.3582	-1.4642	20.6027
	[0.3505]	[0.3522]	0.0146	[0.2484]
Overall Platform	19.0640	20.5516		
	[0.2478]	[0.2493]		

Panel B: ANOVA Model of Disclosure Credibility (b)

Source of Variation	**DF**	**Type III SS**	**MS**	**F-statistic**	**p-value**
NEWS	1	509.9304	509.9304	20.45	<.0001
PLATFORM	1	446.4239	446.4239	17.90	<.0001
NEWS x PLATFORM	1	0.1100	0.1100	0.00	0.9471

(a) This table reports the effects of platform and news valence on disclosure credibility. A composite measure of disclosure credibility was computed by summing the four disclosure credibility questions presented in Table 1.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Table 6 presents the results of the analysis of attitude. The overall model is significant (F=27.78, p<.0001). Table 6, Panel B shows that platform and news has a significant effect on attitude at p < 0.0001 and p = 0.0001 respectfully, while Panel A shows that the means for Twitter are lower from the company website means for both good and bad news conditions. A planned comparison of means by news and platform condition finds that the Twitter good news mean is significantly lower at -3.2444

difference from the Website bad news mean significant at p <0.0001, similar finding is found for the bad news condition by platform with a difference of -3.0088 significant at p <0.0001. Overall, the results suggest that participants perceive a firm's use of social media for financial reporting as foolish, a bad idea, unpleasant and disliked getting financial reports via the channel.

TABLE 6
How Platform Affects Attitude
Panel A: Attitude, LSMean [Standard Error], n = 807(a)

News	Platform			
	Twitter	Website	Difference p-value	Overall News
Bad	17.2955	20.5400	-3.0088	18.9177
	[0.3780]	[0.3809]	<0.0001	[0.2683]
Good	18.8916	21.9004	-3.2444	20.3960
	[0.3780]	[0.3799]	<0.0001	[0.2680]
Overall Platform	18.0935	21.2202		
	[0.2673]	[0.2690]		

Panel B: ANOVA Model of Attitude (b)

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	440.8673	440.8673	15.19	0.0001
PLATFORM	1	1972.2174	1972.2174	67.96	<.0001
NEWS x PLATFORM	1	2.7986	2.7986	0.10	0.7562

(a) This table reports the effects of platform and news valence on attitude. A composite measure of attitude was computed by summing the four disclosure attitude questions presented in Table 1.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Table 7 presents the results of the analysis of relevance. The overall model is significant (F=59.55, p<.0001). Table 7, Panel B shows that platform and news has a significant effect on relevance at p < 0.0001 and p = 0.0152 respectfully, while Panel A shows that the means for Twitter are lower from the company website means for both

good and bad news conditions. A planned comparison of means by news and platform condition finds that the Twitter good news mean is significantly lower at -4.0308 difference from the Website bad news mean significant at p <0.0001, similar finding is found for the bad news condition by platform with a difference of -3.6645 significant at p <0.0001.

TABLE 7
How Platform Affects Relevance
Panel A: Attitude, LSMean [Standard Error], n = 807(a)

News	Platform			
	Twitter	Website	Difference p-value	Overall News
Bad	12.3891	16.4200	-3.6645	14.4045
	[0.2922]	[0.2944]	<0.0001	[0.2074]
Good	13.2857	16.9502	-4.0308	15.1179
	[0.2922]	[0.2936]	<0.0001	[0.2071]
Overall Platform	12.8374	16.6851		
	[0.2066]	[0.2079]		

Panel B: ANOVA Model of Relevance (b)

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	102.6743	102.6743	5.92	0.0152
PLATFORM	1	2986.7216	2986.7216	172.27	<.0001
NEWS x PLATFORM	1	6.7673	6.7673	0.39	0.5323

(a) This table reports the effects of platform and news valence on relevance. A composite measure of relevance was computed by summing the three disclosure relevance questions presented in Table 1.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Investing experience is the average of age, investing experience and work experience. The overall model with platform, news and the interaction of platform and news is insignificant (F=0.24, p<.8718), so no further tests were conducted.

Table 8 presents the results of the analysis of attractiveness. The overall model is significant (F=22.96, p<.0001). Table 8, Panel B shows that news has a significant effect on attractiveness at p < 0.0001, while Panel A shows that the means for Twitter are higher from the company website means for both good and bad news conditions but not significantly so. A planned comparison of means shows that the means are not significantly different across platforms.

TABLE 8
How Platform Affects Attractiveness of Stock
Panel A: Attitude, LSMean [Standard Error], n = 807(a)

News	**Platform**			
	Twitter	Website	Difference p-value	Overall News
Bad	6.5227	6.2960	0.2267	6.7784
	[0.1634]	[0.1679]	1.0000	[0.0990]
Good	8.1654	8.1544	0.0110	7.9304
	[0.1592]	[0.1610]	1.0000	[0.0989]
Overall Platform	7.4285	7.2803		
	[0.0986]	[0.0992]		

Panel B: ANOVA Model of Attractiveness of Stock(b)

Source of Variation	**DF**	**Type III SS**	**MS**	**F-statistic**	**p-value**
NEWS	1	267.7140	267.4140	67.72	<.0001
PLATFORM	1	4.4345	4.4345	1.12	0.2899
NEWS x PLATFORM	1	0.3015	0.3015	0.08	0.7825

(a) This table reports the effects of platform and news valence on attractiveness of stock. Attractiveness of stock is measured using a 11 point Likert scale.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Table 9 presents the results of the analysis of stock recommendation. The overall model is significant (F=17.61, p<.0001). Table 9, Panel B shows that news has a significant effect on stock recommendation at p < 0.0001 but that platform is not

significant at p > 0.10, while Panel A shows that the means for Twitter are higher from the company website means for bad news conditions and lower in the good news condition. A planned comparison of means shows that the means are not significantly different across platforms confirming the ANOVA.

TABLE 9
How Platform Affects Stock Recommendation
Panel A: Attitude, LSMean [Standard Error], n = 807(a)

News	Platform			
	Twitter	Website	Difference p-value	Overall News
Bad	241.3448	233.0400	8.3048	237.1924
	[28.9963]	[29.2130]	1.0000	[20.5802]
Good	433.7881	461.6069	-27.8188	447.6975
	[28.9963]	[29.1402]	1.0000	[20.5544]
Overall Platform	337.5665	347.3234		
	[20.5035]	[20.6310]		

Panel B: ANOVA Model of Stock Recommendation (b)

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	8939659.84	8939659.84	52.38	<.0001
PLATFORM	1	19205.53	19205.53	0.11	0.7374
NEWS x PLATFORM	1	65813.94	65813.94	0.39	0.5348

(a) This table reports the effects of platform and news valence on stock recommendation. Stock recommendation is measured between -1000 to 1000 shares.
(b) Similar results are found after dropping participants who failed the manipulation check question and for wilcoxon signed rank test.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

Recommended time to hold stock was measured on slider scale from 0 to 120 representing the number of months. The overall model with platform, news and the interaction of platform and news is insignificant (F=0.88, p= 0.4533), so no further tests were conducted.

5.8 Test of Hypothesis Two and Three

The above models show that investors process information differently depending on the communication channel and that those channels have consequences to the company by affecting perceptions of management credibility. However, it is important to determine whether management credibility is actually different between conditions. H2 predicts that participants will judge management as less credible when viewing financial disclosures posted on the company's Twitter feed than on the company's investor relations web page. H3 predicts that Twitter will moderate the effect of positive or negative financial news on the judgments of retail investors, compared to the same news released on traditional media (i.e. the company's investor relations web page). To test these hypotheses, I first conduct an omnibus two-way ANOVA with Platform and News Valence and Platform X News Valence interaction terms as independent variables and the sum of the two management credibility questions as the dependent variable.

The overall model is significant ($F = 8.85$, $p < 0.0001$). Table 10 presents the results of the analysis. Panel B shows a statistically significant main effect for both news valence ($F = 18.39$, two-tailed $p < 0.0001$) and a statistically significant main effect for platform ($F = 7.70$, $p < 0.01$) but not a statistically significant interaction between Platform and News Valence. The statistically significant main effect of Platform along with the mean of 14.6083 for Twitter versus a mean of 15.3877 for investor relations web page in Panel B support H2. A planned comparison of means by news and platform condition finds that the Twitter good news mean is marginally lower at -0.6000 difference from the Website bad news mean significant at $p = 0.0966$ two-tailed, while

the bad news condition by platform with a difference of -0.9587 and is not statistically significant.

TABLE 10
How Platform Affects Management Credibility
Tests of H2 & H3
Panel A: Management Credibility, LSMean [Standard Error], n = 807(a)

News	Platform			
	Twitter	Website	Difference p-value	Overall News
Bad	13.9162	14.875	-0.6000	14.3956
	[0.2800]	[0.2821]	0.0966	[0.1987]
Good	15.3004	15.9004	-0.9587	15.6004
	[0.2800]	[0.2814]	0.7869	[0.1985]
Overall Platform	14.6083	15.3877		
	[0.1980]	[0.1992]		

Panel B: ANOVA Model of Management Credibility

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	292.8692	292.87	18.39	<.0001
PLATFORM	1	122.5427	122.54	7.70	0.0057
NEWS x PLATFORM	1	6.4907	6.49	0.41	0.5234

(a) This table reports the effects of platform and news valence on management credibility. A composite measure of management credibility was computed by summing the two management credibility questions presented in Table 1.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

The results support the idea that investor's view management as less credible after viewing financial disclosures that have been posted on social media than after viewing the same financial disclosure from the company's investor relations web page. These results are particularly important to CEOs and CFOs, as they have the final say over what additional channels to release financial information on beyond the SEC mandated channels and guide company communication strategy (Holland 2005).

For Twitter to moderate the effects of news valence I predicted that the mean for Twitter and Good News would be less than the mean for investor relations web page and Good News and the mean for Twitter and Bad News would be higher than investor relations web page and Bad News. I expected the Platform X News Valence interaction to be significant. However, the interaction term is not statistically significant, failing to support H3.

5.9 Additional Tests of Hypothesis Two and Three

To check the robustness of my findings for H2 and H2, I dropped the participants that failed the manipulation check. I lose 276 observations by during so but the cell sizes are still approximately equal with 132 in the Twitter-Bad News condition, 125 in the Website-Bad News condition, 139 in the Twitter-Good News condition, and 136 in the Website-Good News condition. ANOVA is robust to slight variations from normal when cell sizes are with 1.5 times of each other, as all of the cells within the bounds the robustness of ANOVA is relied upon the following tests. The reduced model is significant ($F = 11.53$, $p < 0.0001$). Table 11 presents the results of the analysis. Panel B shows a statistically significant main effect for both news valence ($F = 25.76$, two-tailed $p < 0.0001$) and a statistically significant main effect for platform ($F = 8.41$, $p = 0.0039$) but not a statistically significant interaction between Platform and News Valence. The statistically significant main effect of Platform along with the mean of 14.4253 for Twitter versus a mean of 15.4443 for investor relations web page in Panel B give further support to H2. Additional support A planned comparison of means by news and platform condition finds that the Twitter good news mean is marginally lower at -0.8762 difference from the Website bad news mean significant at $p = 0.1313$ two-tailed,

while the bad news condition by platform with a difference of -1.1619 and is not statistically significant.

TABLE 11
How Platform Affects Management Credibility Less Manipulation Failures
Additional Tests of H2 & H3
Panel A: Management Credibility, LSMean [Standard Error], n = 531(a)

	News	**Platform**		
	Twitter	Website	Difference p-value	Overall News
Bad	13.4621	14.6240	-0.8762	14.0430
	[0.3524]	[0.3621]	0.1313	[0.2526]
Good	15.3884	16.2647	-1.1619	15.8265
	[0.3434]	[0.3472]	0.4402	[0.2441]
Overall Platform	14.4253	15.4443		
	[0.2460]	[0.2508]		

Panel B: ANOVA Model of Management Credibility

Source of Variation	**DF**	**Type III SS**	**MS**	**F-statistic**	**p-value**
NEWS	1	422.4028	422.4028	25.76	<.0001
PLATFORM	1	137.8959	137.8959	8.41	0.0039
NEWS x PLATFORM	1	2.7089	2.7089	0.17	0.6846

(a) This table reports the effects of platform and news valence on management credibility. A composite measure of management credibility was computed by summing the two management credibility questions presented in Table 1.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), NEWS x PLATFORM = the interaction of news and platform.

An additional ANCOVA was ran to test whether including the control variables of how often the participants use the platform they saw the company press releases on (USER), how familiar they are with Lafarge S.A.(FAMIL), and how often they review financial statements (REVIEW). The results are presented in Table 12. The model is significant at ($F=7.56$, $p <0.0001$). The variables of news is significant at $p < 0.0001$ along with platform $p = 0.0398$ one-tailed per hypothesis, $p = 0.0797$ two-tailed. However, of the three control variables on how often participant's use the platform

(USER) is significant at p = 0.0013, familiarity with Lafarge (FAMIL) and how often they review financial statements is not.

Table 12
ANCOVA Model of Management Credibility n=807

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	257.1986	257.1986	16.46	<.0001
PLATFORM	1	48.1078	48.1078	3.08	0.0797
USER	1	163.8917	163.8917	10.49	0.0013
FAMIL	1	56.1895	56.1895	3.60	0.0583
REVIEW	1	6.0576	6.0576	0.39	0.5337
NEWS*PLATFORM	1	3.3973	3.3973	0.22	0.6411

(a) This table reports the effects of platform and news valence on management credibility. A composite measure of management credibility was computed by summing the two management credibility questions presented in Table 1.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), USER = how frequently the participant uses the platform on 7 point Likert scale, FAMIL = how familiar the participant is with Lafarge on 7 point Likert scale, REVIEW = how often the participant reviews financial statement on 7 point Likert scale, NEWS x PLATFORM = the interaction of news and platform.

Table 13 shows the ANCOVA model with the manipulation failures dropped from the sample. The model is significant (F = 7.57, p < 0.0001), the news variable is still significant at p < 0.0001 and the platform variable strengthens from p = 0.0797 two-tailed in the full sample to p = 0.0179 after the manipulation failures are dropped. USER is no longer significant but familiarity is at p = 0.0287 two-tailed. Review of financial statements continues to be statistically insignificant as does the interaction of news and platform.

Table 13
ANCOVA Model of Management Credibility Less Manipulation Failures n=531

Source of Variation	DF	Type III SS	MS	F-statistic	p-value
NEWS	1	379.7035	379.7035	23.48	<.0001
PLATFORM	1	91.2175	91.2175	5.64	0.0179
USER	1	48.0833	48.0833	2.97	0.0852
FAMIL	1	77.8119	77.8119	4.81	0.0287
REVIEW	1	2.6172	2.6172	0.16	0.6876
NEWS*PLATFORM	1	2.0038	2.0038	0.12	0.7250

(a) This table reports the effects of platform and news valence on management credibility. A composite measure of management credibility was computed by summing the two management credibility questions presented in Table 1.
PLATFORM (Twitter or IR web page), NEWS (Good - beat analyst forecasts or Bad - missed analyst forecasts), USER = how frequently the participant uses the platform on 7 point Likert scale, FAMIL = how familiar the participant is with Lafarge on 7 point Likert scale, REVIEW = how often the participant reviews financial statement on 7 point Likert scale, NEWS x PLATFORM = the interaction of news and platform.

As the sum variable of the two management credibility questions was perfectly normally distributed a non-parametric test Wilcoxon Rank Sum test was run to test the differences in the scores between platform and news valence. The results are presented in Table 14 for the full sample. The non-parametric tests show that the management credibility differs by platform $p = 0.0197$ two-tailed and by news valence $p < 0.0001$ further supporting H2. Table 13 present the non-parametric test of the sample after manipulation failures were removed the results are even stronger with platform significant at $p = 0.0107$ compared to a $p = 0.0197$ for the full sample, the news condition is the still significant at $p < 0.0001$.

Table 14
Wilcoxon Rank Sum Test for Management Credibility
Panel A: Full Sample n = 807

Condition	N	Mean	Standard Deviation
Twitter	406	385.0394	3300.0484
Platform	401	423.1970	3300.0484
Z-Score		2.3325	
p-value[a]		0.0197	
Good	403	370.9851	3300.1092
Bad	404	436.9331	3300.0192
Z-Score		-4.0315	
p-value[a]		< 0.0001	

Panel B: Less Manipulation Failures n = 531

Condition	N	Mean	Standard Deviation
Twitter	271	249.8726	1766.1575
Platform	261	283.7643	1766.1575
Z-Score		2.5510	
p-value[a]		0.0107	
Good	257	234.7354	1765.4582
Bad	275	296.1854	1765.4582
Z-Score		-4.6237	
p-value[a]		< 0.0001	

[a] Two-tailed significance level

Overall, the results support the hypothesis that participants' perceptions of management credibility will differ by platform, in support of H2 but not that there is an interaction failing to support H3.

6.0 SUMMARY AND CONCLUSION

I explore the effects of financial information press release announcements on social media platforms and more traditional electronic platforms, and whether doing so influences how retail investors process the information. I investigate how the platform on which financial information is presented affects the route through which the information is processed by investors, and the ensuing impact on their beliefs regarding management credibility. The results reveal that retail investors process financial information posted on Twitter via the peripheral or unconscious route more than the central or conscious route, extending the theory of product channel fit to the context of information processing. This is the first study to investigate how information is perceived and processed across different communication channels. Additionally, I find that financial disclosures on social media are associated with lower overall investor belief of management credibility which, I show to significantly influence investor judgment and decisions about the company. I find similar results after breaking out the participants to those that saw either good or bad news and the channel on which they saw the news. Participants that viewed financial disclosures on social media, in both the good and bad news conditions had lower perceptions of the disclosure in regard to argument quality, usefulness and credibility. However, participants' perceptions of stock attractiveness, the number of shares they recommended to buy or sell to the investment club, or the number of months to hold the stock did not differ between platforms. It was only news valence that affected these measures, with good news associated with higher levels of attractiveness and higher number of recommended shares. There was no significant interaction between platform and news valence. These findings confirm one of the

central tenets of ELM-- that individuals can process the same information differently but still arrive at the same judgment and decision. The ELM argument holds true in the this study as I find that peripheral (central) route processing is associated with lower (higher) perceptions of management credibility but not stock attractiveness, stock recommendation or recommended time to hold. Management credibility has been found to be an important factor in management's ability to communicate information to the capital markets (Williams 1996, Hirst et al. 1999, Mercer 2004). Decreased management credibility explains why Jung et al. (2014) find that small investors do not respond to news releases via Twitter and why more communication is required of management via social media during product recalls. Thus, my study's results are important, as I provide evidence of the effect of disclosure media on management credibility, which in turn significantly affects the immediate judgments and decisions regarding stock attractiveness and purchase.

My results provide important insights for both companies and investors. Due to the multitude of communication channels available, companies must decide which channels allow them to reach the most investors with the same message. The research provides insight into how potential investors view financial information from companies and shows that financial information is processed differently across channels, despite coming from the same source, due to lack of fit between the message and the channel.

In particular, the results of the research are informative to CEOs, CFOs and other executives responsible for financial reporting. I find that financial information disseminated on new communication channels (Twitter is under 10 years old and was only widely adopted beginning in 2009) are perceived as having lower argument quality,

credibility, and usefulness with retail investors overall having a lower attitude towards the channel. These diminished perceptions result in decreased perceptions of management credibility. The lack of management credibility could necessitate more disclosures, particularly for disclosures that lack fit, via the channel to have the same effect as fewer disclosures on more traditional channels where perceptions of management are higher. However, the benefits to management still exist as perceptual and attitudinal changes that occur via the peripheral route are less persistent, open to counter influence, and less predictive of future behavior (Petty and Cacioppo 1986), indicating that management that engages an audience via new communication channels could ultimately be more successful in persuading the audience to their point of view versus withdrawing and using more traditional channels where central route processing is more dominant. Perception/attitude changes that occur via the central route are, in general, more stable, more enduring, and are more predictive of long-term behavior (Petty and Cacioppo 1986) indicating that reverting to more traditional channels may not have the result desired by management if the goal is to change perceptions only temporarily..

Similarly, for investors, the information environment has changed markedly on where to obtain company information. Investors seeking to make optimal investing decisions can benefit from the study, as it shows that the communication channel that the investor first receives the information alters how the investor processes the information. For less experienced investors, starting at a social media channel to obtain financial information may cause them to miss important information about the company.

The results of this study should be interpreted considering its limitations. First, participants were asked to recommend increases or decreases to only 1,000 shares held by a hypothetical investment club and limited to that range in the experiment. The 1,000 anchor may have resulted in decreased variability in the recommendations. Previous research on investment recommendation has used 10,000 shares (Farkas and Murthy 2013) and 100,000 shares (Elliot et al. 2012). It is possible that increasing the number of shares held will increase variability; a possibility that can be tested in future research.

There are many avenues for future research on the role of social media in accounting. Future research could investigate whether the salience of the accounting information in the Twitter posts influences investors and how so, in this study investors only saw announcements of earnings in the Twitter posts but no actual accounting numbers. It would be interesting to investigate how tweets about specific financial events that are not earnings related influence investors. Additionally, in this study the source of the tweets was the company and tied to any one individual within the company. A number of CEOs and CFOs and other executives within companies are active on Twitter and it would be interesting to know if individuals with high credibility within the social network or community have lower credibility as a result of using social media for Reg FD disclosures. Furthermore, research on the role of community sentiment, as measured by likes or the number of followers and the subsequent influence on investors and other decision makers, could be informative to both investors and management. Finally, in this study I use financial disclosures from a business to business firm; it is unknown whether similar results would be found for firms that are

primarily consumer or serviced oriented and have high social status firms, as measured by number of followers, has on investors.

In summary, I find that when product-channel fit is low, retail investors process information unconsciously compared to when product-channel fit is high and retail investors process the information consciously. The effect is particularly pronounced when retail investors viewed good news from the firm. Additionally, I find that when product-channel fit is low, management credibility is lower compared to when product-channel fit is high. Understanding the interaction of message and channel and subsequent effects on decisions is both timely and important.

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APPENDIX A – EXPERIMENTAL PROCEDURES

Experiment Procedures

1. Informed Consent
a. Non-professional Investor Question
b. Informed Consent

2. Introduction
a. Case Material
b. Profile of Lafarge
c. Lafarge financial ratios vs. industry
d. Map of countries where Lafarge operates

3. Main Experiment
a. Press Release headlines (Twitter or IR)
b. Lafarge Q2 2012 press release
c. Press Release headlines (Twitter or IR)
d. Lafarge sells assets press release
e. Press Release headlines (Twitter or IR)
f. Lafarge Q3 2012 press release
g. Press Release headlines (Twitter or IR)
h. Announce of joint venture
i. Press Release headlines (Twitter or IR)
j. Reuters news articles announcing Lafarge misses (bad news) or beats (good news).
k. Lafarge 2012 Annual Results press release

4. Main Experiment Questions
a. Attractiveness as an investment
b. Recommendation
c. Time recommendation
d. Justification
e. Management competence
f. Trust in management
g. Manipulation question
h. ELM questions
i. Post experimental questionnaire

APPENDIX B – EXPERIMENTAL MATERIALS

Have bought or sold stocks in the past 12 months?
- ❍ Yes
- ❍ No

Page Break

I appreciate you taking the time to respond to this research survey. The primary objective of this study is to obtain a better understanding of how effective it is for companies to invest in social media initiatives. Additionally, I hope to better understand when it is desirable for companies to invest in social media initiatives. You will be asked to read some press releases from a company and then provide your opinions on the use of technologies by companies. You must be 18 or older in order to participate in this research survey.

Please note that your responses to this research survey are anonymous. In addition, please note that completion of the survey is voluntary and you may withdraw at any time but that, as mentioned, I strongly believe you will find the research interesting. The survey should take no more than 30 minutes to complete. During that time you will be asked to indicate your social media preferences. Your responses will be compiled with other participants. Then, I will examine how your responses compare to other individuals.

If you have any questions or concerns about this study, please contact me, Neal Snow (the Principal Investigator in charge of this research study) at 813-974-6863. This study, titled "Information Processing Study," is IRB study #12268. If you have questions about your rights as a participant in this study, general questions, or complaints, concerns or issues you want to discuss with someone outside the research study, call the Division of Research Integrity and Compliance at the University of South Florida at 813-974-5638.

If you are interested in participating, please click the “Next” button below. By clicking the “Next” button you are confirming that are you 18 years or older.

You must complete the study and enter in the unique id given at the end in order to receive payment Amazon Mechanical Turk.

Sincerely,

Neal Snow
Principal Investigator
University of South Florida

For the purpose of the survey, please imagine that you have joined a local investment club. At the last meeting the club asked you to monitor, evaluate, and make a recommendation (up to 1,000 shares) for the club regarding one company, Lafarge S.A.. The club currently holds 1,000 shares in the company.

You will be shown a profile of the company to familiarize you with the company followed by additional information from the company that was released on popular investor relation sites during 2012 and 2013.

Using the information, you will then be asked to make and justify a recommendation to the club regarding whether the club should increase or decrease its investment in the company. You may want to take notes on the information that you view to help you make the recommendation.

Please note, depending on your internet speed some pages may take a few seconds to load.

Lafarge S.A. produces and sells building materials under the Lafarge brand worldwide.

The company produces and sells a range of cement and hydraulic binders, including basic Portland and masonry cements, and various other blended and specialty cements and binders for the construction industry. It also offers technical support, ordering and logistical assistance, documentation, demonstrations, and training services relating to the use of cements, as well as engages in cement trading activities. In addition, the company produces and sells aggregates, which comprise hard rock, such as limestone and granite; natural sand, gravel, recycled asphalt, and ready mix concrete, as well as products and services relating to paving activities. Further, it provides wallboard and finishing products, as well as gypsum plaster, plaster blocks, joint compounds, metal studs, anhydrite binders for self-leveling floorscreeds, and industrial plasters.

The company sells its products to concrete producers, precast concrete product manufacturers, contractors, builders, masons, building materials wholesalers, asphalt producers, road contractors, construction companies, general building materials distributors, plasterboard installers, wallboard specialty dealers, do-it-yourself home centers, and transforming industries. The company, formerly known as J. et A. Pavin de Lafarge, was founded in 1833 and is headquartered in Paris, France.

Lafarge S.A. trades on the Paris Stock Exchange under the symbol LG.

Source: BloombergBusinessWeek

	Financial ratios					Operating metrics		
Company name	Current ratio	Lt debt to assets	Total debt to assets	Lt debt to equity	Total debt to equity	Return on avg assets	Return on avg equity	Return on investment
Lafarge S.A.	1.11	29.14	36.91	74.24	94.02	1.92	3.67	2.53
Industry Average	1.49	27.03	31.60	102.88	116.51	1.17	0.96	1.80

Data Source: FactSet via Google Finance

Lafarge operates in 58 countries and has 68,000 employees as of 12/31/2011.

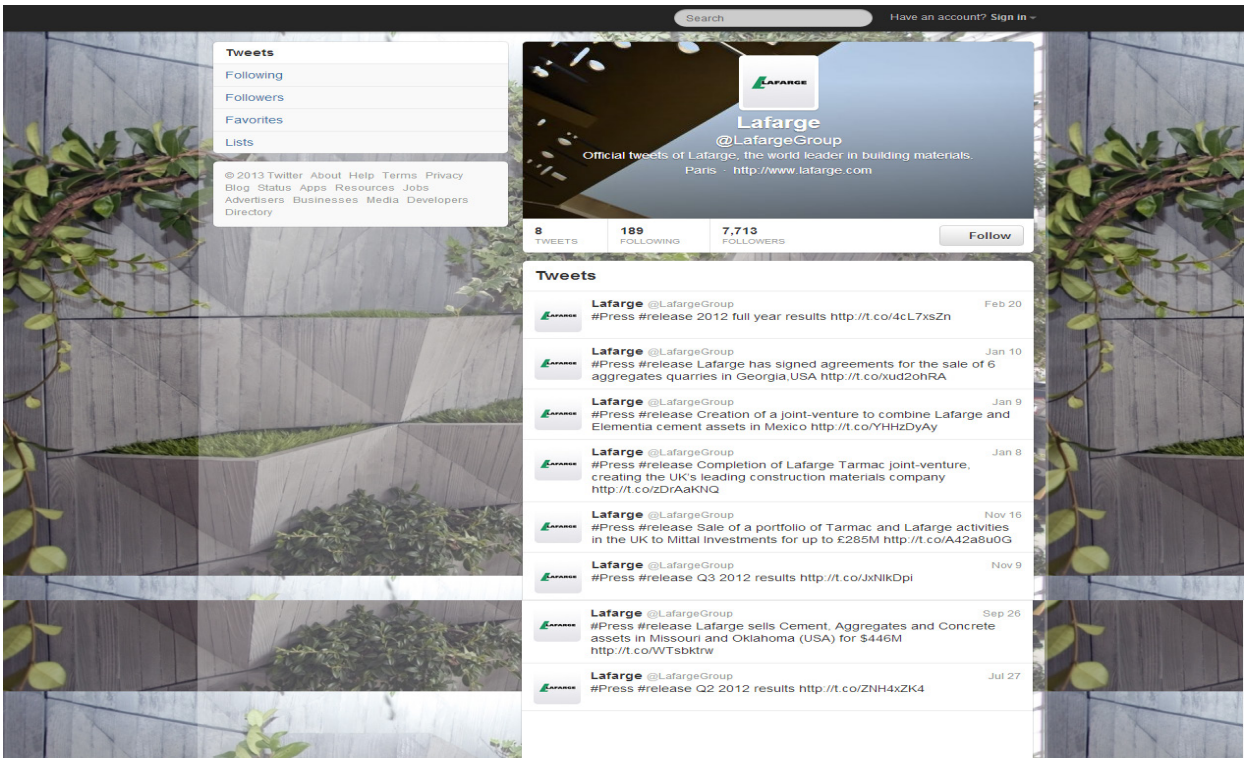

Figure B1 Screenshot Lafarge Twitter Feed

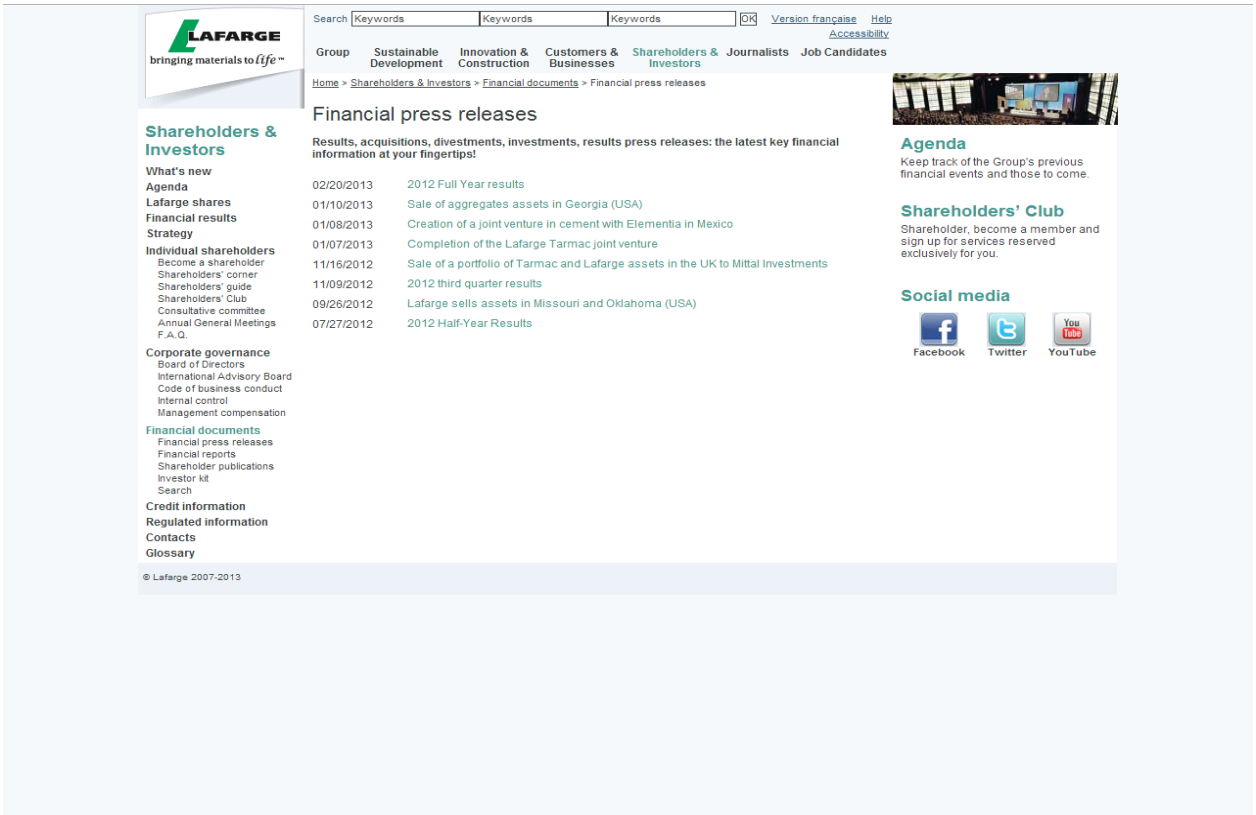

Figure B2 Screenshot Lafarge Investor Relations Web Page

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Financial press releases

Results as of June 30, 2012

Date 07/27/2012
NYSE Euronext Paris : LG

Positive trends confirmed: sales up 5% and Current Operating Income up 11% in the second quarter
Strong cash generation and cost savings measures on track

Second quarter key figures
- Sales up 5% to € 4,261m
- EBITDA up 8% to € 1,007m
- Current operating income up 11% to € 755m
- Excluding asset impairment and restructuring charges, net income Group share was stable at € 294m (€ 1.03 per share)

First-half key figures
- Sales up 5% to € 7,614m
- EBITDA up 8% to € 1,523m
- Current operating income up 15% to € 1,022m
- Excluding asset impairment and restructuring charges, net income Group share improved 15% to € 312m (€ 1.09 per share)

Group highlights

- Sales increased for the quarter and year-to-date, driven by successful price actions across all product lines to respond to cost inflation.
- The Group achieved €170 million of cost savings in the first-half, €100 million in the second quarter, and is on track to reach at least €400 million for the year.
- EBITDA and current operating income rose in the quarter and year-to-date, driven by double digit growth in Middle East and Africa, Asia, Latin America, and North America. Margins also improved both in the quarter and the first-half, up 130 basis points when excluding carbon credit sales.
- The Group recorded a non-recurring charge of €200 million in the second quarter for the impairment of Greek assets and recorded €148 million of restructuring charges in the first-half to implement its cost savings initiatives.
- Net income Group share decline impacted by asset impairment and restructuring charges. Excluding these charges, net income group share and earnings per share improved 15% year-to-date.
- Net debt of €12.5 billion reduced by €1.7 billion from June 30, 2011, and strong liquidity further improved through the issuance in July of €675 million mid-term bonds with no financial covenants and interest rates below 6 percent.

Bruno Lafont, Chairman and Chief Executive Officer of Lafarge, said:

"Economic conditions remain challenging for many parts of the world and we remain prudent on our outlook. But even in a lower growth volume environment, our actions to generate sales growth and cash, and to improve returns, led to a third consecutive quarter of positive trends.
These actions will continue as we implement cost savings of at least €400 million in 2012, drive sales growth and higher margin products and services through innovation, and extract more out of our assets with strict capital discipline. We confirm our objective to secure at least €1 billion of divestments this year as part of improving returns and reducing net debt to less than €10 billion as soon as possible in 2013."

Outlook

Overall the Group continues to see cement demand moving higher and maintains its estimated market growth of between 1 to 4 percent in 2012 versus 2011. Emerging markets continue to be the main driver of demand and Lafarge benefits from its well balanced geographic spread of high quality assets.
We expect higher pricing for the year and that cost inflation will increase at a lower rate than in 2011.

Consolidated accounts as of June 30, 2012

The Board of Directors of Lafarge, chaired by Bruno Lafont, met on July 26, 2012 and approved the accounts for the period ended June 30, 2012. Further to their limited review of the interim condensed consolidated financial statements of Lafarge, the auditors have established a report which is included in the half-year financial report.

Consolidated financial statements

(€m)	Second quarter		Variation		First half		Variation	
	2012	2011 (4)	Gross	Like for like (6)	2012	2011 (4)	Gross	Like for like (6)
Volumes								
Cement (million tons)	38.4	39.5	-3%	-2%	69.7	70.6	-1%	-
Aggregates (million tons)	51.0	51.4	-1%	-2%	84.2	86.1	-2%	-3%
RMX Concrete (million m3)	8.6	9.2	-7%	-	15.7	16.8	-7%	-2%
Results (million euros)								
Sales	4,261	4,054	5%	3%	7,614	7,260	5%	4%
EBITDA (1)	1,007	934	8%	4%	1,523	1,413	8%	5%
EBITDA margin (%)	*23.6*	*23.0*	*60bps*		*20.0*	*19.5*	*50bps*	
Current operating income	755	683	11%	7%	1,022	891	15%	9%
Net income Group share	57	289	-80%		13	260	-95%	
Net income before restructuring and impairment (2)	*294*	*294*	*0%*		*312*	*271*	*15%*	
Earnings per share (€) (3)	0.20	1.01	-80%		0.05	0.91	-95%	
Free cash flow	122	142	-14%		(312)	(133)	nm	
Group net debt					12,550	14,260	-12%	

(1) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and is a non-GAAP financial measure.
(2) Net income group share includes pre-tax asset impairment and restructuring charges of € 254m and € 7m for second quarter 2012 and 2011, respectively, and impairment and restructuring charges of € 348m and € 16m for first-half 2012 and 2011, respectively.
(3) Basic average number of shares outstanding of 287.1 million and 286.2 million for second quarter 2012 and 2011, respectively, and 287.1 million and 286.1 million year-to-date 2012 and 2011, respectively.
(4) Figures for 2011, excluding net debt, are restated to reflect the reclassification of the Gypsum activities as discontinued operations.
(6) At constant scope and exchange rates.

EBITDA results by region (1)
Current operating income by regions

(€m)	Second quarter			First half		
	2012	2011 (2)	Variation	2012	2011 (2)	Variation
North America	165	133	24%	119	58	105%
Western Europe	185	194	-5%	279	345	-19%
Central & Eastern Europe	100	127	-21%	86	118	-27%
Middle East & Africa	328	298	10%	643	572	12%
Latin America	70	62	13%	129	115	12%
Asia	159	120	33%	267	205	30%
TOTAL	**1,007**	**934**	**8%**	**1,523**	**1,413**	**8%**

(1) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and is a non-GAAP financial measure.
(2) Figures for 2011 are restated to reflect the reclassification of the Gypsum activities as discontinued operations.

Sales development and financial results

Sales volumes for cement, aggregates and concrete slightly declined in the quarter and year-to-date. For cement, sales volumes decreased 3% in the quarter and 1% year-to-date, reflecting divestments and volume declines primarily in Western and Central and Eastern Europe that were partially offset by improvements in North America and Asia. Aggregates sales volumes declined by 1% in the quarter and 2% year-to-date, reflecting lower construction activity in Western Europe. Concrete volumes declined by 7% for both periods due to the sale of US readymix assets in the third quarter 2011, creating a higher base comparison. On a like-for-like basis, readymix concrete sales volumes were stable.

Consolidated sales moved higher, up 5% for both periods, supported by successful price actions to respond to cost inflation across all of our product lines, higher cement volumes in North America and Asia, and favorable foreign exchange.

EBITDA improved for the quarter and year-to-date, up 8%. Double digit EBITDA increases in Middle East and Africa, Latin America, Asia, and North America supported this growth. Declines occurred in Western and Central & Eastern Europe due to the impact of poor weather conditions in the early part of the year, €51 million of lower credits from the sale of carbon credits in the first-half compared to last year, and a challenging economic environment. Overall, cost reduction actions contributed €170 million to the results for the first-half.

Net Income Group Share declined to €57 million in the quarter and to €13 million for the first-half. The decrease was primarily due to a €200 million second quarter pre-tax impairment charge on Greek assets resulting from the sustained downturn in economic conditions. In addition, the Group recorded €54 million of pre-tax restructuring charges in the quarter (€148 million in the first-half) as part of the implementation of the Group's cost savings program.

Net debt declined by €1.7 billion relative to June 2011 and moved higher compared to year-end 2011 due to normal seasonal working capital needs and exchange rates.

Investments, divestments and liquidity

Investments totaled €298 million for the first-half 2012, down from €566 million in the first half 2011.
- Sustaining capital expenditures remained stable at €110 million versus €122 million in 2011.
- Internal development capital expenditures and acquisitions declined from €444 million in the first-half 2011 to €188 million in the first-half 2012.

Lafarge received €72 million in cash for divestments in the first-half 2012, including sales of minority stakes, and plans to divest more than €1 billion in 2012.

As of June 30, 2012, Lafarge SA had €3.4 billion in undrawn committed credit lines, with an average maturity of about 3 years, in addition to €2.6 billion of cash on hand.

Additional information

The analyst presentation of results and the half-year financial report, including the interim management report, the interim condensed consolidated financial statements and the notes are available on this Website.

Practical information:

There will be an analyst conference call at 11:00 CET, on July 27, 2012. The presentation will be made in English with slides that can be downloaded from this website.

The presentation may be followed via a live web cast on the Lafarge website as well as via teleconference:
- Dial in (France): +33(0)1 70 99 42 86
- Dial in (UK or International): +44(0)20 7136 2055
- Dial in (US): +1212 444 0412

Please note that in addition to the web cast replay, a conference call playback will be available until the 3rd of August 2012 midnight at the following numbers:
- France playback number: +33 (0)1 74 20 28 00 (pin code: 8415877)
- UK or International playback number: +44 (0)20 3427 0598 (pin code: 8415877)
- US playback number: +1 347 366 9565 (pin code: 8415877)

Lafarge's next financial publication - 3rd Quarter 2012 results - will be on November 9th, 2012 (before the NYSE Euronext Paris stock market opens).

Notes to editors
Located in 64 countries with 68,000 employees, **Lafarge** is a world leader in building materials, with top-ranking positions in its Cement, Aggregates & Concrete businesses. In 2011, Lafarge posted sales of 15.3 billion euros.
For the second year in a row, Lafarge ranked amongst the top-10 of 500 companies evaluated by the "Carbon Disclosure Project" in recognition of their strategy and actions against global warming. With the world's leading building materials research facility, Lafarge places innovation at the heart of its priorities, working for sustainable construction and architectural creativity.

Important disclaimer - forward-looking statements:
This document contains forward-looking statements. Such forward-looking statements do not constitute forecasts regarding results or any other performance indicator, but rather trends or targets, as the case may be, including with respect to plans, initiatives, events, products, solutions and services, their development and potential. Although Lafarge believes that the expectations reflected in such forward-looking statements are based on reasonable assumptions as at the time of publishing this document, investors are cautioned that these statements are not guarantees of future performance. Actual results may differ materially from the forward-looking statements as a result of a number of risks and uncertainties, many of which are difficult to predict and generally beyond the control of Lafarge, including but not limited to the risks described in the Lafarge's annual report available on its Internet website (www.lafarge.com) and uncertainties related to the market conditions and the implementation of our plans. Accordingly, we caution you against relying on forward looking statements. Lafarge does not undertake to provide updates of these forward-looking statements.
More comprehensive information about Lafarge may be obtained on its Internet website (www.lafarge.com), including under "Regulated Information" section.
This document does not constitute an offer to sell, or a solicitation of an offer to buy Lafarge shares.

Agenda
Keep track of the Group's previous financial events and those to come.

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Figure B3 Screenshot Lafarge Q2 Press Release Shown to All Participants

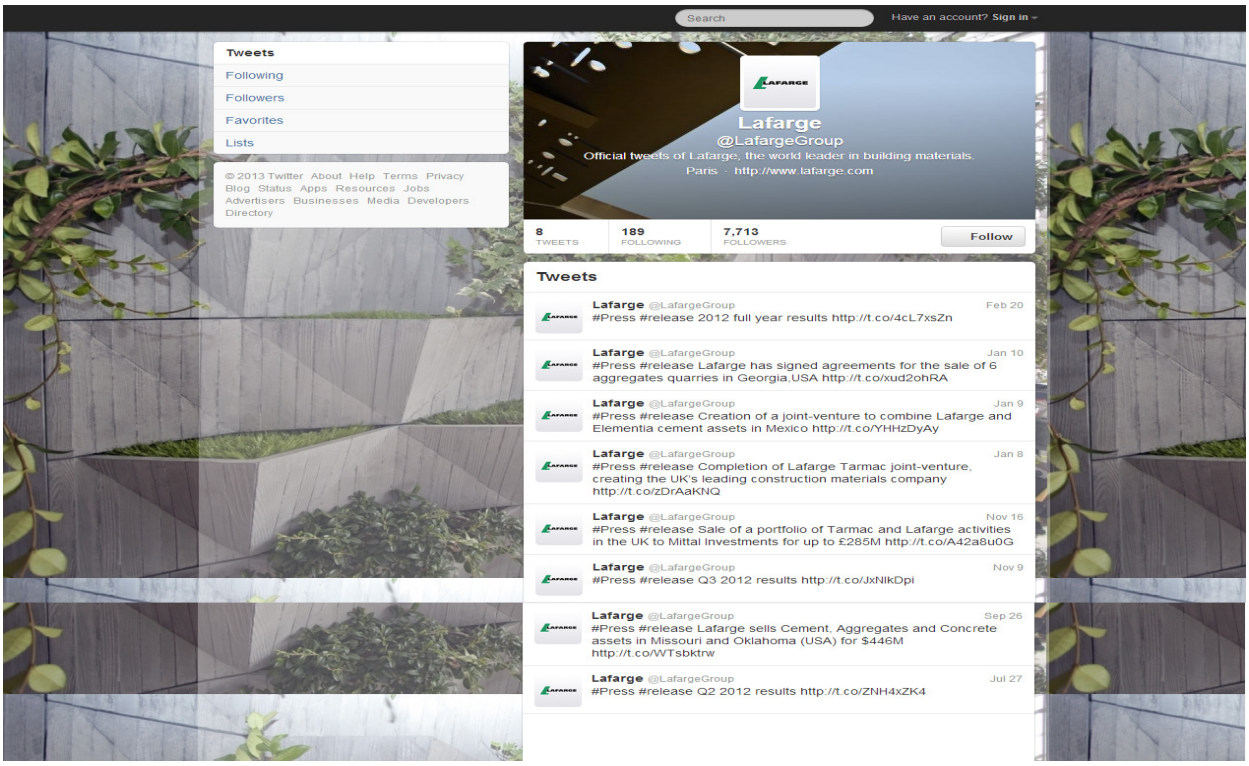


Figure B4 Screenshot Lafarge Twitter Feed Second Time Shown

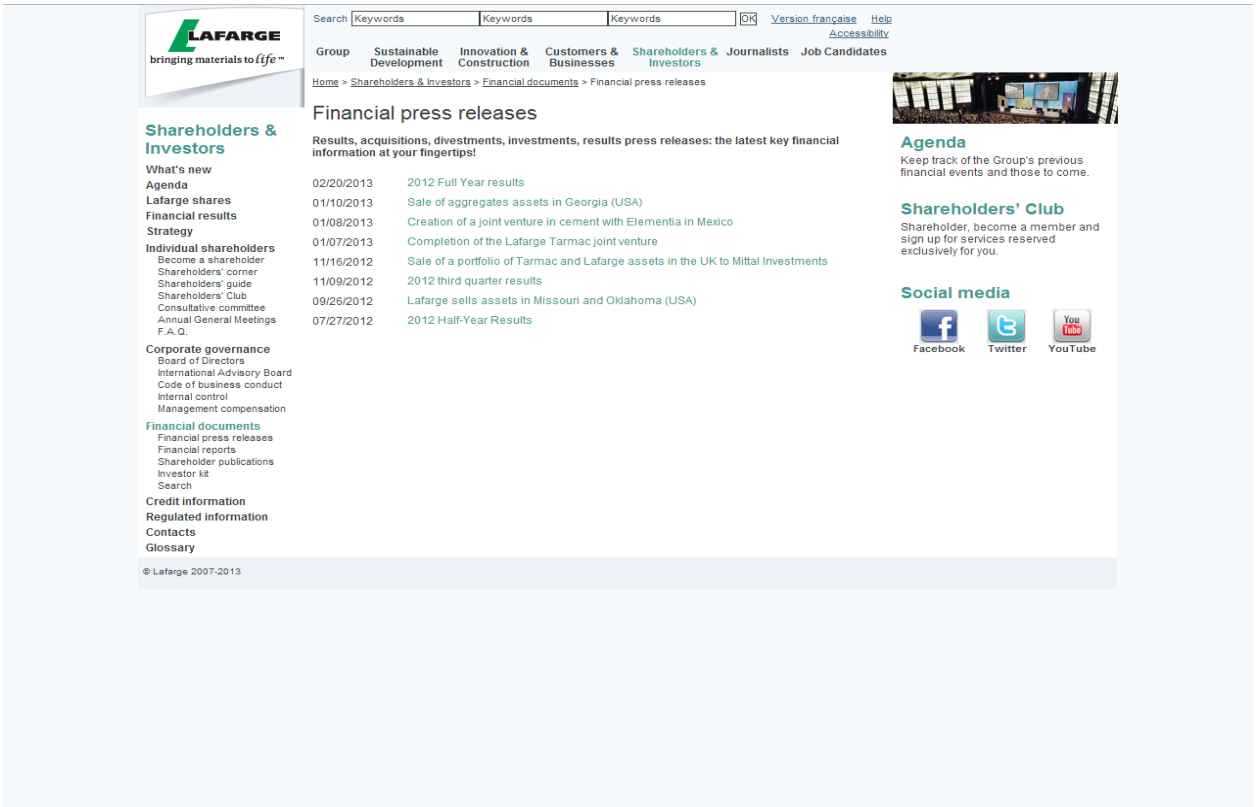


Figure B5 Screenshot Lafarge Investor Relations Web Page Second Time Shown

Figure B6 Screenshot Lafarge Press Release Sale of Assets in USA Shown to All

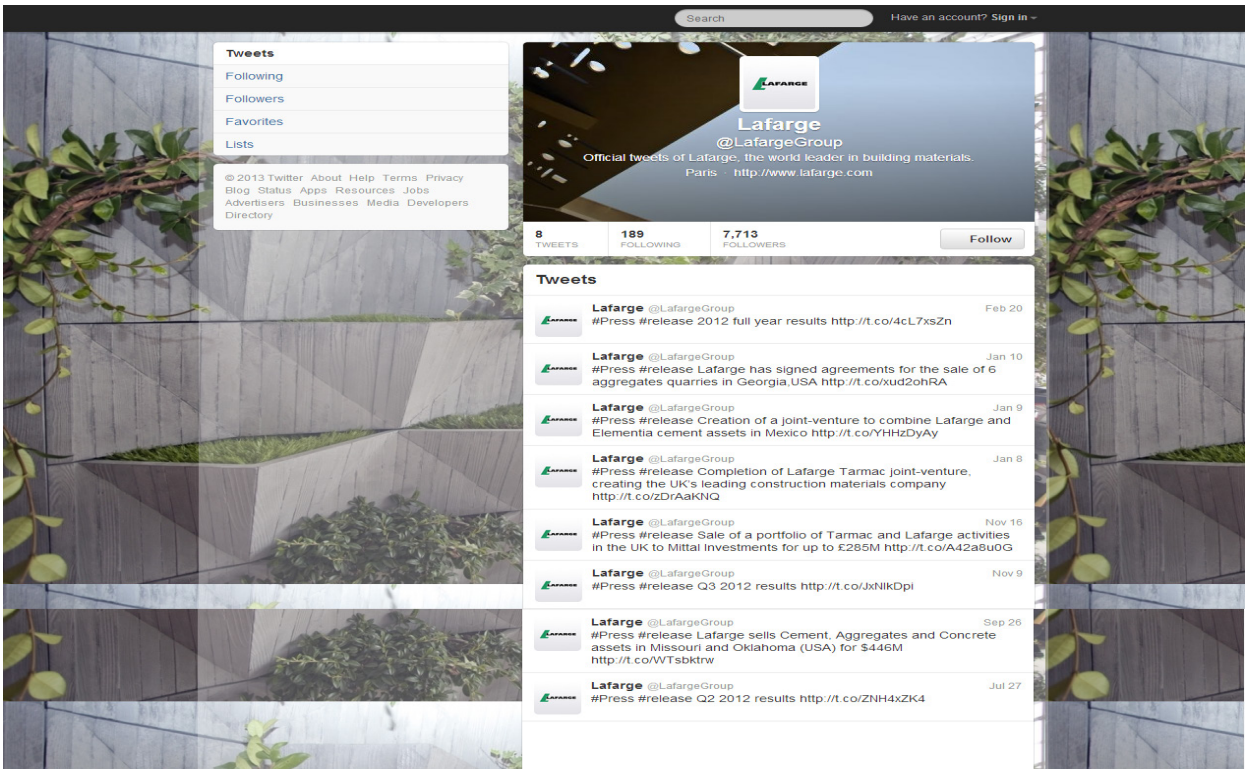


Figure B7 Screenshot of Lafarge Twitter Feed Third Time Shown

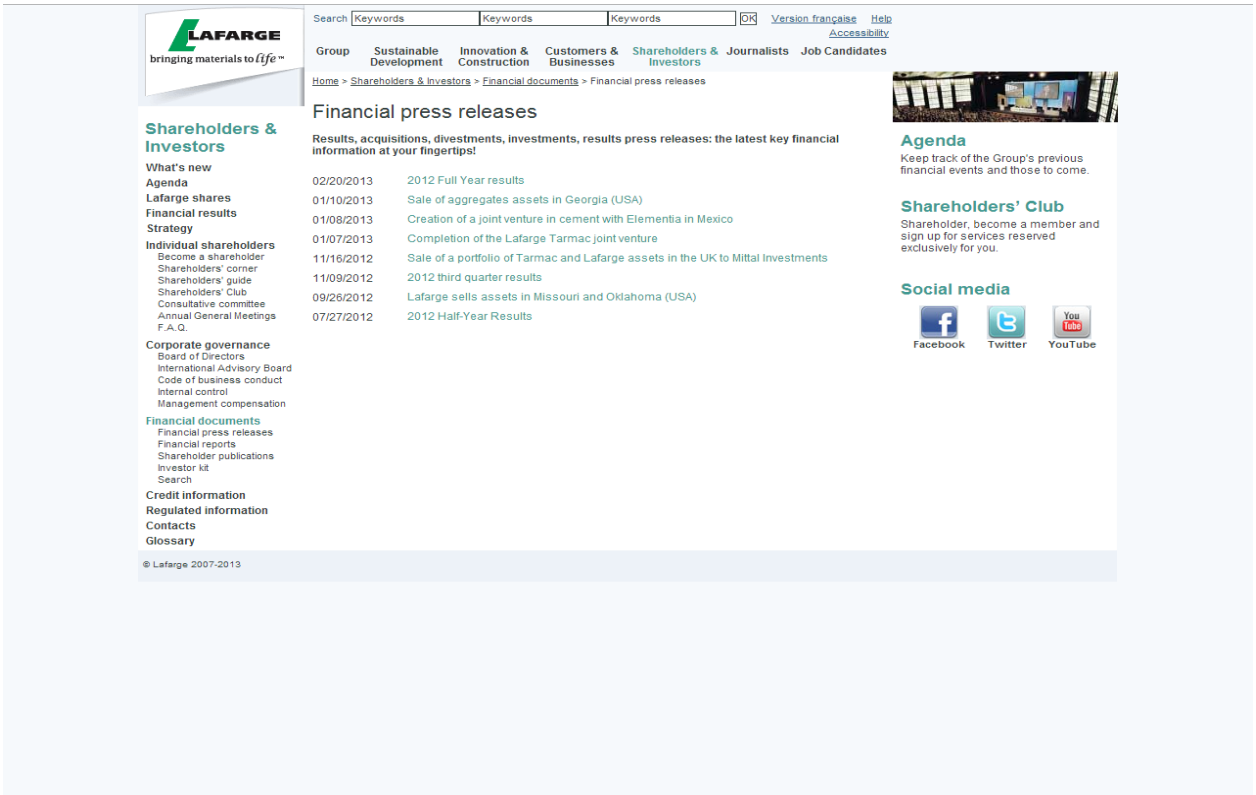
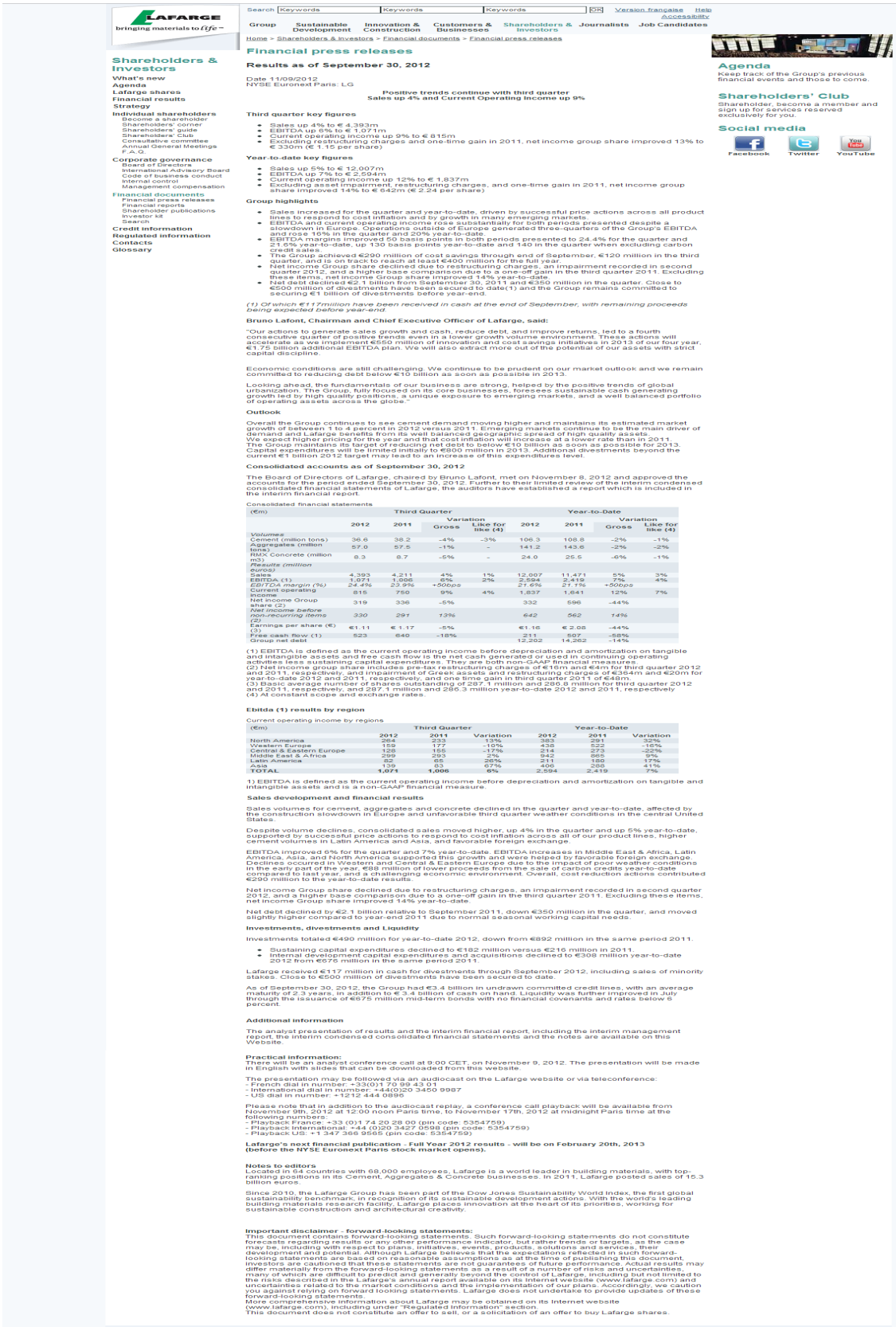


Figure B8 Screenshot of Lafarge Investor Relations Web Page Third Time Shown



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Financial press releases

Results as of September 30, 2012

Date 11/09/2012
NYSE Euronext Paris: LG

Positive trends continue with third quarter
Sales up 4% and Current Operating Income up 9%

Third quarter key figures

- Sales up 4% to € 4,393m
- EBITDA up 6% to € 1,071m
- Current operating income up 9% to € 815m
- Excluding restructuring charges and one-time gain in 2011, net income group share improved 13% to € 330m (€ 1.15 per share)

Year-to-date key figures

- Sales up 5% to € 12,007m
- EBITDA up 7% to € 2,594m
- Current operating income up 12% to € 1,837m
- Excluding asset impairment, restructuring charges, and one-time gain in 2011, net income group share improved 14% to € 642m (€ 2.24 per share)

Group highlights

- Sales increased for the quarter and year-to-date, driven by successful price actions across all product lines to respond to cost inflation and by growth in many emerging markets.
- EBITDA and current operating income rose substantially for both periods presented despite a slowdown in Europe. Operations outside of Europe generated three-quarters of the Group's EBITDA and rose 16% in the quarter and 20% year-to-date.
- EBITDA margins improved 50 basis points in both periods presented to 24.4% for the quarter and 21.6% year-to-date, up 130 basis points year-to-date and 140 in the quarter when excluding carbon credit sales.
- The Group achieved €290 million of cost savings through end of September, €120 million in the third quarter, and is on track to reach at least €400 million for the full year.
- Net income Group share declined due to restructuring charges, an impairment recorded in second quarter 2012, and a higher base comparison due to a one-off gain in the third quarter 2011. Excluding these items, net income Group share improved 14% year-to-date.
- Net debt declined €2.1 billion from September 30, 2011 and €350 million in the quarter. Close to €500 million of divestments have been secured to date(1) and the Group remains committed to securing €1 billion of divestments before year-end.

(1) Of which €117million have been received in cash at the end of September, with remaining proceeds being expected before year-end.

Bruno Lafont, Chairman and Chief Executive Officer of Lafarge, said:

"Our actions to generate sales growth and cash, reduce debt, and improve returns, led to a fourth consecutive quarter of positive trends even in a lower growth volume environment. These actions will accelerate as we implement €550 million of innovation and cost savings initiatives in 2013 of our four year, €1.75 billion additional EBITDA plan. We will also extract more out of the potential of our assets with strict capital discipline.

Economic conditions are still challenging. We continue to be prudent on our market outlook and we remain committed to reducing debt below €10 billion as soon as possible in 2013.

Looking ahead, the fundamentals of our business are strong, helped by the positive trends of global urbanization. The Group, fully focused on its core businesses, foresees sustainable cash generating growth led by high quality positions, a unique exposure to emerging markets, and a well balanced portfolio of operating assets across the globe."

Outlook

Overall the Group continues to see cement demand moving higher and maintains its estimated market growth of between 1 to 4 percent in 2012 versus 2011. Emerging markets continue to be the main driver of demand and Lafarge benefits from its well balanced geographic spread of high quality assets.
We expect higher pricing for the year and that cost inflation will increase at a lower rate than in 2011.
The Group maintains its target of reducing net debt to below €10 billion as soon as possible for 2013.
Capital expenditures will be limited initially to €800 million in 2013. Additional divestments beyond the current €1 billion 2012 target may lead to an increase of this expenditures level.

Consolidated accounts as of September 30, 2012

The Board of Directors of Lafarge, chaired by Bruno Lafont, met on November 8, 2012 and approved the accounts for the period ended September 30, 2012. Further to their limited review of the interim condensed consolidated financial statements of Lafarge, the auditors have established a report which is included in the interim financial report.

Consolidated financial statements

(€m)	Third Quarter		Variation		Year-to-Date		Variation	
	2012	2011	Gross	Like for like (4)	2012	2011	Gross	Like for like (4)
Volumes								
Cement (million tons)	36.6	38.2	-4%	-3%	106.3	108.8	-2%	-1%
Aggregates (million tons)	57.0	57.5	-1%	-	141.2	143.6	-2%	-2%
RMX Concrete (million m3)	8.3	8.7	-5%	-	24.0	25.5	-6%	-1%
Results (million euros)								
Sales	4,393	4,211	4%	1%	12,007	11,471	5%	3%
EBITDA (1)	1,071	1,006	6%	2%	2,594	2,419	7%	4%
EBITDA margin (%)	*24.4%*	*23.9%*	*+50bps*		*21.6%*	*21.1%*	*+50bps*	
Current operating income	815	750	9%	4%	1,837	1,641	12%	7%
Net income Group share (2)	319	336	-5%		332	596	-44%	
Net income before non-recurring items (2)	*330*	*291*	*13%*		*642*	*562*	*14%*	
Earnings per share (€) (3)	€1.11	€ 1.17	-5%		€1.16	€ 2.08	-44%	
Free cash flow (1)	523	640	-18%		211	597	-58%	
Group net debt					12,202	14,262	-14%	

(1) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and free cash flow is the net cash generated or used in continuing operating activities less sustaining capital expenditures. They are both non-GAAP financial measures.
(2) Net income group share includes pre-tax restructuring charges of €16m and €4m for third quarter 2012 and 2011, respectively, and impairment of block assets and restructuring charges of €364m and €20m for year-to-date 2012 and 2011, respectively, and one time gain in third quarter 2011 of €48m.
(3) Basic average number of shares outstanding of 287.1 million and 286.8 million for third quarter 2012 and 2011, respectively, and 287.1 million and 286.3 million year-to-date 2012 and 2011, respectively
(4) At constant scope and exchange rates.

Ebitda (1) results by region

Current operating income by regions

(€m)	Third Quarter			Year-to-Date		
	2012	2011	Variation	2012	2011	Variation
North America	264	233	13%	383	291	32%
Western Europe	159	177	-10%	438	522	-16%
Central & Eastern Europe	128	155	-17%	214	273	-22%
Middle East & Africa	299	293	2%	942	865	9%
Latin America	82	65	26%	211	180	17%
Asia	139	83	67%	406	288	41%
TOTAL	**1,071**	**1,006**	**6%**	2,594	2,419	7%

1) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and is a non-GAAP financial measure.

Sales development and financial results

Sales volumes for cement, aggregates and concrete declined in the quarter and year-to-date, affected by the construction slowdown in Europe and unfavorable third quarter weather conditions in the central United States.

Despite volume declines, consolidated sales moved higher, up 4% in the quarter and up 5% year-to-date, supported by successful price actions to respond to cost inflation across all of our product lines, higher cement volumes in Latin America and Asia, and favorable foreign exchange.

EBITDA improved 6% for the quarter and 7% year-to-date. EBITDA increases in Middle East & Africa, Latin America, Asia, and North America supported this growth and were helped by favorable foreign exchange. Declines occurred in Western and Central & Eastern Europe due to the impact of poor weather conditions in the early part of the year, €88 million of lower proceeds from the sale of carbon credits year-to-date, compared to last year, and a challenging economic environment. Overall, cost reduction actions contributed €290 million to the year-to-date results.

Net income Group share declined due to restructuring charges, an impairment recorded in second quarter 2012, and a higher base comparison due to a one-off gain in the third quarter 2011. Excluding these items, net income Group share improved 14% year-to-date.

Net debt declined by €2.1 billion relative to September 2011, down €350 million in the quarter, and moved slightly higher compared to year-end 2011 due to normal seasonal working capital needs.

Investments, divestments and Liquidity

Investments totaled €490 million for year-to-date 2012, down from €892 million in the same period 2011.

- Sustaining capital expenditures declined to €182 million versus €216 million in 2011.
- Internal development capital expenditures and acquisitions declined to €308 million year-to-date 2012 from €676 million in the same period 2011.

Lafarge received €117 million in cash for divestments through September 2012, including sales of minority stakes. Close to €500 million of divestments have been secured to date.

As of September 30, 2012, the Group had €3.4 billion in undrawn committed credit lines, with an average maturity of 2.3 years, in addition to € 3.4 billion of cash on hand. Liquidity was further improved in July through the issuance of €675 million mid-term bonds with no financial covenants and rates below 6 percent.

Additional information

The analyst presentation of results and the interim financial report, including the interim management report, the interim condensed consolidated financial statements and the notes are available on this Website.

Practical information:
There will be an analyst conference call at 9:00 CET, on November 9, 2012. The presentation will be made in English with slides that can be downloaded from this website.

The presentation may be followed via an audiocast on the Lafarge website or via teleconference:
- French dial in number: +33(0)1 70 99 43 01
- International dial in number: +44(0)20 3450 9987
- US dial in number: +1212 444 0895

Please note that in addition to the audiocast replay, a conference call playback will be available from November 9th, 2012 at 12:00 noon Paris time, to November 17th, 2012 at midnight Paris time at the following numbers:
- Playback France: +33 (0)1 74 20 28 00 (pin code: 5354759)
- Playback International: +44 (0)20 3427 0598 (pin code: 5354759)
- Playback US: +1 347 366 9565 (pin code: 5354759)

Lafarge's next financial publication - Full Year 2012 results - will be on February 20th, 2013 (before the NYSE Euronext Paris stock market opens).

Notes to editors
Located in 64 countries with 68,000 employees, Lafarge is a world leader in building materials, with top-ranking positions in its Cement, Aggregates & Concrete businesses. In 2011, Lafarge posted sales of 15.3 billion euros.

Since 2010, the Lafarge Group has been part of the Dow Jones Sustainability World Index, the first global sustainability benchmark. In recognition of its sustainable development actions. With the world's leading building materials research facility, Lafarge places innovation at the heart of its priorities, working for sustainable construction and architectural creativity.

Important disclaimer - forward-looking statements:
This document contains forward-looking statements. Such forward-looking statements do not constitute forecasts regarding results or any other performance indicator, but rather trends or targets, as the case may be, including with respect to plans, initiatives, events, products, solutions and services, their development and potential. Although Lafarge believes that the expectations reflected in such forward-looking statements are based on reasonable assumptions as at the time of publishing this document, investors are warned that these statements are not guarantees of future performance. Actual results may differ materially from the forward-looking statements as a result of a number of risks and uncertainties, many of which are difficult to predict and generally beyond the control of Lafarge, including but not limited to the risks described in the Lafarge's annual report available on its Internet website (www.lafarge.com) and uncertainties related to the market conditions and the implementation of our plans. Accordingly, we caution you against relying on forward looking statements. Lafarge does not undertake to provide updates of these forward-looking statements.
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This document does not constitute an offer to sell, or a solicitation of an offer to buy Lafarge shares.

Agenda
Keep track of the Group's previous financial events and those to come.

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Figure B9 Screenshot Lafarge Q3 Press Release Shown to All Participants

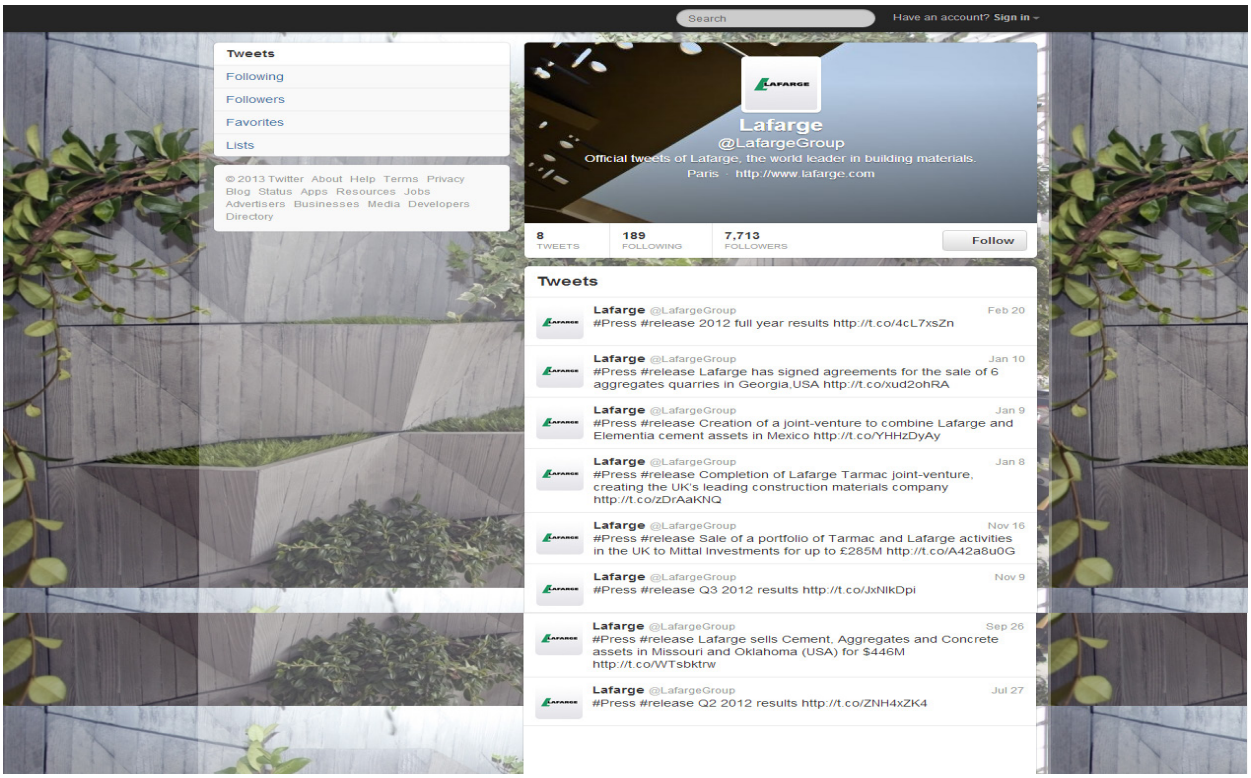

Figure B10 Screenshot Lafarge Twitter Feed Fourth Time Shown

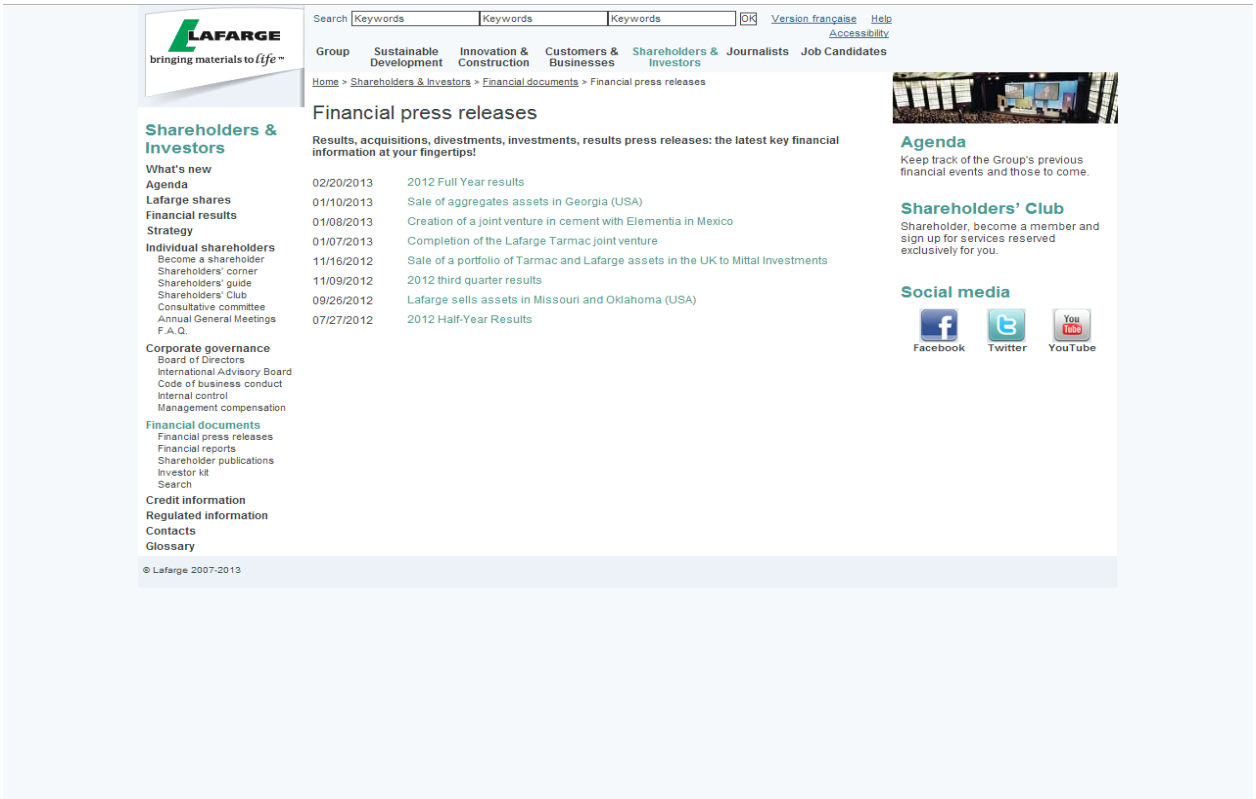

Figure B11 Screenshot Lafarge Investor Relations Web Page Fourth Time Shown

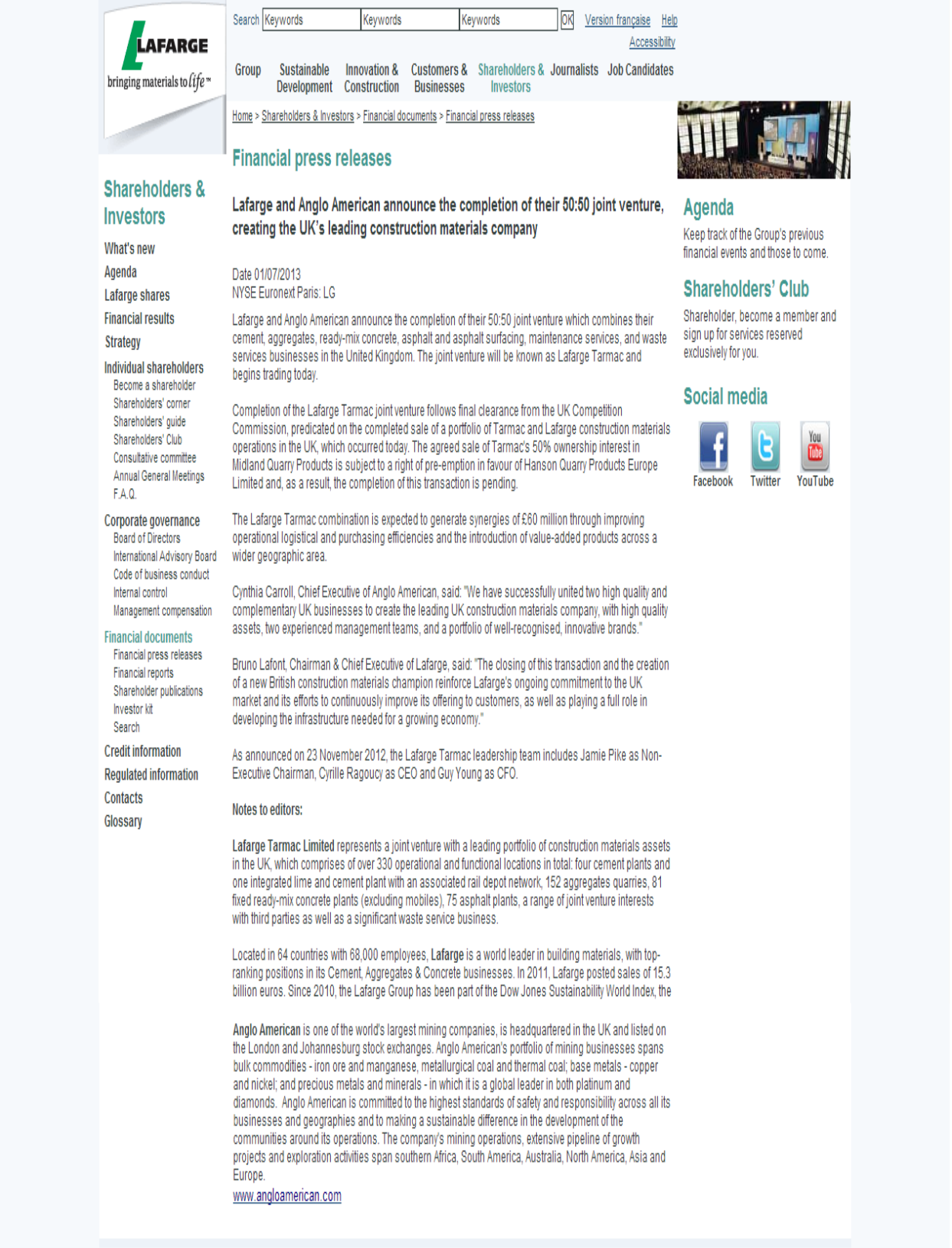

Figure B12 Screenshot Lafarge Joint Venture Press Release Shown to All

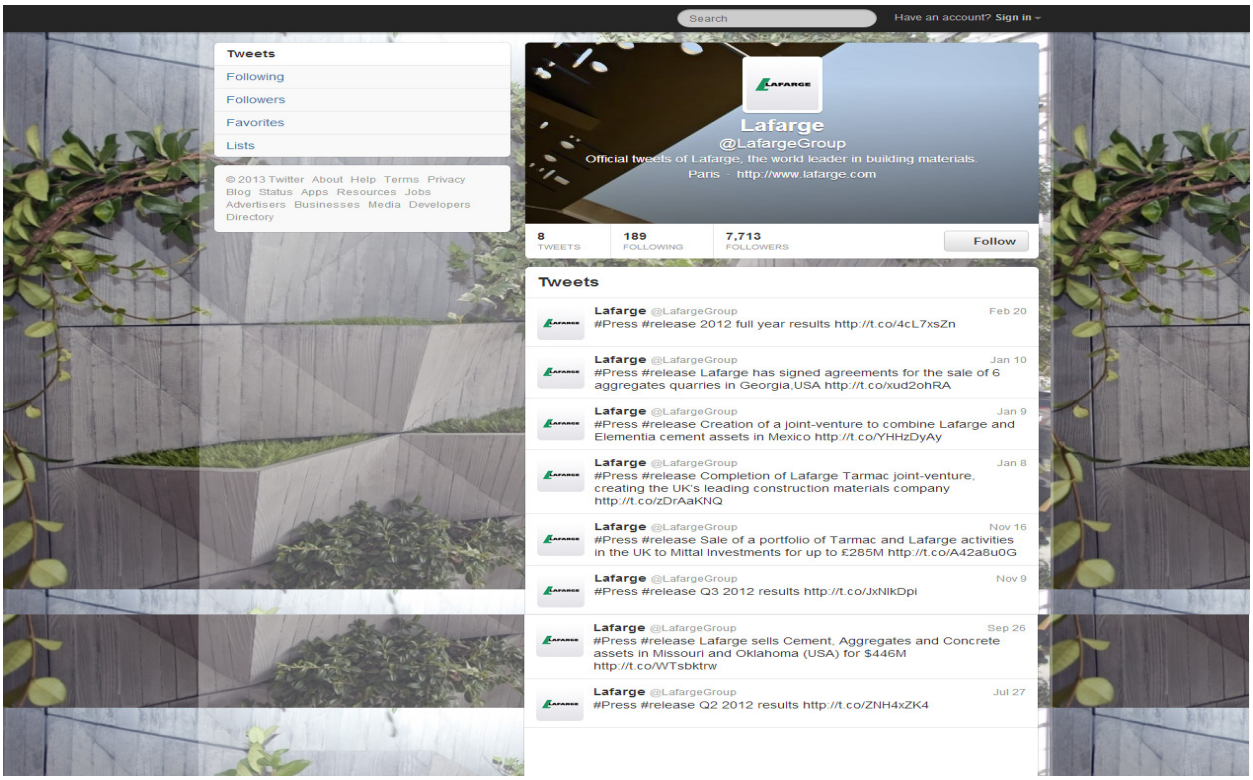

Figure B13 Screenshot Lafarge Twitter Feed Fifth Time Shown

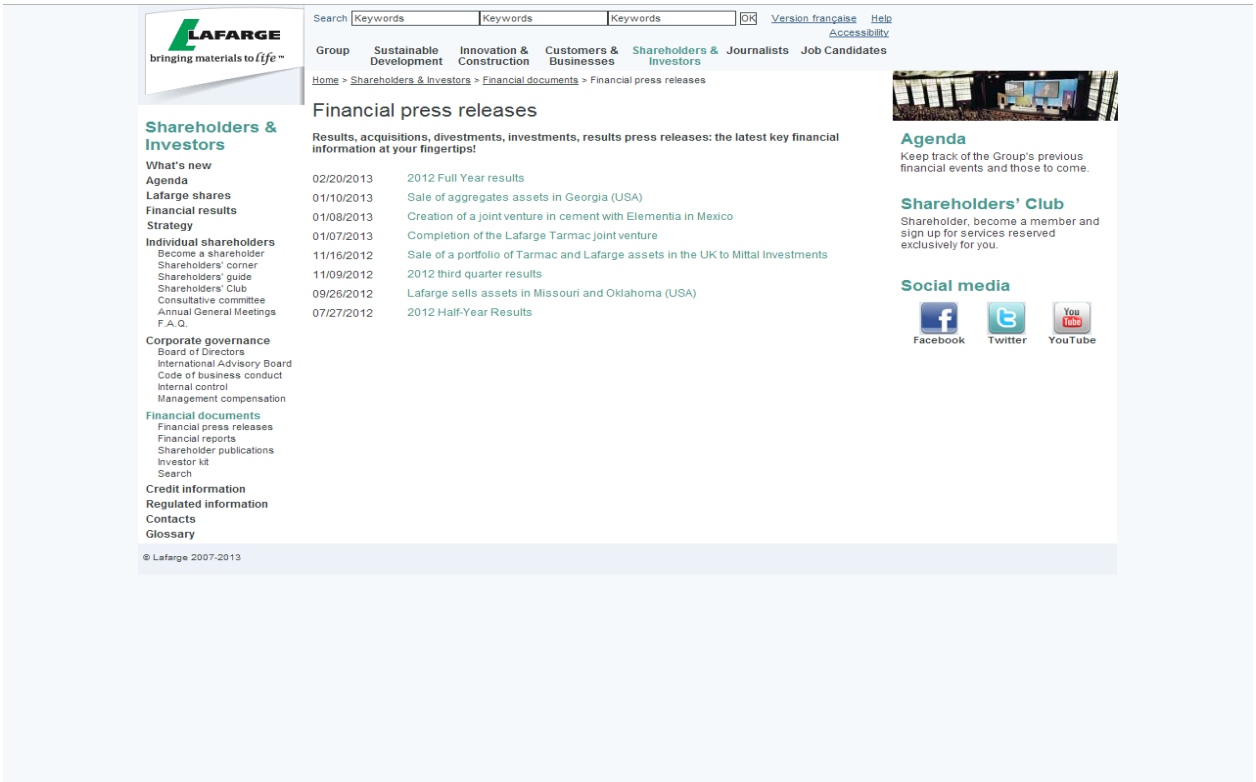

Figure B14 Screenshot Lafarge Investor Relations Web Page Fifth Time Shown

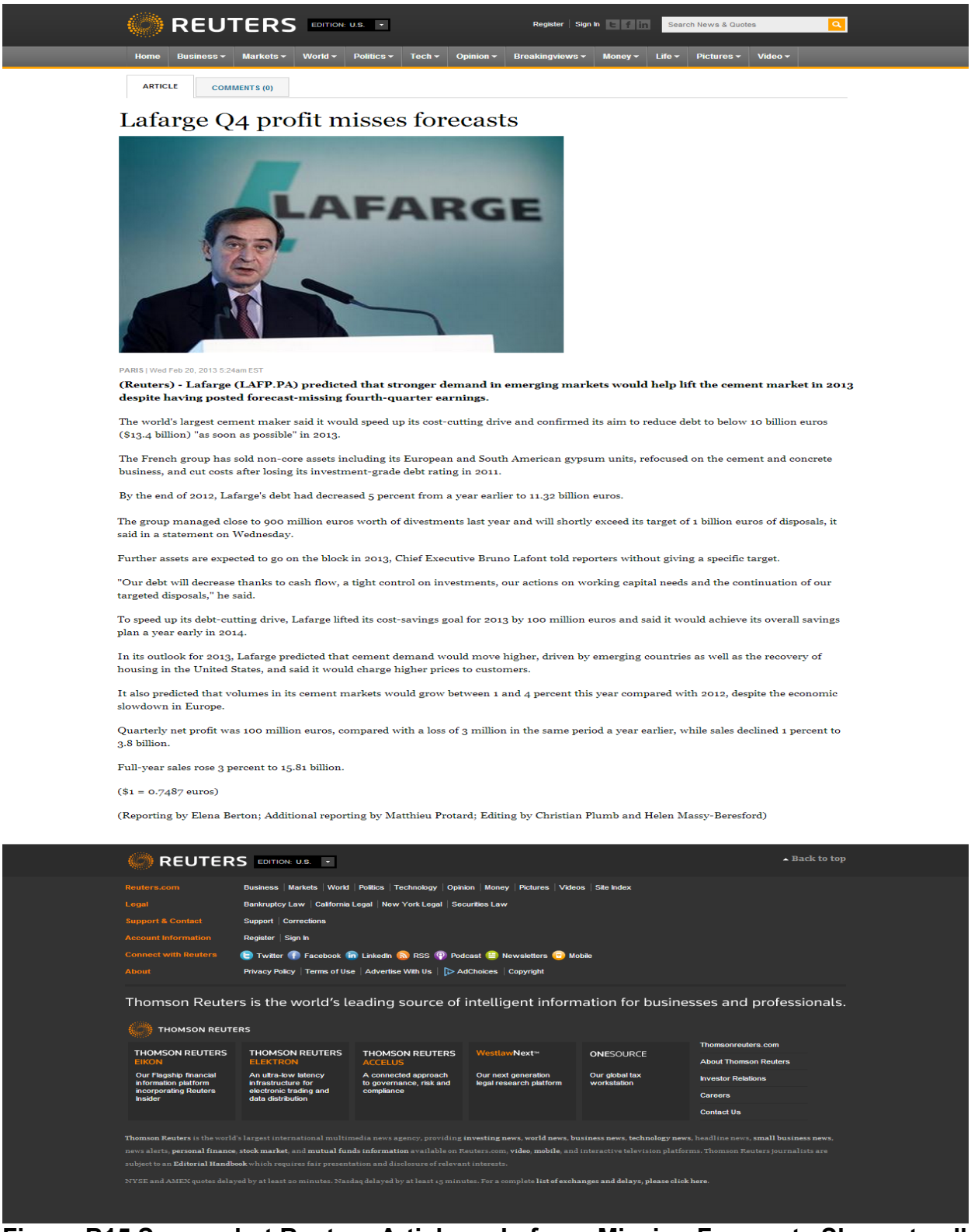

Figure B15 Screenshot Reuters Article on Lafarge Missing Forecasts Shown to all in Bad News Condition

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ARTICLE | COMMENTS (0)

Lafarge Q4 profit beats forecasts

PARIS | Wed Feb 20, 2013 5:24am EST

(Reuters) - Lafarge (LAFP.PA) predicted that stronger demand in emerging markets would help lift the cement market in 2013 after it posted forecast-beating fourth-quarter earnings.

The world's largest cement maker said it would speed up its cost-cutting drive and confirmed its aim to reduce debt to below 10 billion euros ($13.4 billion) "as soon as possible" in 2013.

The French group has sold non-core assets including its European and South American gypsum units, refocused on the cement and concrete business, and cut costs after losing its investment-grade debt rating in 2011.

By the end of 2012, Lafarge's debt had decreased 5 percent from a year earlier to 11.32 billion euros.

The group managed close to 900 million euros worth of divestments last year and will shortly exceed its target of 1 billion euros of disposals, it said in a statement on Wednesday.

Further assets are expected to go on the block in 2013, Chief Executive Bruno Lafont told reporters without giving a specific target.

"Our debt will decrease thanks to cash flow, a tight control on investments, our actions on working capital needs and the continuation of our targeted disposals," he said.

To speed up its debt-cutting drive, Lafarge lifted its cost-savings goal for 2013 by 100 million euros and said it would achieve its overall savings plan a year early in 2014.

In its outlook for 2013, Lafarge predicted that cement demand would move higher, driven by emerging countries as well as the recovery of housing in the United States, and said it would charge higher prices to customers.

It also predicted that volumes in its cement markets would grow between 1 and 4 percent this year compared with 2012, despite the economic slowdown in Europe.

Quarterly net profit was 100 million euros, compared with a loss of 3 million in the same period a year earlier, while sales declined 1 percent to 3.8 billion.

Full-year sales rose 3 percent to 15.81 billion.

($1 = 0.7487 euros)

(Reporting by Elena Berton; Additional reporting by Matthieu Protard; Editing by Christian Plumb and Helen Massy-Beresford)

Figure B16 Screenshot Reuter Article on Lafarge Missing Forecats Shown to all in Good News Condition

LAFARGE bringing materials to life™

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Results as of December 31, 2012

Date 02/20/2013
NYSE Euronext Paris: LG

Strong progression of operational performance
Sales up 3,5% and Current Operating Income up 12% for the year
fifth consecutive quarter of operating results growth

Fourth quarter key figures

- Sales stable at €3,809m
- EBITDA up 7% to €856m
- Current operating income up 12% to €603m
- Net income Group share increased to €100m *(versus a loss of € 3m in 2011)*, or €0.34 per share

Year-to-date key figures

- Sales up 3.5% to €15,816m
- EBITDA up 7% to €3,450m
- Current operating income up 12% to €2,440m
- Net income Group share reached €432m, or €1.50 per share. Excluding one-off items(1), net income group share increased 70% to €772m, or €2.69 per share
- Dividend of €1 per share, subject to AGM approval

Group highlights

- Sales increased 3.5% year-to-date, driven by successful price actions across all product lines to respond to cost inflation and by growth in emerging markets.
- The Group delivered on its cost savings target, achieving €410 million in the year; innovation plan roll out is gaining pace and actions generated €80 million of EBITDA in 2012.
- EBITDA and current operating income rose 7% and 12% respectively in the periods presented despite the continued slowdown in Europe. Operations outside of Europe generated more than 75% of the Group's EBITDA and rose 17% in the quarter and 19% year-to-date. Group EBITDA margin improved 130 basis points in both periods when excluding carbon credit sales.
- Net income Group share reached €432 million for the year, down 27% mainly because of the one-time €466 million gain related to gypsum divestments in 2011. Excluding one-offs items(1), net income Group share improved 70% year-to-date to €772 million.
- Net debt declined €0.9 billion in the fourth quarter, dropping to €11.3 billion. The Group has secured close to €900 million of divestments, of which €474 million were received in 2012, and will shortly exceed its objective of securing €1 billion.

(1) Asset impairment in Q2 2012 on Greece and in Q4 2011 on Western Europe and the Emirates, restructuring charges, and one-time gains in 2011 on Gypsum divestments

Bruno Lafont, Chairman and Chief Executive Officer of Lafarge, said:

"We have delivered on our objectives for 2012 and our results grew for the fifth consecutive quarter, driven by strong operational performance and growth in emerging markets which generated close to 60% of our sales.
We are progressing fast and I am convinced that we will deliver most of our 2012-2015 plan to generate €1.75 billion additional EBITDA through cost reduction and innovation measures by the end of 2014, close to one year ahead of our initial objective. We target to deliver €650 million additional EBITDA from these measures in 2013.
Whilst we adopt a cautious stance on the current market environment, our actions will drive net debt reduction to below €10 billion as soon as possible in 2013.
Going forward we will continue to extract the full potential of our uniquely diversified portfolio of high quality assets, selectively investing in organic growth in our core markets. All our actions strive towards growth in sales, earnings, return on capital employed and cash flows and my priority is to maximize value creation for our shareholders".

Outlook
Overall the Group sees cement demand moving higher and estimates market growth of between 1 to 4 percent in 2013 versus 2012. Emerging markets continue to be the main driver of demand and Lafarge benefits from its well-balanced geographic spread of high quality assets.

We expect higher pricing for the year and that cost inflation will continue, although at a slightly lower rate than in 2012.

The Group maintains its target of reducing net debt to below €10 billion as soon as possible in 2013. Capital expenditures will be limited initially to €800 million in 2013. Additional divestments beyond the current target of €1 billion since the beginning of 2012 may lead to an increase of this expenditures level while maintaining our debt reduction objective.

Consolidated accounts as of December 31, 2012

The Board of Directors of Lafarge, chaired by Bruno Lafont, met on February 19, 2013 and approved the accounts for the year ended December 31, 2012. The auditors have completed their audit on the consolidated financial statements. Their report is in the process of being issued.

(€m)	Fourth Quarter				Year-to-Date			
	2012	2011	Variation Gross	Variation Like for like (4)	2012	2011	Variation Gross	Variation Like for like (4)
Volumes								
Cement (million tons)	34.8	36.5	-5%	-4%	141.1	145.3	-3%	-2%
Aggregates (million tons)	47.1	49.1	-4%	-5%	188.3	192.7	-2%	-3%
RMX Concrete (million m3)	7.8	8.3	-5%	-3%	31.8	33.8	-6%	-2%
Results (million euros)								
Sales	3,809	3,813	-	-1%	15,816	15,284	3%	2%
EBITDA (1)	856	798	7%	5%	3,450	3,217	7%	4%
EBITDA margin (%)	*22.5%*	*20.9%*	*+160bps*		*21.8%*	*21.0%*	*+80bps*	
Current operating income	603	538	12%	9%	2,440	2,179	12%	7%
Net income Group share (2)	100	(3)			432	593	-27%	
Net income before non-recurring items (2)	*130*	*(109)*			*772*	*453*	*70%*	
Earnings per share (€) (3)	€0.34	€(0.01)			€1.50	€2.07	-28%	
Earnings per share before non-recurring items(2)	*€0.45*	*€(0.38)*			*€2.69*	*€1.58*	*70%*	
Free cash flow (1)	673	701	-4%		884	1,208	-27%	
Group net debt					11,317	11,974	-5%	

(1) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and free cash flow is the net cash generated or used in continuing operating activities less sustaining capital expenditures. They are both non-GAAP financial measures.
(2) Net income group share includes pre-tax restructuring charges of €40m and €41m for fourth quarter 2012 and 2011, respectively; €406m for impairment of Greek assets and pre-tax restructuring charges year-to-date 2012, €346m for impairment charges in Western Europe and the Emirates and restructuring charges offset by one-time gains of €466m related to gypsum divestments year-to-date 2011.
(3) Basic average number of shares outstanding of 287.1 million and 287.0 million for fourth quarter 2012 and 2011, respectively, and 287.1 million and 286.5 million year-to-date 2012 and 2011, respectively.
(4) At constant scope and exchange rates.

EBITDA(*) results by region

(€m)	Fourth Quarter			Year-to-Date		
	2012	2011	Variation	2012	2011	Variation
North America	163	140	16%	546	431	27%
Western Europe	118	147	-20%	556	669	-17%
Central & Eastern Europe	41	56	-27%	255	329	-22%
Middle East & Africa	293	266	10%	1,235	1,131	9%
Latin America	85	66	29%	296	246	20%
Asia	156	123	27%	562	411	37%
TOTAL	**856**	**798**	**7%**	3,450	3,217	7%

(*) EBITDA is defined as the current operating income before depreciation and amortization on tangible and intangible assets and is a non-GAAP financial measure.

Sales development and financial results

Sales volumes declined year-to-date, affected by the construction slowdown in Europe. However, solid domestic growth in Asia, Latin America and most countries of Middle East Africa largely mitigated this decline. In the fourth quarter, unfavorable weather conditions in the northern hemisphere, notably in the United States and in Central and Eastern Europe, weighed on volume trends.

Consolidated sales moved higher, up 3.5% year-to-date, supported by successful price actions to respond to cost inflation across all our product lines, higher cement volumes in Latin America and Asia, and favorable foreign exchange effects.

EBITDA improved 7% for both periods presented, supported by growth in Middle East & Africa, Latin America, Asia, and North America and favorable foreign exchange. Declines occurred in Western and Central & Eastern Europe due to the impact of poor weather conditions in the first and fourth quarters, €78 million of lower proceeds from the sale of carbon credits year-to-date compared to last year, and a challenging economic environment.

The Group continued to implement its performance and innovation measures; cost reduction actions contributed €410 million and innovation generated €80 million to year-to-date results.
Net income Group share declined, reflecting mostly a higher base comparison due to the one-off gains recorded in 2011 on the gypsum divestments. Excluding one-off items(1) , net income Group share improved 70% year-to-date to €772 million.

At €11.3 billion, net debt declined by €0.9 billion in the quarter and €0.7 billion compared to December 2011.

(1) Asset impairment in Q2 2012 on Greece and in Q4 2011 on Western Europe and the Emirates, restructuring charges, and one-time gains in 2011 on Gypsum divestments

Investments, divestments and Liquidity

Investments totaled €817 million for year-to-date 2012, down from €1.2 billion in 2011.

- Sustaining capital expenditure was stable, at €392 million versus €389 million in 2011.
- Internal development capital expenditure and acquisitions declined to €425 million in 2012 from €810 million in 2011.

Lafarge received €474 million in cash from divestments through 2012, including sales of minority stakes and the divestment of assets in Missouri and Oklahoma (USA). Close to €900 million of divestments have been secured to date.

As at December 31, 2012, the Group had €3.4 billion in undrawn committed credit lines, with an average maturity of 2.5 years, in addition to €2.7 billion of cash on hand. Liquidity was further improved in the year through the issuance of €815 million mid-term bonds with no financial covenants and rates below 6 percent.

Additional information

The analyst presentation of results and the financial report for the fourth quarter ended December 31, 2012, including the management report and consolidated financial statements (to the exception of the notes) are available on this website.

Practical information:

The annual results presentations will be hosted by Bruno Lafont, Chairman and CEO and Jean-Jacques Gauthier, Chief Financial Officer.

There will be **an analyst presentation at 9:00 AM CET** at the Pavillon Gabriel, 5 avenue Gabriel, 75008 Paris. The presentation will be made in English with slides that can be downloaded from this website.

The presentation may be followed via a live audio cast on the Lafarge website as well as via teleconference:
- Dial in (France): +33 (0)1 70 48 01 66
- Dial in (UK or International): +44 (0)20 3364 5381
- Dial in (US): +1 646 254 3388
Please note that in addition to the web cast replay, a conference call playback will be available until the 27th of February 2013 midnight at the following numbers:
- France playback number: +33 (0)1 74 20 28 00 (pin code: 7135431#)
- UK or International playback number: +44 (0)20 3427 0598 (code: 4066080#)
- US playback number: +1 347 366 9565 (code: 4066080#)

A press conference will be held at 11:00 AM CET at the Pavillon Gabriel, 5 avenue Gabriel, 75008 Paris. The presentation will be made in French with simultaneous English translation, available on-site or by phone:
- From France: +33 (1) 70 91 86 60
- From UK: +44 (0)20 7136 20 55
In addition, a conference call playback will be available until the 27th of February 2013 midnight:
- France playback number: +33 (0)1 74 20 28 00 (pin code: 92 93 244)
- UK playback number: +44 (0)20 3427 0598 (pin code: 14 56 212)

Lafarge's next financial publication - 1st Quarter 2013 results - will be on May 7, 2013 (before the NYSE Euronext Paris stock market opens).

NOTES TO EDITORS

Located in 64 countries with 65,000 employees, Lafarge is a world leader in building materials, with top-ranking positions in its Cement, Aggregates & Concrete businesses. In 2012, Lafarge posted sales of 15.8 billion euros.
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Figure B17 Screenshot Lafarge Annual Report Press Release Shown to All

How attractive is Lafarge as an investment?

	Very unattractive 1	2	3	4	5	6	7	8	9	10	Very attractive 11
	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

By what number of shares do you recommend the investment club change its current 1,000 share investment in Lafarge S.A.? (decrease/increase up to 1000 shares)
_____ Number of shares

How long do you recommend the investment club hold its investment in Lafarge S.A.?
_____ Number of months

Please list one to three key factors for your recommendation below.

Page Break

I think Lafarge S.A.'s management has the competence necessary to make clear and unbiased financial disclosures on Twitter.

	Strongly Disagree 1	2	3	4	5	6	7	8	9	10	Strongly Agree 11
	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

I trust Lafarge S.A.'s management to make clear and unbiased financial disclosures on Twitter.

	Strongly Disagree 1	2	3	4	5	6	7	8	9	10	Strongly Agree 11
	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Page Break

Did Lafarge S.A., meet, beat or miss analyst forecasts in the fourth quarter?

❍ Meet
❍ Beat
❍ Miss

Page Break

Approximately how many followers did the Lafarge Twitter feed have?

- ❍ Less than 5,000 followers
- ❍ Between 5,000 and 10,000 followers
- ❍ Between 10,000 and 50,000 followers
- ❍ Greater than 50,000 followers

❍ **Page Break**

Financial information provided through the company's Twitter feed was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
Informative	❍	❍	❍	❍	❍	❍	❍
Helpful	❍	❍	❍	❍	❍	❍	❍
Valuable	❍	❍	❍	❍	❍	❍	❍
Persuasive	❍	❍	❍	❍	❍	❍	❍

Financial information provided through the company's Twitter feed was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
Trustworthy	❍	❍	❍	❍	❍	❍	❍
Credible	❍	❍	❍	❍	❍	❍	❍
Honest	❍	❍	❍	❍	❍	❍	❍
Reliable	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's Twitter feed to obtain financial information...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
increased my productivity (e.g., make my work faster).	❍	❍	❍	❍	❍	❍	❍
increased my performance (e.g., make my work better).	❍	❍	❍	❍	❍	❍	❍
made me more effective (e.g., helped me make better decisions).	❍	❍	❍	❍	❍	❍	❍

I found the company's Twitter feed to be useful for obtaining financial information.

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's Twitter feed to obtain financial information was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
important.	❍	❍	❍	❍	❍	❍	❍
relevant (appropriate).	❍	❍	❍	❍	❍	❍	❍
necessary.	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's Twitter feed to obtain financial information was a _____ idea.

	Bad 1	2	3	4	5	6	Good 7
	❍	❍	❍	❍	❍	❍	❍

Using the company's Twitter feed to obtain financial information was a _____ idea.

	Foolish 1	2	3	4	5	6	Wise 7
	❍	❍	❍	❍	❍	❍	❍

Using the company's Twitter feed to obtain financial information was _____ .

	Unpleasant 1	2	3	4	5	6	Pleasant 7
	❍	❍	❍	❍	❍	❍	❍

Overall, I _____ the idea of obtaining financial information from the company's Twitter feed.

	Dislike 1	2	3	4	5	6	Like 7
	❍	❍	❍	❍	❍	❍	❍

Page Break

How often do you use Twitter?

	Never 1	2	3	4	5	6	A great deal 7
	❍	❍	❍	❍	❍	❍	❍

Questions for participants in company website condition

Financial information provided through the company's website was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
Informative	❍	❍	❍	❍	❍	❍	❍
Helpful	❍	❍	❍	❍	❍	❍	❍
Valuable	❍	❍	❍	❍	❍	❍	❍
Persuasive	❍	❍	❍	❍	❍	❍	❍

Page Break

Financial information provided through the company's website was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
Trustworthy	❍	❍	❍	❍	❍	❍	❍
Credible	❍	❍	❍	❍	❍	❍	❍
Honest	❍	❍	❍	❍	❍	❍	❍
Reliable	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's website to obtain financial information...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
increased my productivity (e.g., make my work faster).	❍	❍	❍	❍	❍	❍	❍
increased my performance (e.g., make my work better).	❍	❍	❍	❍	❍	❍	❍
made me more effective (e.g., help me make better decisions).	❍	❍	❍	❍	❍	❍	❍

I found the company's website to be useful for obtaining financial information.

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's website to obtain financial information was...

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
important.	❍	❍	❍	❍	❍	❍	❍
relevant (appropriate).	❍	❍	❍	❍	❍	❍	❍
necessary.	❍	❍	❍	❍	❍	❍	❍

Page Break

Using the company's website to obtain financial information was a _____ idea.

	Bad 1	2	3	4	5	6	Good 7
	❍	❍	❍	❍	❍	❍	❍

Using the company's website to obtain financial information was a _____ idea.

	Foolish 1	2	3	4	5	6	Wise 7
	❍	❍	❍	❍	❍	❍	❍

Using the company's website to obtain financial information was _____ .

	Unpleasant 1	2	3	4	5	6	Pleasant 7
	❍	❍	❍	❍	❍	❍	❍

Overall, I _____ the idea of obtaining financial information from the company's website.

	Dislike 1	2	3	4	5	6	Like 7
	❍	❍	❍	❍	❍	❍	❍

Page Break

How often do you visit company websites?

	Never 1	2	3	4	5	6	A great deal 7
	❍	❍	❍	❍	❍	❍	❍

Post Experiment Questionnaire

How often do you visit company websites?

	Never 1	2	3	4	5	6	A great deal 7
	❍	❍	❍	❍	❍	❍	❍

Before taking this study, how familiar were you with Lafarge S.A.?

	Not at all familiar 1	2	3	4	5	6	Very familiar 7
	❍	❍	❍	❍	❍	❍	❍

How old are you? _____

What is the highest level of education you have completed?
- ❍ Less than High School
- ❍ High School / GED
- ❍ Some College
- ❍ 2-year College Degree
- ❍ 4-year College Degree
- ❍ Masters Degree
- ❍ Doctoral Degree
- ❍ Professional Degree (JD, MD)

How many years of professional work experience do you have? _____

How many accounting classes have you taken post high school?
- ❍ 0
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 5
- ❍ 6 or more

How many business classes have you taken post high school?
- ❍ 0
- ❍ 1 - 4
- ❍ 5 - 9
- ❍ 10 - 14
- ❍ 15 or more

How many years of investing experience do you have?

How often do you review company financial information
- ❍ Daily
- ❍ Weekly
- ❍ Monthly
- ❍ 3-4 times a year
- ❍ Once a year
- ❍ Never

What broker do you use to trade stocks, bonds or mutual funds? _____

How much does your broker charge per trade? _____

On a balance sheet, Assets = Liabilities + _____

- ❍ Stockholder's Equity
- ❍ Revenue
- ❍ Net Income
- ❍ Long Term Liabilities

Do you have any comments or suggestions about this survey?

UNIVERSITY OF SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

3/20/2013

Neal Snow, M.A.
School of Accountancy
4202 East Fowler Ave.
Tampa, FL 33620

RE:	**Exempt Certification**
IRB#:	Pro00012268
Title:	Information Processing Study

Study Approval Period: 3/20/2013 to 3/20/2018

Approved Items:

Protocol Document:
Snow eIRB Protocol

Informed Consent Script:
IRB_Letter.docx

Dear Dr. Snow:

On 3/20/2013, the Institutional Review Board (IRB) determined that your research meets USF requirements and Federal Exemption criteria as outlined in the federal regulations at 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures. Please note that changes to this protocol may disqualify it from exempt status. Please note that you are responsible for notifying the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a new application at least 60 days prior to the end of your exemption approval period. Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board