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Does Media Choice In Online Annual-Report Addresses Influence Investment Decisions?

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DOES MEDIA CHOICE IN ONLINE ANNUAL-REPORT ADDRESSES INFLUENCE INVESTMENT DECISIONS?

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ABSTRACT

This study assesses the impact of electronic communications on investors as affected by three influences—media richness, order effects, and first impression bias. Prior research suggested a significant portion of investors consult the non-financial, text section of financial reports in evaluating investment opportunities. Public companies may attempt to influence investors with Internet-based video and audio versions of the commentary included in earnings announcements—information previously presented solely in written (text) form. On investor relations websites, public companies post podcast audio recordings of quarterly earnings announcements (often after streaming the audio live) and post video versions of the online annual-report address (commonly referred to as a "Letter to the Shareholder"). In the current study, the researcher randomly assigned research subjects to one of nine online research settings that manipulated choice of media and presentation order in viewing a fictional company's online annual-report address. Following each presentation, subjects reported their likelihood to invest in the fictional company. Analysis of responses from this quasi-experiment suggested media choice, favoring text-based presentations, does matter in investment decision-making and detected no difference in influence between the audio and video presentations.

KEY WORDS: media richness, multimedia, audio media, presentation order, order effects, first impression bias, impression management, financial narratives, financial reporting

DEDICATION

This work is dedicated to the formal and informal teachers in my life. The list is too long to enumerate, but certainly includes my parents, my public-school teachers, my AKΨ brothers, as well as professors and undergraduate support staff.

Reaching this goal was much less likely without your unique contributions.

Thanks for listening and offering encouragement.

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CHAPTER I

INTRODUCTION

This study assesses the impact of electronic communications on investors as affected by three influences—media richness, order effects, and first impression bias. Specifically, the following outlines how increased Web accessibility has led some public companies to include video and audio on their investor relations websites. Related changes in the behavior of individuals are also reported.

A study by a United Nations agency reported that approximately 74% of the United States population used the Internet in 2010 (Union, 2010). The same study reported high Internet use in other developed as well as some developing countries (Union, 2010).

Observers have also suggested that increased Web use has influenced many social aspects of life, including the manner in which ordinary citizens gather information and make decisions about financial matters. In 2004 and again in 2005, the Pew Internet & American Life Project asked Americans about the resources they used in making major life decisions. One decision, "making a major investment or financial decision", appeared in both studies. Pew reported:

> ". . . When asked to compare the importance of online information to offline sources of information that factored into the decision, 57% of those who had relied on the net in an important way for at least one of the five decision areas said that online information was the *most* important source of information, as compared with 37% who said that offline information was most important (Boase et al, 2006, pp. 36-37)."

Pew's research reported that forty-one percent (41%) of respondents indicated they used the

Internet in making a major investment or financial decision—an estimated 16 million of Americans considered the Internet as playing a "crucial role" (12%) or an "important role" (17%) (Boase et al, 2006, p. 37). In a study of a sample of weblog entries, researchers found that entries from private individuals (or Internet service provider (ISP) accounts likely attributable to individuals) accounted for approximately 27% of requests for non-annual report content and approximately 26% of annual report requests (Rowbottom & Lymer, 2009). Kelton and Yang also found evidence suggesting that "investors frequently use the Internet as their primary information source (2008, p. 84)."

Actions by public companies suggest that they too have taken notice. Use of the Internet as a means for distributing corporate reports to users has expanded dramatically since the 1990s (Beattie & Pratt, 2001; Bollen et al. 2006; Hodge & Pronk, 2006). Early adopters first offered annual reports in HTML (hypertext markup language), which many companies continue to offer. Publicly traded companies now increasingly offer Portable Document Format (PDF) versions of annual reports on company websites (Hodge and Pronk, 2006). Some public companies offer their corporate reports in both formats in an effort to retain existing website users and attract new ones.

Online annual reports provide a number of economic benefits. The "self-service" aspect of company websites benefits companies by potentially reducing information requests from investors and other stakeholders (Beattie & Pratt, 2001). Website users enjoy quicker access to company data, despite the added costs of printing. Financial numbers are often available in downloadable form also (including data formatted in eXtensible Business Reporting Language or XBRL), that can be manipulated without manual input (Lymer et al., 1999). Many corporate report writers and readers have readily adopted the practice of obtaining company information

from the Internet.

Both regulatory agencies and standard setters have also encouraged the shift to using the Internet to obtain information. International standard setters, namely the International Accounting Standards Board (IASB) adopted guidelines for online business reporting more than a decade ago (Lymer et al., 1999). In July 2007, the United States Securities and Exchange Commission (SEC) amended guidelines for supplying proxy materials to shareholders. The amended rules recognized that the Internet is a faster, more efficient, and thrifty means to distribute proxy materials and administer proxy voting (2007). As the SEC also noted, "A centralized website containing proxy-related disclosure may facilitate shareholder access to other relevant information such as research reports and news about the issuer" (U. S. Securities and Exchange Commission, 2007, p. 42230). These SEC guidelines recognize that the Web serves as a delivery method for a variety of information formats, including reports, company news, and other information that public companies may wish to publicize.

At approximately the same time, some of these companies have taken advantage of relatively inexpensive, sophisticated media tools, including those needed to produce high-quality videos. Given that broadband access has permeated much of the developed world, some companies have chosen to leverage the technology to provide visual and audio electronic versions of executive messages directly to shareholders.

Motivation and Purpose of the Study

For many years, analysts and some investors have had opportunities to listen to company officials discuss quarterly financial results during financial analysts' conference calls. Many shareholders covet a chance to attend annual and quarterly meetings with celebrity CEOs like

Steve Jobs and Warren Buffett—outsiders have jokingly compared shareholder devotion to that of belonging to a cult (Lambert, 2002). In recent years, a number of publicly traded companies have also produced and posted video-versions of their executive annual-report addresses, often referred to as "Letters to the Shareholders", on their company websites.

Public companies may host these "Letters to the Shareholder" videos on company-owned websites as well as posting them on video-sharing sites, such as YouTube. As Pew has reported, approximately 71% of U.S. Internet users have used a video-sharing site and more than a quarter have used one as recently as "yesterday" (Moore, 2011). Once primarily the domain of family reunion videos and other social media fare, many corporations have established professionally designed channels on these video-sharing sites. In developing the current study, the researcher reviewed companies appearing in 2010 Standard & Poor's (S & P's) Top 100 Company Index. Five percent of companies appearing in this Index posted a video entitled as a "Letter to the Shareholder", "Annual Report", or similar title on their annual reports or investor relations website. Four percent of companies appearing in 2011 S & P's Top 100 Company Index posted an electronic executive message. More than one-half of the S & P 100 companies had a channel or other presence on YouTube, Vimeo, or similar web pages. In addition to a "Letter to the Shareholder-type" video, company websites also feature podcasts of quarterly conference calls. The actions by numerous public companies highlight a need for research to examine this relatively new phenomenon.

Skeptics may rightfully question whether investors actually pay attention to the non-financial information, or narratives, included in annual reports. Furthermore, if investors do read narrative information, a skeptic may question the extent its content may influence investors. As discussed later, prior research found evidence that investors use the chairman's statement (J. K.

Courtis, 2004; M. J. Jones, 1988) and that its content influences investors' decisions (Segars & Kohut, 2001). Evidence suggested that investors willingly undertake the task of reading executive communications. Richer forms of media may offer more information through non-verbal communication as well as voice inflections. With these communication channels available as a convenience, the question whether investors actually prefer viewing executive communications to reading or hearing their message deserved further exploration.

A number of studies examining people's responses to high-tech financial reporting already appear in the literature. Clement and Wolfe (2000) explored differences between reading a financial report and viewing a newscast-type video of the same financial report. Their results suggested that users of the newscast-type report react significantly differently than users of a paper financial report and that a difference in perceptions of report quality suggested report design (paper versus video) was influential. In the most recent study, Elliott et al (2012) tested whether choice of media (paper versus video) to announce a restatement of earnings makes a difference in an investment decision and related issues. The results of the study suggested that choice of media and attribution of responsibility have an interactive effect on investment recommendations and on how trustworthy participants perceive the company's manager. These studies represent very significant contributions to understanding this relatively new phenomenon in financial reporting.

The present study explored whether the use of on-demand multimedia (in this case, video and audio media) by publicly traded corporations influenced investor behavior. The term multimedia refers to the combined use of more than one medium. The term medium simply referred to a single means of communication: audio, video, text, etc. The current study examined how online video and audio presentations of financial reports affect ordinary investors making

the investment decision. The present study also considered the potential effects produced by rearranging the sequence of additional information. The rest of the introduction summarizes of the main points of the present study.

Research Questions

Past technologies limited corporate mass communications to printed annual reports. Other forms of communication with investors, such as quarterly conference calls with only analysts, were audio presentations to a select group of analysts. Audio recordings of these conference calls are now sometimes available on company websites and also the finance webpages of Google and Yahoo. Modern technology affords public companies a more dynamic means for company leaders (such as president or chief executive officer) to report directly to investors: online video. Does viewing a video presentation featuring a company executive affect the audience differently than listening to the executive's voice alone? These companies can now sidestep the scrutiny usually administered by traditional media outlets, such as business news channels, and allow company executives to promote positive company news or gloss over disappointing results and highlight positive plans without answering journalists' difficult questions. Furthermore, given that websites contain other pieces of information, does the order of presentations (multimedia and non-multimedia) affect investors' decisions differently? Technology has broadened the opportunities for many more current and potential investors to see and hear executives address them directly, not only those participating in conference calls.

The present study primarily relies on Media Richness Theory. Daft and Lengel (1984) offered Media Richness Theory (also referred to as Information Richness Theory) to explain how richer media (i.e., those containing greater degrees of human influences and interactions) have

more impact than leaner media, such as numbers on a printed page. Among electronic executive-financial presentations, the video medium and the audio medium differ in richness. This difference may emerge as a subtle difference in the investment decision data provided. The present study's experiments investigate the influence in media richness of video, audio, and text-based presentations in investor decision-making.

With greater information availability, investors may read and consider more than one piece of information. Prior research suggests the order of viewing information may have an impact on decision-making—a factor taken into account for the current study. One theory, First Impression Bias, suggests that the impact of the first piece of information encountered is so great that its influence continues, even after presenting other evidence of similar value. Lim et al. (2000) found support for First Impression Bias, but also found evidence suggesting media richness reduces the continued influence of first impression bias. Tuttle et al., (1997), using alternating, text-based presentations of "good news" and "bad news", reported a Recency Effect. According to the Belief Revision model (Hogarth & Einhorn, 1992), the Recency Effect occurs where evidence appearing later in the sequence is more influential than evidence presented earlier. Still other theories suggest that behavior in a new task most closely follows the behavior in a similar task (Set Effects) or that a new stimuli or event emerges as a member of class, even when no explicit, direct connection has occurred (Set Theory). When evaluating investment alternatives, investors may encounter multiple sources of information at the company website. This study also investigated the possible effect of presentation-order on the investment decision.

Contributions of the Dissertation

The present study examines how investors respond differently when financial reports

include a richer video version of the executive annual-report address. Specifically, the present research examines how individuals respond differently when encountering three versions of media: richer video, less rich audio and leanest text-based messages. In addition, other positive and negative cues (stimuli) conveyed by written passages (text) alternated with the electronic media (video, audio, or text equivalent) presentations to consider potential differences in presentation order. The current study contributes to the literature in a number of respects. First, with respect of financial reporting, the present study is the first to compare video with audio media as well as the first to use Media Richness Theory to evaluate audio media used in financial reporting. Second, the current study has practical implications, as audio is the medium commonly used in conference call settings. Third, the current study advances existing research to consider the impact of First Impression Bias and Order (Recency) Effects when financial presentations include multimedia as well as the strength of these effects. A significant and growing portion of the population regularly consults the Internet for information. With growing broadband access, companies have a more sophisticated, richer means to influence investors directly. As previous research suggests that investors often consult non-financial (narrative) presentations, the study of the potential influence electronic executive messages represents an important area for further exploration.

Organization of the Dissertation

The remainder of this dissertation is organized as follows: Chapter II presents a review of the previous literature concerning efforts to harness more content-rich electronic media in external reporting. Additionally, Chapter II provides a more detailed review of theoretical explanations for the impact of richer media and for the impact of the order of presentation when

using multiple pieces of information. This leads to the development and statement of the study's hypotheses. Chapter III summarizes the methodology used to test the hypotheses, including a discussion of the variables, a description of the experiment, participants, and the experimental instrument. Chapter IV presents the descriptive statistics of the evidence gathered and results of statistical testing. Chapter V summarizes the study's results, contributions, implications, and conclusions as well as limitations and suggestions for future research. Finally, descriptions of the web survey company employed and the experimental instrument appear in the appendices.

CHAPTER II

LITERATURE REVIEW AND HYPOTHESES

The present study examined issues connected to the video, audio, and text versions of the "Letter to Shareholders". The following paragraphs connect this letter and the broader category of narrative portions of the annual report to investor decision-making. Three pertinent issues are outlined: 1) Do investors consult executive annual-report addresses? 2) Do these executive annual-report addresses have any influence in investment decision-making? 3) Does management, as seen in the addresses themselves, reveal an active effort to influence investors? Next, the researcher examines video and audio versions of the online executive annual-report address.

The first issue was whether investors actually read the document addressed to stockholders. Authors have labeled this document with a variety of names, including "letter from the chairman/president/CEO", "chairman's address", "chairman's statement", and "letter to shareholder". In this dissertation, the author will refer to it as the online executive annual-report address. Many existing studies have reported evidence suggesting that the written executive annual-report address is the most read portion of the annual report (Anderson, 1979; Courtis, 1982; Lee & Tweedie, 1975; Wilton & Tabb, 1978; Winfield, 1978). More recent publications continue to cite this established body of literature (Breesch, Branson, & Cole, 2012; de Villiers & van Staden, 2010; Short, Broberg, Cogliser, & Brigham, 2010).

The second concern was the question of influence. Specifically, when making the investment decision, how often do investors use management narratives rather than accounting numbers in the financial statements? Segars and Kohut (2001) reported evidence suggesting that the written annual-report address affects investors' decision-making. Furthermore, Hodge and Pronk (2006, p. 284) report 29% of professional investors researching new investments viewed the management discussion and analysis (MD&A) section without investigating the main financial statements; likewise, 28% of professional investors evaluating existing investments only viewed the MD&A section. They also report that 40% of nonprofessional investors investigating a new investment and 26% of nonprofessional investors evaluating existing investments only consulted the MD&A section. Still other groups review non-financial information presented in the MD&A section along with selected portions of the financial statements. Regardless of the level of sophistication, large groups of investors pay at least some attention to the non-financial presentations.

The third concern addresses the need for evidence suggesting that management actively attempts to influence investors' decisions. Studies suggest that executives' letters to shareholders, presented with annual corporate reporting, often contain "self-serving" comments (Staw et al., 1983; Bettman & Weitz, 1983; Salancik & Meindl, 1984). Evidence from an experiment by Kaplan et al. (1990) suggested that strategies associated with impression management present in the president's letter greatly influenced individuals' decisions to invest in stocks and their outlook on future corporate performance. Clatworthy and Jones (2006) uncovered further evidence of the use of impression management techniques; they found vast differences among textual patterns used in the letter to the shareholders, with profitable companies highlighting current positive results and unprofitable companies looking to the future.

Research into the value of information content in management narratives continues to the present (Erickson et al., 2011; Geppert & Lawrence, 2008; Henry, 2008). These past studies suggest written executive annual-report addresses to the shareholders are used by investors, do influence investment decision-making, and that management is aware of this and actively employs impression management strategies to accentuate the positive aspects of a company's financial present or future.

Existing research highlighted above does support the propositions that investors do consume written executive annual-report addresses and that these are influential. A review of the literature, presented in the next section, suggests research opportunities to examine reporting format are plentiful. Applicable information systems and psychology theories are presented to frame the discussion of the potential impact of multimedia on executive communication in two respects. Specifically, the current study considers how multi-channel means of communication, as explained by Media Richness Theory, impacts consumers of that communication. Furthermore, the present study examines the influence of presentation sequence when presenting multiple pieces of information. Theories concerning presentation order include First Impression Bias, Set Theory, Set Effects, and Recency in Order Effects. Lastly, the chapter concludes with a brief summary.

Report Format and Advances in Technology

"Whilst there is a mass of research on its accounting content, the changing form of the report as a whole has been subjected to relatively little systematic investigation."(Hopwood, 1996)

At approximately the same time as Internet use by the general population began its dramatic growth, a special section of the *Accounting, Society, and Organizations* featured three

articles examining design changes in corporate annual reports (Graves et al., 1996; McKinstry, 1996; Preston et al., 1996). The quote above appeared in the Introduction to the special section. More than decade later, scholarly study into this evolution has hardly exhausted these research opportunities. Dramatic advances in technology have broadened this relatively pristine area even further.

Researchers in accounting information systems have accepted the challenge of this research. Two recent literature reviews provide an update of research activities and highlight research opportunities (Dilla et al., 2010; Kelton et al., 2010). Each group of authors divided research into two visualization categories: "interactive" or "static". As one group described the difference:

> "In contrast to *static* information visualization, where preparers select information items and their display format for decision makers; with *interactive* information visualization, users are allowed a choice of which data to display, how to represent the data, or both."(Dilla, et al., 2010)

Most accounting information systems offer the robust, interactive reporting tools needed to satisfy the requirements of both external and internal (managerial) report consumers. The interests of the current study align, however, more directly with the review of scholarly work in static presentation formats.

Authors of the literature review of static-presentation-format research used the Theory of Cognitive Fit to structure the paper. The phrase *cognitive fit* describes a match between the mental representation of the problem and the problem-solving task. When cognitive fit occurs, the match yields an efficient and effective solution and, as a result, an efficient and effective task performance. When a match does not occur, the person assumes the role of a problem solver. The problem solver must expend more cognitive effort (than someone who experiences a match)

to translate the representation or task to match, resulting in slower response or decreased accuracy (Tuttle & Kershaw, 1998; Vessey, 1991; 1994). Findings from subsequent research suggested a distinction between internal problem representation (i.e., a problem solver's prior knowledge) and the external problem representation, namely the information presentation format (Shaft & Vessey, 2006). The present study extended research into the latter area.

One underserved area of external problem representation is research in multimedia. While scholars have published many studies examining the use of multimedia in primary and secondary schools, its use in businesses and nonprofit entities remains a largely unexplored area. "Research into the efficacy of multimedia in organizational contexts is scant; most research has been conducted in educational settings . . ."(Kelton et al., 2010) Previously limited by compact-disc distribution or slow dial-up connections, multimedia now readily plays on websites for a more timely delivery. Descriptions of the extant multimedia research in business and accounting contexts follow.

Studies in information systems have compared multimedia and a traditional format, text on paper, to identify possible differences in task performance and reactions by users. One study found that users reported that multimedia presentations of financial statements were more entertaining and rated them higher in quality, but users had greater recall with paper and judged the two approximately equal in clarity and persuasion (Clements & Wolfe, 1997). Later, these authors investigated differences in participants' recall and judgment between paper and video presentations of financial reports. Specifically, the researchers examined how the medium used (video versus paper) affected personal opportunity (employment possibility) and firm-quality judgments. The researchers found that video could have a strong emotional reaction that overwhelms analytic processing in firm-quality judgments, depending on the perception of the

report's ability to inform. The research found that participants rated the quality of video higher than participants reading the printed reports, suggesting that report design was influential (Clements & Wolfe, 2000). The current study differs from this study in a number of respects. These authors used undergraduate students as subjects; the current study used actual investors as participants. These earlier studies were concerned with the affective (i.e., emotional) influence of multimedia on making decisions; the present study includes interest in media's cognitive influence on decision-making. The current study examines audio media, a medium commonly used for quarterly conference calls with investors, in addition to video.

Contemporary research considered whether the order of presentation affects decision-making and whether multimedia improves understanding of information presented. Lim and Benbasat (2000) considered whether the use of multimedia reduces the influence of first impression bias compared with the use of text-based information. Researchers found an interaction effect, where appraisal scores of participants using multimedia increased more than appraisal scores of participants using text-based information. The post-interview appraisal scores of the text-based groups were significantly different. The post-interview appraisal scores of the multimedia groups, however, did not differ significantly; this result supports the proposition that multimedia reduces first impression bias. In a later study (Lim & Benbasat, 2002), these researchers examined whether text alone, graphics alone, or a combination of the two (i.e., multimedia) supports the retention and later recall of explanatory and descriptive information. As defined in this research, pieces of "explanatory" information are facts connected in a meaningful relationship, while pieces of "descriptive" information are isolated facts lacking that connection. The authors found that, with the complementary cues of both text and graphics presented at once, multimedia supports retention and recall of explanative information, but not

descriptive information. Evidence suggesting greater retention and recall of explanative information supported the proposition that multimedia is well-suited to make correct inferences about organizations (Lim & Benbasat, 2002). Like the earlier study by these authors, the current study examines the issue of presentation order in annual reporting, but differs by considering the use of audio in comparison to video. In addition, the present study used ordinary investors as participants, whereas those studies employed undergraduate students as surrogates.

Earlier research of multimedia used in executive support systems (ESS) suggested a text-based format is preferable to multimedia representations of problems (Huang & Windsor, 1998). Specifically, these researchers explored analyzing information in three ESS prototypes: text alone; multimedia that included text, animation charts, animated text blocks, and graphics; and multimedia that included audio in addition to those same visual elements. The authors reported a mismatch between multimedia and the task, with participants reporting that the animation and sound were distracting and unnecessary (Huang & Windsor, 1998). The current study differs from this study in a number of respects. First, the visual elements in the Huang and Windsor study include graphics and animated charts and text blocks; only the company executive and a few static (no motion) graphics for the executive's name and title and the company name appear on screen in the current study. Second, the Huang and Windsor study used audio only in the last treatment group; the present study employed comparisons among video, audio, and text versions of the same experimental material in all three experiments.

In a more recent study, Wheeler and Arunachalam (2009) examined tendencies to apply externally provided information processing rules when influenced by three factors. Using undergraduate students as participants, the researchers constructed experiments to study the influence of medium type (single medium or multimedia), task familiarity, and information load

on willingness to use those rules or revert to internal rules. These authors concluded employing multimedia adversely affects understanding of task information, which led to inconsistent application of externally provided information processing rules. These researchers found resistance to using externally provided information processing rules generally (Wheeler & Arunachalam, 2009). The current study explores different decision-making constructs besides those examined by Wheeler and Arunachalam.

Another study from this area, and also published in 2009, explored use of different media in corporate social responsibility disclosures (Cho et. al.). Specifically, the authors explored whether choice of medium influenced user trust in communicating these disclosures as well as its potential influence on user perception of corporate social and environmental responsibility. In their three-by-two between-participants experiment, the researchers manipulated industry-type (environmentally sensitive and non-environmentally sensitive industries) and media at low richness (text only), medium richness (photos only), and high richness (video) levels. In their experimental task, participants drawn from undergraduate auditing classes answered questions, concerning trust following a media presentation (one of the three levels described above). The participants recorded their answers on a seven-point Likert scale that ranged from "not at all responsible" to "very reasonable". Results supported the proposition that richer media positively affects stakeholders' trust in social disclosures and their perception of corporate social and environmental responsibility. The results did not support the idea that environmental sensitivity of an organization's industry moderated the impact. The researchers concluded that media richness influenced trusting intentions (willingness to depend on others) and perceived levels of social and environmental responsibilities, but not trusting beliefs (belief that another party has favorable qualities) (Cho, et al., 2009). Again, the present study differs from this study by

including audio media not included here.

The most recent study in the extant literature (Elliott, et al., 2012) examined the effect of media choice on investment decisions and trust when a company announces a restatement. Specifically, the researchers conducted an experiment to consider whether choice of announcement media (paper or video) and responsibility attribution (internal or external) effects investment decisions and trust. For the experiment, researchers recruited experienced professional managers as participants. Researchers provided a written case describing a fictional company and then asked for an investment recommendation, a level of confidence for their recommendation, and a list of supporting reasons. Next, the experimental materials provided the restatement announcements (on paper or on video), containing an internal attribution (assumption of responsibility for a faulty accounting treatment) or an external attribution (denial of responsibility and reliance on an outside expert for the same faulty accounting treatment). Following the announcement, researchers asked participants to offer recommendations and to answer a series of questions regarding trust. The results provided evidence of an interaction. When the CEO accepted responsibility, participants who viewed the announcement video trusted the CEO more than those who read the announcement text did. When the CEO denies responsibility, participants who viewed the announcement video trusted the CEO marginally less than those who read the announcement text did. The study results also revealed no significant difference between recommendations occurring before and after the restatement announcement. Like the study results for trust, when the CEO accepted responsibility, participants viewing the announcement video invested more than those reading the announcement text did. When the CEO denies responsibility, participants viewing the announcement video invested less relative to those reading the text version of the announcement invested. Additional analysis of the results

suggests, “Trust mediates the influence of attribution and disclosure venue on participants’ post-restatement investment recommendations.” (Elliott, et al., 2012, p. 528)

The current study differs from this most recent study in a number of respects. The research discussed in the previous paragraph focuses on the issue of restatements issued on paper versus those announced using online video; the present study examines different subject matter, the executive annual-report address conveyed through video. Additionally, the current study examines media richness in its comparison of video to audio only. The current study also explores the issue of order of information presentation using video created for the experiment and modeled on recently posted company videos. Lastly, professional managers served as participants in this study, whereas the present study used real investors as its subjects.

With the explosive growth of Internet use as well as advances in technology, opportunities to research the impact of these new report formats remain numerous. The next section outlines the conceptual underpinnings of the current study. In addition, a later section of this chapter includes a discussion of presentation order and multimedia.

Media Richness

The proposition that online executive annual-report addresses influence investment decision-making draws theoretical support from the psychology, management, public policy, and information systems literatures. Theory, such as Ajzen (1991), suggests an element needed for voluntary decision-making is “. . . an internalized influence of persons and groups important to the respondent. . .” (East, 1993). Given the choice, human beings making such a decision prefer some sense of assurance to no sense of assurance; a sense of safety is among humankind’s most basic needs, as delineated in the revised Hierarchy of Needs (Maslow, 1971). Management and

public policy scholars point out that followers look to leaders to meet our demands for certainty and orderliness in an unorderly world. . .” (Lipman-Blumen, 2005). Similarly, Sankowsky noted that these needs drive followers to find authority figures who may offer comfort and promise to fill those needs (1995). In the context of online executive annual-report addresses, company executives represent knowledgeable authority-figure types that may fill those unmet needs.

How the executive chooses to communicates this knowledge represents only one characteristic of the message’s influence on investing behavior. The following conceptual model illustrates those aspects of the message as well as how choice media employed influences the message. Figure 1 Panel A provides full descriptions of the diagram elements and presents the Conceptual Model in 2 dimensions:

Figure 1
Panel A
Conceptual Model of the Present Study

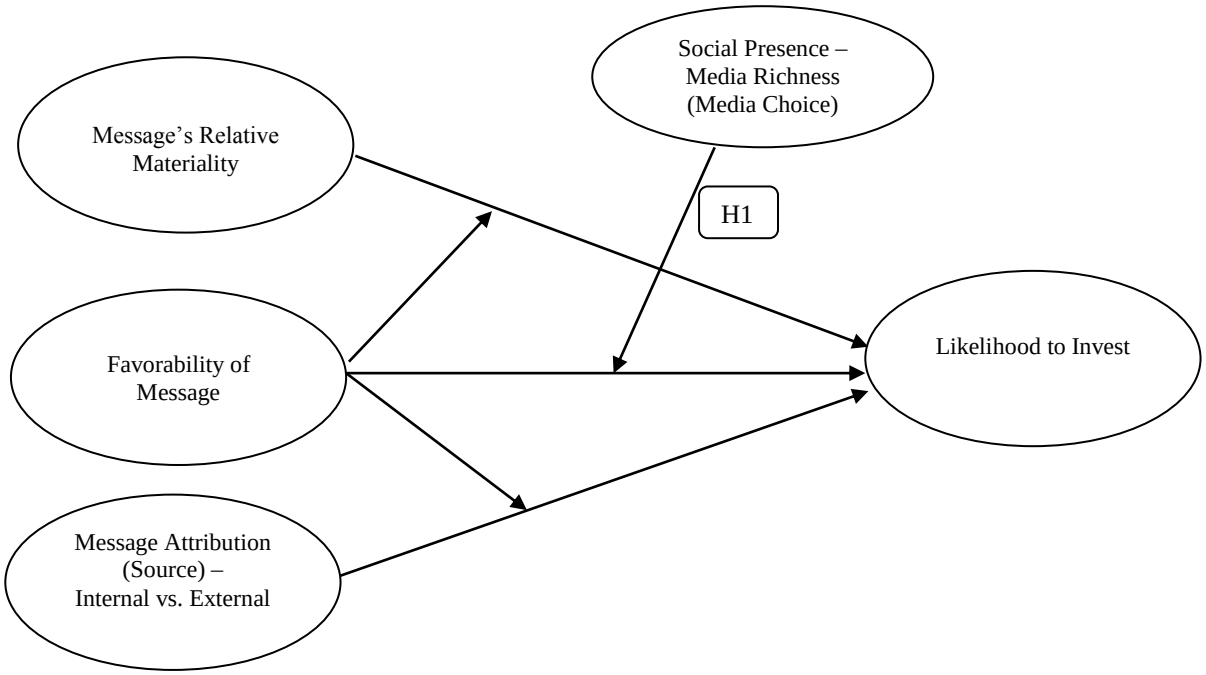
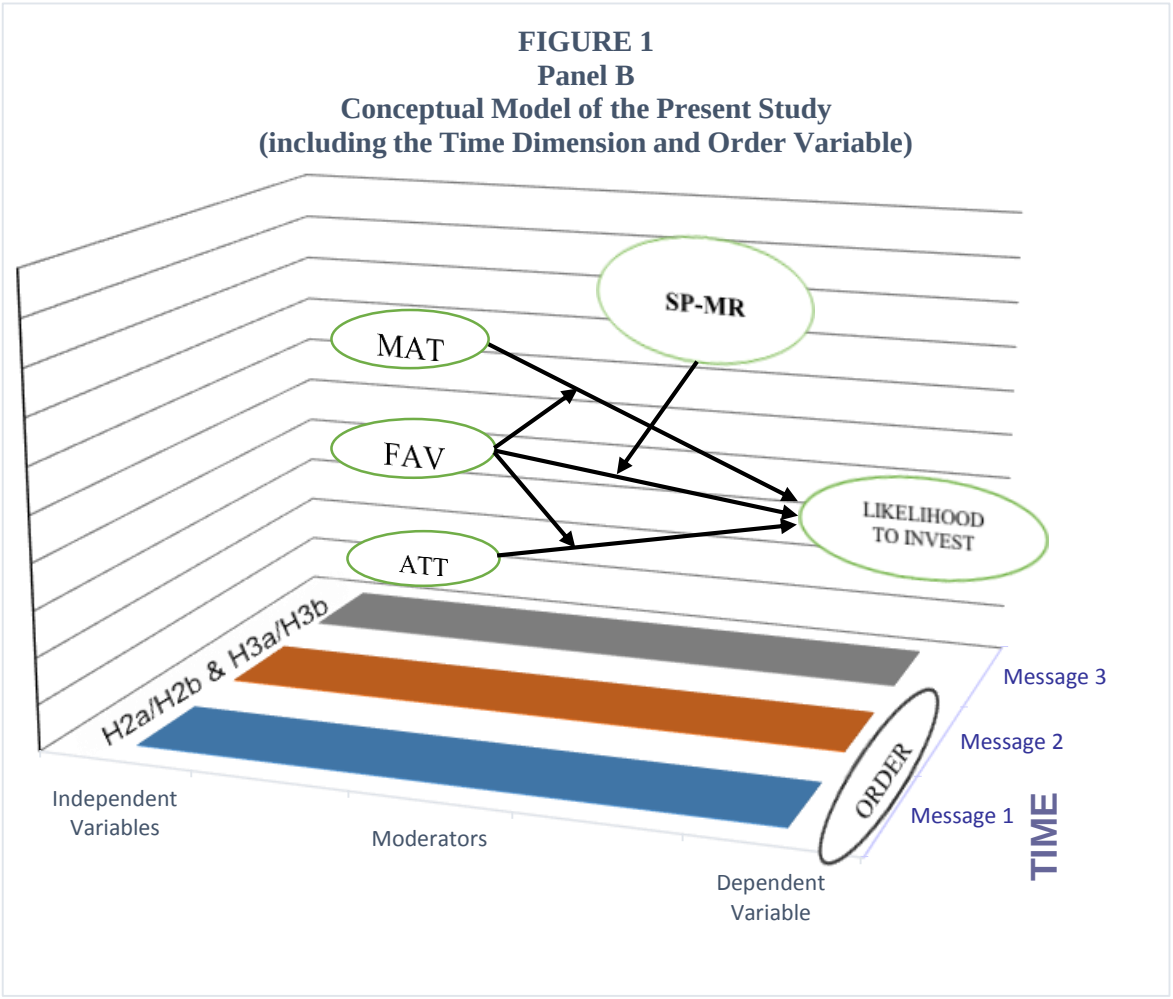


Figure 1 Panel B adds the third dimension, time, to illustrate the second independent variable of the current study, presentation order, which is a function of time:

FIGURE 1
Panel B
Conceptual Model of the Present Study
(including the Time Dimension and Order Variable)



At the time an annual-report address is delivered, media choice is likely the only ethical means left to influence investors. Unless management overrides the system, executives can no longer affect the favorability and relative materiality (in an accounting sense) of the annual report's message. Whenever they can control the news, public companies may prefer to release news stories themselves. Third parties, such as government agencies, competitors, and litigators, may

also initiate some action that generates news. Researchers have recently examined how media choice and message attribution influence investors in the case of restatements (Elliott, et al., 2012). The current study examined media choice in the context annual-report addresses.

With today's technology, company executives have more communication tools at their disposal. Many researchers in information systems and related fields jointly cite Social Presence Theory and Information (Media) Richness Theory. Social Presence Theory describes media's capability to convey non-verbal details. Information (or, Media) Richness Theory, describes qualities of communication modes (or means) and suggests the fit between communication mode and the type of decision-making affects whether decisions are timely and effective. The present study primarily focuses on differences in media choice and, naturally, on the Media Richness Theory. Following the preceding discussion, an illustration of the general model from extant literature is provided before continuing with an in-depth discussion of Media Richness Theory.

Relying on psychology theory (Ajzen, 1991), East (1993) took advantage of an once-in-a-lifetime event to study in investors' decision-making. Dispatching graduate students to gather data, East surveyed investors who had purchased shares of three newly privatized British utilities. East found evidence suggesting a strong influence from family and friends in making the decision to invest. These results suggest investors may seek out some form of assurance before investing. With their statuses differs greatly than those of family and friends, company executives are knowledgeable leaders of their companies. In the absence of family or friend influence, the executive's position authority may function as a substitute in providing some degree of assurance. Cable business programmers seem to recognize this on some level. In exchange for unofficial free company advertising, executives often appear as guests on business television shows. Warren Buffett, for example, regularly makes multi-segment appearances on

CNBC—another avenue for Mr. Buffett to reach investors.

Traditional avenues for communicating with investors at large include mass-produced form letters, professionally printed annual reports, and shareholders' meetings held in person. Technological innovations have increased public companies' options for communicating with widely dispersed investors. For any message, the means of communications, regardless of the degree of sophistication, may influence how audiences interpret the message received. For example, a humorous story is usually better understood and appreciated if it is presented in person than if the same person tells the story over the phone or in writing. With newly added avenues for reaching investors, public companies should carefully evaluate how their choice of communication mode affects their message. The current study's framework to consider how the means of communication influences the interpreted message is the Media Richness Theory.

In describing media richness, or its synonym "information richness", authors Richard Daft and Robert Lengel defined richness as "the potential information-carrying capacity of data" (Daft & Lengel, 1984, p. 196). In reference to an earlier work (Daft & Wiginton, 1979), Daft and Lengel observed that variety in language didn't adequately explain how information is processed in organizations. Appropriateness in language choice depends on degree of subjectivity required by the communication and the language used in some organizational communications is primarily limited to simple numbers and straight-forward, unambiguous terminology (1984).

Daft and Lengel's description continued, referring to Lengel's earlier work (1983): "Lengel (1983), building upon the work of Bodensteiner (1970), argued that the communication media used . . . determines the richness of information processed. He proposed that communication media vary in the richness of information processed. Moreover, communication

media were suggested to fit along a 5-step continuum" (Daft & Lengel, 1984, p. 176). The same model for media (information) richness appears as Figure 2 below.

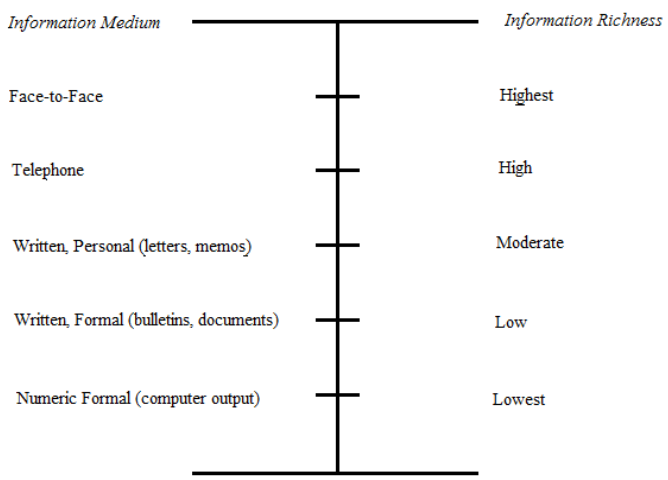


Figure 2: Continuum of Communication Media and Information Richness

Lengel, relying on earlier works of Bodensteiner (1970) and Holland, Stead, & Leibrock (1976), arranged the ordering of five information media in the continuum according to four characteristics: "Each medium differs in (1) feedback capability, (2) communication channels utilized, (3) source, and (4) language." (Daft & Lengel, 1984, p. 176) Face-to-face communication is the richest medium, offering immediate feedback, originating from a personal source, and consisting of both visual and audio channels as well as both body and natural language (Daft & Lengel, 1984). Formal numeric documents appear on the opposite end of the scale; these documents feature very slow feedback, originate from an impersonal source, and use a limited visual channel and numeric language (Daft & Lengel, 1984). With the growth of communication technologies, many more lines could now appear along this original scale.

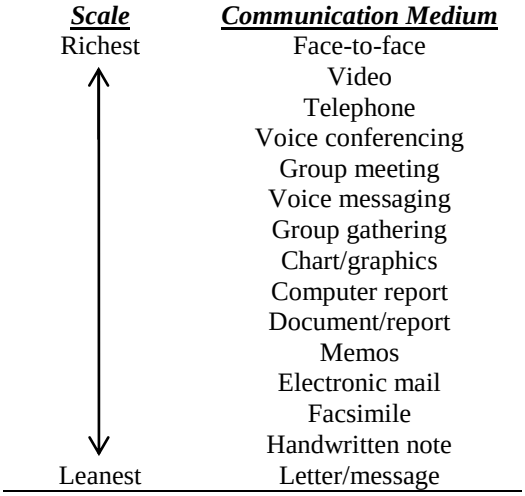
While having no or little difference in feedback and source, video offer both body and natural language not available with audio. An understanding of characteristics used to order the continuum supports the relative placement of the video medium as more media-rich than the audio medium.

In addition, two extensions to the original Media Richness Theory offer some support to the proposition that video is richer than audio. Media Synchronicity Theory incorporates communication theory and organizational task functions to focus on the more dimensions of the communication process, not only the features of the medium itself. Media synchronicity is the extent to which individuals work together on the same activity at the same time—have a shared focus (Dennis & Valacich, 1999). This theory describes communication as the sum of two processes—conveyance and convergence—that occur in varying degrees as communication happens. Convergence involves agreeing or failing to agree on the new information's meaning. Conveyance involves transmitting new information and assimilating it into individuals' mental models. Theorists state conveyance ". . . can be divergent, in that not all participants need to focus on the same information at the same time, nor must they agree on its meaning" (Dennis & Valacich, 1999). Media Synchronicity Theory (MST) proposes that low synchronicity fits best with conveyance. A feature of low synchronicity is low feedback, which agrees with the media in the current study. The one-way transfer found in video, audio, and text media results in slow or no feedback (Dennis & Valacich, 1999), though advances in social media, such as Twitter and Facebook, have created some avenues for feedback in recent years. The theory extends Media Richness Theory to consider whether groups in the process are established or newly formed. A related MST proposition supports the present study. In the conveyance of information, a newly formed group will prefer "media providing symbol sets with greater social presence" (Dennis &

Valacich, 1999). As previously discussed, the general model of this study suggests that social presence moderates the authority-figure influence and this proposition underscores the point that investors investigating investment opportunities may be particularly affected. Another extension, Media Naturalness Theory, begins with the premise that face-to-face communication is the most natural to human beings. Modes of communication that have less and less resemblance to face-to-face decrease in "naturalness" and result in increased cognitive effort to achieve comparable understanding (Kock, 2004). This feature of Media Naturalness Theory also supports the positioning of audio media lower than video media, which more closely resembles face-to-face. Insights from these extensions of Media Richness Theory offer support in placing more technologically advanced modes of communication that are absent from the original scale.

An important development of Media Richness Theory supports the suggested placement of online communication modes along the original Information Richness continuum. Rice (1992) proposed an updated, more detailed continuum based on a review of the results of seven empirical studies testing Media Richness and/or Social Presence theories. Based on the studies reviewed, Rice constructed the empirical ranking of communication media, as reproduced in Figure 3:

Figure 3
Empirical Rankings of Various Communication Media Along Information Richness and Social Presence Scales



Source: Rice (1989)

In this ranking, all three forms of media in the current study appear. Video appears among the richest forms. Voice messaging, a generic term for answering machines and voice mail, shares the same qualities as audio media in the current study. The text-only version of the annual-report address again appears as one of the leanest communication modes. The printed executive annual-report address often contains elements similar to a report (earnings per share, for example) and those of a letter or message. Support from a review of empirical studies (Rice, 1992) strengthens the case of placing video and audio on the original media richness scale.

More recently, researchers in computer-mediated communication (or, CMC) appear to agree, as suggested in his quote:

> "In CMC and human factors research on multimodal interfaces, the two dominant conceptual frameworks that have guided the examination of modality effects are social presence theory (Short et al, 1976) and media richness theory (Daft & Lengel, 1984)" (Kalyanaraman & Sundar, 2008, pp. 222-223).

In this field, the term "mode" refers to the type of channels present in a communication scenario and "multimodal" refers to more communication using two or more modes, such as both video

and text (Kalyanaraman & Sundar, 2008). This quote suggests support for online video and audio media on the Information (Media) Richness continuum.

Now armed with this better understanding of information (media) richness, how does the Media (Information) Richness Theory affect decision-making? Daft and Lengel's model (1984, pp. 198-199) describes a direct relationship between information richness and complexity of organizational phenomena in effective information processing.

> "Media low in richness are suited to simple topics. The mechanical side of the organization is normally simple and measureable. . . . Other variables, such as organizational goals, strategies, managerial intentions, or employee motivation, are intangible. . . . Making sense of these factors requires a rich medium that provides multiple information cues, immediate feedback and a high variety language." (Daft & Lengel, 1984, pp. 199-200)

According to this theory, effective information process (and therefore, optimized decision making,) depends on matching the level of information richness to the decision at hand. Providing high levels of information richness for problems low in complexity unnecessarily complicates decision-making. On the other hand, using low levels of information richness for problems high in complexity provides inadequate basis (too few cues, low variety language, and little or no feedback) required for proper decision-making in a timely manner. According to Daft and Lengel's model for Media Richness Theory, supplying reporting with a level of media richness that corresponds to the level of complexity produces efficient, effective decisions.

Whether the organization is a group of many or a single individual, deciding to buy a particular company's stock is hardly a simple matter reading of verifiable accounting numbers. Evaluation of non-quantitative data, including details often provided by company executives in letters to shareholders, may affect the investment decision. Executives appearing in such videos do discuss "intangible" information, such as company goals, strategies, and other plans, in a

medium offering multiple cues and high variety language. The first hypothesis was designed to test the premise that the video aspect of online video messages does add richness and, therefore, influence the viewer:

> H1: Investors' tendency to invest will be greater when the executive annual report address is made using a richer media presentation.

According to the Media Richness Theory, use of the richer media (online video/audio) should make information processing more effective and efficient relative to the audio only and other less rich presentations. Multimedia contributes additional channels for evaluating the subjective aspects of the investment (stock purchase) decision.

Presentation of Multiple Pieces of Information

According to Media Richness Theory, vast differences exist between reading textual information and consuming a video or audio only presentation. Moreover, investors can only actively engage in one of those activities at a time and will likely consume multiple sources of information before making an investment decision. With multiple forms of media present, one concern about detecting differences between electronic and text-based media is whether the order of those presentations may account from some portion of those differences. Existing literature addresses this concern using text-based media.

Overview

Psychologists have examined the question of which piece of information in a sequence is most influential. They have produced a number of relevant theories to address the question: set theory and set effects, formation of impressions, first impression bias, and finally recency, order

effects, and the belief adjustment model. The first three theories are briefly discussed in this overview.

Though the names of these theories sound similar, set theory and set effects represent two distinct scenarios. Set theory, also known as the theory of equivalent class, describes the phenomenon when a new, unrelated stimuli or element (of any length) becomes associated with a class of stimulus, even though only one association between the new element and one element in the class is presented (Baiman & Lewis, 1989). Under set theory, connections emerge between a new element and the elements in a class, even though no direct connection among all elements is explicitly indicated. On the other hand, a set effect is defined as "a tendency to solve new problems by applying past habits and assumptions" (Bella, 2006). A set effect behavior in problem-solving can prevent "perceiving a simpler solution than the familiar, tried-and-true but more cumbersome approach" (Bella, 2006).

Researchers considering how presentation order potentially impacts perceptions often cite the classic article on forming impressions of people by the social psychologist S. E. Asch (1946). In his seminal work, the author conducted a series of ten experiments to consider how participants formed impressions of people described in the experimental materials. Participants heard and/or read a list of personal characteristics in some form of biographical sketch and, depending on the specific nature of the experiment, record their impressions by providing written descriptions in their own words (rather than repeating the list), using check-lists, or by ranking characteristics of the individual described. The experiments included altering the order that the characteristics were presented (Asch, 1946).

Asch's research examined two competing views of impression formation. The first view described impression formation as an additive process, with the overall impression as the sum of

observed traits. The second view describes impression formation because of an integration of traits, with traits operating in relation to each other. Asch's research supported the latter view, finding that presenting identical lists to study participants except for a single quality (the manipulation) dramatically altered the impression formed between the two study groups. Other conclusions of the study include forming impressions is an organized process; central qualities are discovered and are distinctive from peripheral qualities; and individual characteristics operate in harmony or at odds with a person's other characteristics and the same characteristics in another person may serve different functions. In his extensive study of how impression of personalities are formed, Asch found useful insights into how impressions are formed in general (Asch, 1946).

Overall, set theory, set effects, and Asch's study of forming impressions suffer from improper fit to the issue of online investors viewing and hearing executive messages. Connecting a new element to an existing class as described in set theory does not adequately describe this research setting; evaluating investments is not necessarily limited to matching evidence by type. Similarly, the habitual nature of set effects hardly describes evaluating investment opportunities through, in part, experiencing multimedia presentations. Advances using Asch's seminal publication have contributed to a research stream important to the present study. In fact, the two psychological theories employed in the current study, namely first impression bias and order effects, include Asch among their foundational citations. Further discussion of these theories follows in the next two sections.

First Impression Bias

Building on Asch's work, researchers in information systems considered whether the first

presentation encountered proved overwhelmingly influential. As briefly referenced previously, Lim, Benbasat, and Ward (2000) describe first impression bias as "a limitation of human information processing in which people are strongly influenced by the first piece of information that they are exposed to, and that they are biased in evaluating subsequent information in the direction of the initial inference."(p. 115). Subsequent studies have confirmed Asch's finding that the earliest information received disproportionately affects judgment (Jones et al, 1968; Kelly, 1950; Luchins, 1957; Rosenhan, 1973). These studies also found the first impression bias persisted to overwhelm the influence of inconsistent information presented later by either arguing how the inconsistent fits or simply ignoring it as an aberration (Lim et al, 2000).

Lim et al (2000) proposed that the use of multimedia reduces the impact of first impression bias, compared to use of text-based information. The study's experimental task asked participants to evaluate a fictional leader of a department, using experimental materials developed from the profile of a real, but anonymous person. Participants recorded their appraisal observations on a seven-point Likert-type scale.

Student participants were organized into four groups. Two groups of participants viewed video clips of an interview with the fictional department head and the other two groups read transcripts of the same interview. The authors forced a manipulation, requiring two groups (one viewing the video and one reading the transcript) to first appraise the department leader based on a written report, prior to viewing the interview video or reading the transcript. This report (i.e. the biased cue or the treatment) was a personality profile of the fictional leader suggesting qualities that were incompatible with the characteristics required and delineated for the position. This resulted in two sets of observations (a post-treatment score and a post-interview score) for each of the two groups receiving the treatment. On the other hand, the control groups (the other

group only viewing the video and the other group only reading the transcripts) provided only one appraisal of the subject (the post-interview score).

In analyzing these appraisal scores, researchers found two forms of results to support their propositions. First, researchers analyzed scores by system type (text or video—i.e. between participants), by time sequence (post-treatment versus post-interview—i.e. within participants), and a possible interaction of these two factors. The first impression hypothesis (use of multimedia reduces the influence of first impression bias) is supported by the presence of the interaction; appraisal scores of participants viewing the video clip increased significantly more than appraisal scores of participants using text-based information. Second, researchers compared post-interview appraisal scores of the biased (experimental) and non-biased (control) groups. The post-interview appraisal scores of the text-based groups were significantly different. The post-interview appraisal scores of the multimedia groups, however, did not differ significantly. This result also supports the proposition that multimedia reduces first impression bias.

The study discussed above examines first impression bias in an employee-evaluation context. Like the seminal Asch study's experimental task, participants in the Lim et al study appraised a fictional individual. The present study examined if multimedia reduces first impression bias in a scenario when the presence of an individual (i.e., the company executive) was adjacent to the item appraised, namely the investment. A chairman of the board or chief executive officer is certainly the face of the company to investors. If the theories hold, the objects appraised in the experimental materials are interchangeable; first impression bias and multimedia's mitigating influence on first impression bias applies to decisions where appraisers evaluate an individual as the subject appraised and in a supporting role to the subject appraised.

The current study built on the Lim et al (2000) study. First, the present study extended

Lim et al. by examining possible reductions of first impression bias using the richer video media (a form of multimedia), slightly less rich audio media, as well as textual presentations. When presenting the executive annual-report message after the first impression, the leaner media, relative to media in the comparison, should theoretically produce a lesser reducing effect on the initially biasing cue. All versions of these executive messages in this context convey positive messages; placement of an initial negative news stimulus before the executive message is needed to witness the shift in reaction. Accordingly, an appropriate hypothesis follows:

> H2a: The difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address *after* negative news is disclosed.

In the current study, an audio presentation was examined addition to the video presentation used in the Lim study. The trend from post-text-based negative report scores to post-annual-report address scores should be upward, signaling the introduction of "disconfirming" stimuli. Based on first impression bias and media richness theories, the trend of the experimental group (receiving the relatively richer version) should be greater than the trend of the control group (receiving the relatively leaner version).

Second, the present study proposes to extend Lim's work further by examining the strength of first impression bias relative to media richness. In this portion of the current study, the order of items presented in the above hypothesis was reversed; the positive executive annual-report message precedes the negative text-based information. According to the first impression bias, participants will anchor on the first stimuli and adjust with subsequent stimuli. According to media richness, the better alignment between the subjective nature of the decision and richer media message should produce greater interest in investing than a similar alignment using leaner media.

> H2b: The difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address *before* negative news is disclosed.

Again, participants encountered stimuli of a disconfirming nature (in this case, text-based negative news) in the second place and that was expected to result in a noticeable change in respondents' appraisal scores. Relying on both media richness and first impression bias theories, the initial impression formed with richer media should better withstand subsequent introduction of negative news, relative to a leaner media.

The data collection of the present study proceeded after each presentation (stimuli) was exposed. (This collection procedure is referred to as "Step-by-Step" and is described in detail in the next section.) Data collection for the current study will mirror that of the Lim et al (2000) study. The present experiment produced two sets of observations for each of the two groups receiving the treatment: a post-text-based negative stimuli (post-treatment) score and a post-annual-report-address score. For the control groups, only the first score (i.e., the post-annual-report-address score) was used for comparison. The experimental materials are carefully constructed so that a single data collection serves both Hypotheses 2a and 2b without conducting additional sessions.

Overall, this portion of the present study represents a meaningful contribution. The current study examines multimedia's reduction of first impression bias relative to media richness in scenarios with audio media. Furthermore, the present research makes a case for extending First Impression Bias to appraisals of human-adjacent objects, such as a company stock as an investment alternative. The present study continues from the earlier employee-evaluation scenario, arguably an area of human resources management, into an accounting report context.

In the next section, the discussion shifts to another model for considering multiple pieces of information: the belief adjustment model.

Recency, Order Effects, and the Belief Adjustment Model

Research regarding the order effects has appeared in the accounting literature for many years, often in an auditing context (Arnold, Collier, Leech, & Sutton, 2000; A. H. Ashton & Ashton, 1988; R. H. Ashton & Ashton, 1990; Church, 1990, 1991; Church, Davis, & McCracken, 2008; Tubbs & Messier Jr, 1990). In 1992, Hogarth and Einhorn published their Belief-Adjustment Model, which expanded on the existing belief updating process of anchoring (i.e., setting an initial estimate) and adjusting. One refinement was to divide the process into modes. The authors define "presentation mode" as how individuals respond when new evidence is presented and define "processing mode" as their assimilation of it into existing beliefs or judgments. Among its contributions, this study also described how processing may happen in one of two manners. In a "Step-by-Step" (SbS) manner, belief updating occurs as a new piece of evidence is presented. When the Step-by-Step manner is adopted, measurements are taken after each piece of evidence is presented. In contrast, with the "End of Sequence" (EoS) approach, an adjustment to beliefs occurs only after all evidence is presented. When the End-of-Sequence manner is employed, only one measurement occurs at the end of the sequence. Hogarth and Einhorn's work relied on the prevailing thought that people will adopt the End-of-Sequence approach as long as the processing does not exceed their cognitive abilities; however, people will adopt the Step-by-Step approach when processing longer or more complex information. When presented piecemeal, people's response is limited to only the Step-by-Step approach (Hogarth & Einhorn, 1992). The determination of the processing manner (Step-by-Step versus End-of-

Sequence) depended on the factors discussed in the following paragraphs.

In addition to the processing mode feature, researchers must also account for two other features needed to implement their order effect predictions: encoding and adjustment. The term "encoding" refers to updating that occurs relative to a reference point, equal to either the prior anchor (current belief) or a constant (i.e., adjustment to an absolute value). Consequently, encoding can be classified into two alternative tasks: evaluation and estimation. "In evaluation tasks, people encode evidence as positive or negative relative to the hypothesis under consideration (1992, p. 9)." The authors describe evaluation as "bi-polar", beginning with an absolute value reference point and encoding new evidence to move the current belief along a continuum between -1 and 1. Alternatively, ". . . estimation tasks involve assessing some kind of 'moving average' (e.g., impression of 'likeableness') that reflects the position of each new piece of evidence relative to current opinion. (1992, p. 9)" Here, the authors describe estimation as "unipolar", beginning with the current belief as reference point and encoding new evidence to move on a continuum between 0 and 1. The distinction between evaluation and estimation lies in the handling of evidence of similar nature (all positive or all negative). Suppose two positive pieces of evidence require encoding. Using evaluation encoding, individuals encode these two pieces as confirming their belief, regardless of the relative strength of the evidence, and revise their belief upward for each. Using estimation encoding, individuals first assess the size of the evidence relative to their existing belief (the moving average), in addition to the confirming or disconfirming nature. In estimation encoding, order of evidence matters. If the weaker of the two pieces of positive evidence is assessed first, the stronger evidence may still be upwardly effective if assessed second. In the reverse case, the weaker evidence will actually prove downwardly influential if the moving average (new current belief) has exceeded the weaker

evidence's relative size; in other words, averaging in a score lower than the moving average will lower the average (Hogarth & Einhorn, 1992, pp. 9-10).

The third feature of the Belief-Adjustment Model is known as "adjustment", which describes the effect of new positive or negative evidence relative to the existing anchor. In absolute terms, confirming (more positive or more negative) new evidence has little effect on an existing anchor situated near that positive or negative end of the continuum. By contrast, the disconfirming (e.g., receiving positive new evidence with a negative existing opinion) new evidence has much greater impact on that same existing anchor than the confirming evidence. Inclusion of this adjustment weight recognizes that inclusion of new evidence is not equally impactful when put into the context of the existing anchor (Hogarth & Einhorn, 1992, pp. 14-15).

Two additional characteristics of the tasks must be considered to derive order-effect predictions using the Belief Revision Model. The first characteristic is complexity. Hogarth and Einhorn classified tasks into two classes: "Simple" and "Complex". Tasks were "judged to be Complex if they involved a large amount of information (e.g., 600-word messages, Crane, 1977) or unfamiliar stimuli (e.g., estimating averages of sets of noises, Parducci, Thaler, & Anderson, 1968)" (1992, pp. 5-6). The second characteristic is length. The authors again classified tasks into two classes: "Short" and "Long". In analyzing previous studies, Hogarth and Einhorn found that the number of items fell conveniently into two categories: "(T)he 'Short' with between 2 and 12 items and the 'Long' with 17 or more."(1992, p. 6). Using all of these factors (i.e., the processing mode, encoding, response mode, and the two classifications of task), the authors predicted the order-effect as either primacy effects, recency effects, or no effect.

Accounting scholars have utilized the Belief Revision Model (e.g., Kahle & White, 2004; Messier & Tubbs, 1994). A journal article particularly applicable to the current study utilized

market-based laboratory experiments where participants made either bids or offers for shares between announcements of good or bad news to the market (Tuttle, et al., 1997). The entire experiment consisted of four fictional companies, with each presented as a round, the first company (round) used for participant training, and the second company (round) used to verify that the information manipulation worked properly. The authors manipulated the order of the information presented in Companies (rounds) Three and Four and gathered data for testing hypotheses from the latter two rounds. In all rounds, traders exchanged bids and offers for shares of the fictional company in the initial period and each of four additional trading periods, each one following an announcement to the market. In addition, two versions of the experiment were employed, with identical information presented in Rounds One and Two. In Round Three, Version 1 received the sequence of "good news—good news—bad news—bad news" announcements and Version 2 received the sequence of "bad news—bad news—good news—good news" announcements. To counter-balance the experiment, the sequence of news announcements was reversed for Versions 1 and 2 in round four. The researchers conducted the experiment three times in total, collecting six sets of data from Rounds 3 and 4 (Tuttle, et al., 1997).

According to the Belief Revision model, the prediction for a short series of simple, mixed (meaning both positive and negative stimuli) evidence, presented in step-by-step manner (regardless of encoding) is the recency effect, as seen in Table 1 that follows:

TABLE 1:
Summary of Order-Effects Predictions

Encoding:	Evaluation Tasks		Estimation Tasks			
Type of Evidence:	All		Mixed		Consistent	
Response Mode:	End-of-Sequence	Step-by-Step	End-of-Sequence	Step-by-Step	End-of-Sequence	Step-by-Step
Short Series:						
- Simple	Primacy	***Recency***	Primacy	***Recency***	Primacy	No effect
- Complex	Recency	Recency	Recency	Recency	No effect	No effect
Long Series:	Force toward primacy	Force toward primacy	Force toward primacy	Force toward primacy	Primacy	Primacy

Reproduced from: Order Effects in Belief Updating, by Hogarth and Einhorn - *Cognitive Psychology* 1992 (pg. 17).

The term "recency effect" describes the phenomena that evidence received later appears more influential in the final opinion than the evidence received earlier. In analyzing the results, the authors (1997) found that the evidence collected did support the recency effect predicted, with the mean price changes suddenly increasing (decreasing) after the announcement of good news (bad news) in the manipulation, as predicted in their hypothesis. The authors summarized their results:

> "Had the markets used the information without bias, one would expect the markets to arrive at identical positions. This certainly did not happen; the observed order effect was highly significant. The implication is that markets may not remove every type of individual decision bias." (Tuttle, et al., 1997, p. 101)

This study of order effects on market efficiency utilized text-based news of companies without the influence of video or audio from company officials. In its use of mixed stimuli and company news announcements, the current study using multimedia messages from company executives represents an extension of this seminal study.

Earlier examination of the multimedia's reducing influence on first impression bias logically suggests examination of a possible similar reducing influence on the recency effect. The present study proposes an additional experiment to explore this issue. Following Lim's

example and considering Media Richness Theory, the reducing phenomenon of the video version should prove to have a greater impact:

> H3a: The difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address *after* negative news following positive news is disclosed.

Here, an additional positive stimuli is presented first, followed by a negative stimuli, and the proposed mitigating effect of the richer electronic (video or audio) media occurring last.

Following the arguments delineated above, the presentation order should make a difference when using richer multimedia in place of text-based stimulus. Holding constant the content of the media, the relative strength of the recency effect should appear stronger using a richer form of media:

> H3b: The difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address following previous negative news *before* new negative news is disclosed.

Implicit in this hypothesis is the presence of the recency effect among the participants experiencing media (video or audio) and the order of presentation reversed. Under the Media Richness Theory, the relative strength of the richer stimuli should prove greater.

By proceeding in the Step-by-Step manner, using the same news and media, but manipulating the order, order effects theory predicts recency when each observation (score) is recorded. Anchoring occurs on the first stimuli and adjustment occurs as each confirming or disconfirming stimulus arrives. This theory predicts that investors who experience richer versions of the executive annual-report address first will report a higher tendency to invest score than those experience it last. If the predictions hold, the results should resemble the findings of Tuttle et al (1997) and suggest that the Belief Revision Model applies to non-text-based stimuli.

Summary

This chapter discussed extant research and theories leading to the development of three hypotheses. Initial concerns about the stature of annual reporting itself were addressed in the literature. Recent literature reviews organized past research into those "static" and "interactive" reporting formats and placed multimedia into the former category. A review of this literature suggested the field of multimedia as a static reporting format remains relatively unexplored. Referring to cognitive fit theories, researchers of prior studies examined the affective (emotional) and cognitive impacts of multimedia on decision-making in a number of combinations (text only, text with multimedia elements, etc.), but a comparison of video and audio in this context remains uninvestigated. Appearing in some of the earlier research, Media Richness Theory is described in more detail and its importance in this research setting leads to the first hypothesis. Psychological theories concerning presentation order of multiple pieces of information are discussed. First impression bias and order effects are described and applied to the research setting, which leads to the development of hypotheses for each. The current study develops these hypotheses from the detailed description and application of these theories applied to the present research setting.

CHAPTER III

METHODOLOGY

Research Design

This study assesses the impact of electronic communications on investors as affected by three influences—media richness, order effects, and first impression bias. The study examined the research question through two independent variables, MEDIUM OF COMMUNICATION and ORDER OF PRESENTATION. The study used three between-participants experimental designs, conducted in nine groups. In some instances, examining the three influences necessitated three separate independent variables. The designs used in the present study employ ORDER OF PRESENTATION as the second independent variable serving both the media richness/order effects design and the media richness/first impression bias design. The dependent variable is LIKELIHOOD TO INVEST. Participants were randomly assigned to treatment groups—either groups that encounter two presentations (stimuli) and others to groups that encounter three presentations (stimuli).

Through the instrument design, the experimenter manipulated the first independent variable MEDIUM OF COMMUNICATION at three levels (VIDEO, AUDIO, or TEXT) to test Hypothesis 1 (Media Richness). Participants in the VIDEO condition will only view the video version of the executive annual-report address. Participants in the AUDIO condition will listen

to a recording containing only the audio portion of the same executive annual-report address. Participants in the TEXT condition will only see the text version of the executive annual-report address. To test Hypothesis 2a, 2b, and 3a, the instrument was designed to manipulate the second independent variable ORDER OF PRESENTATION using one Positive Stimulus in video, audio, or text-only versions (the executive annual-report address) and one text-based Negative Stimulus. To test Hypothesis 3b, the instrument was designed to manipulate the second independent variable ORDER OF PRESENTATION using one Positive Stimulus in video, audio, or text-only versions (the executive annual-report address), one text-based Negative Stimulus, and one other Positive Stimulus, which is always text-based.

Variable Definitions

Independent Variables

The first independent variable is the MEDIUM OF COMMUNICATION, which serves as the variable of interest in testing Hypothesis 1, regarding the influence of media richness in the electronic or traditional (text) media chosen for online executive addresses. The treatment conditions vary between video, audio, and text-only versions of the executive annual-report address. The MEDIUM OF COMMUNICATION for the first experimental condition is the video version of the executive annual-report address (VIDEO). The MEDIUM OF COMMUNCIATION for the second experimental condition is the audio version of the executive annual-report address (AUDIO). The MEDIUM OF COMMUNICATION for the control condition is the text-only version of the executive annual-report address (TEXT). To provide evidence supporting Hypothesis 1, the VIDEO condition should produce greater influence to invest than the AUDIO or TEXT conditions. Likewise, the AUDIO condition should produce

greater influence to invest than the TEXT condition.

The second independent variable is the ORDER OF PRESENTATION (stimulus) and serves as the variable of interest in testing the remaining hypotheses. The ordering of the stimuli presented makes the needed distinctions between Hypotheses 2a, 2b, 3a, and 3b. Examining Hypothesis 3b necessitates presenting three presentations to participants (Experiment 2); data from presenting two presentations suffices to examine Hypotheses 2a, 2b, and 3a.

Dependent Variable

The dependent variable is the LIKELIHOOD TO INVEST. The leadership face of the company now delivers a video message, with its positive financial highlights and plans for future growth. Measuring whether the presence of richer video images is more influential on the investor behavior is one object of this study. Another study objective concerns the impact of the richer media on the investment decision as a part of the myriad of influences available to investors. In the information age, the presence of many information sources suggests exploration of whether the order of information presentations alters the influence-value of the evidence itself.

Participants

Ordinary investors were selected to serve as participants for this study. True to the environment of the research focus, the study was conducted online using an instrument developed in an online survey website. The same website survey company (see Appendix A for a description) also provided access to participant panels with a variety of interests, including those characterized as "ordinary investors". To verify that these self-reported "investors" met our expectations, the first questions of the instrument screened individuals before they were

allowed to participate in the experiment. Specifically, the screening questions inquired if participants had an interest in investing in common stock and if they had experience in certain fields, such as occupations in banking and finance as well as the legal profession. Settings in the instrument excluded individuals who self-reported experience in these fields, as such experience may have specialized knowledge greater than an "ordinary investor" may. Additionally, in an effort to obtain a diverse group of individuals, potential participants were also asked to identify the age group by decade to which they belonged as well as their gender. Settings in the instrument regulated the number of individuals on the bases of age and gender who were permitted to continue as participants. The desired sample included no more than 60% in either gender as well as no more than 20% of an age group between participants in their twenties and those who were age 60 or older.

Description of Instruments and Experimental Tasks

Participants in both experiments received up to three presentations. After receiving each information presentation, participants had a study period to read and consider the information presented. Settings within the online environment delayed the appearance of the "continue" arrow, thereby providing the study period and preventing careless participants from simply clicking through the information. Then, each participant recorded his/her likelihood to invest in the subject company using a six-point Likert-type scale. Consistent with the Step-by-Step (SbS) method described in Chapter 2, data collection occurred after each stimulus and study period ended. After a short period to record an answer has elapsed, participants continued to the next information presentation and another study period began. This process repeated until the designated number of presentations and related response periods were completed. Each session

concluded with the completion of an exit questionnaire (discussed later).

To promote internal validity while approximating the use of a real company video, the researcher created the video clip used in the experimental task. The experimenter studied and transcribed recent company videos to develop a realistic script for a fictional company. A faculty member of the School of Journalism and New Media volunteered his services to appear as the fictional company's CEO (Chief Executive Officer). Volunteers from the School of Journalism and New Media recorded and edited the video clip as well as recording the audio portion as a separate clip.

Whereas the script of the video was derived from an actual company's annual report video, the other two stimuli were drawn from an earlier study examining order effects in a trading market scenario (Tuttle, et al., 1997, p. 95). The "good news" and "bad news" cues in the current study's instrument uses the same phrasing used in the earlier study, except the name of the fictional company created for the present study replaces "the company" references.

The experiment consisted of nine treatment groups, labeled Groups "A" through "I" consecutively. The discussion that follows outlines the treatment combinations in groups of three, with the only difference in each group is the media employed (video, audio, or text-only).

Groups A, B, and C receive a combination of treatments with two stimuli: Positive Stimulus (address conveyed by media and varied between groups) first and Negative Stimulus second. Table 2 outlines the presentations by group:

TABLE 2 ***EXPERIMENTAL DESIGN – GROUPS A, B, and C***			
	Presentations		
	Group A	**Group B**	**Group C**
Periods			
1	Reading instructions and company profile	Reading instructions and company profile	Reading instructions and company profile
2	Positive news (**Video version**) presented	Positive news (**Audio version**) presented	Positive news (**Text version**) presented
3	Negative news (text-based) presented	Negative news (text-based) presented	Negative news (text-based) presented

The participants were expected to follow these procedures during the experiment. First, participants read screens containing study consent requirements and instructions, including the study scenario and the company profile. Next, proceeding in a "Step-by-Step" manner described in the Belief-Revision model, participants experienced (i.e., read, viewed, or listened to) the first presentation and evaluated the information presented during the study period. In the same window, they then recorded their observation, namely their tendency to invest, again using a six-point Likert-type scale, ranging from "Less Likely to Invest" to "More Likely to Invest". Participants proceeded to experience the second presentation and evaluated the content of the information in much the same manner. Finally, participants completed an exit questionnaire, as described below. The instrument for Groups A, B, and C consisted of a 'review, analyze, and respond' activity for each of the two presentations and the activity of completing the exit questionnaire. The exit questionnaire posed demographic questions typically found in similar studies (e.g., education, age, gender). All groups in the experiment completed the same exit questionnaire.

Groups D, E, and F received a combination of treatments with three (instead of only two) stimuli: one Negative Stimulus (text-based) first, one Positive Stimulus (address conveyed by media and varied between groups) second, and another Negative Stimulus (text-based) third.

Table 3 outlines the presentations by group:

TABLE 3
EXPERIMENTAL DESIGN – GROUPS D, E, and F

	Presentations		
	Group D	**Group E**	**Group F**
Periods			
1	Reading instructions and company profile	Reading instructions and company profile	Reading instructions and company profile
2	Negative news (text-based) presented	Negative news (text-based) presented	Negative news (text-based) presented
3	Positive news (**Video version**) presented	Positive news (**Audio version**) presented	Positive news (**Text version**) presented
4	Negative news (text-based) presented	Negative news (text-based) presented	Negative news (text-based) presented

The participants in Groups D, E, and F followed the same procedures as participants in Groups A, B, and C, except Groups D, E, and F encountered one additional negative presentation.

Similar to Groups D, E, and F, Groups G, H, and I represented a combination of treatments with three stimuli: one Negative Stimulus (text-based) first, a Positive Stimulus (text-based) second, and another Positive Stimulus (the address conveyed by media and varied between groups) third. Table 4 outlines the presentations by group:

TABLE 4
EXPERIMENTAL DESIGN – GROUPS G, H, and I

	Presentations		
	Group G	**Group H**	**Group I**
Periods			
1	Reading instructions and company profile	Reading instructions and company profile	Reading instructions and company profile
2	Positive news (text-based) presented	Positive news (text-based) presented	Positive news (text-based) presented
3	Negative news (text-based) presented	Negative news (text-based) presented	Negative news (text-based) presented
4	Positive news (**Video version**) presented	Positive news (**Audio version**) presented	Positive news (**Text version**) presented

The participants in Groups G, H, and I followed the same procedures as participants in Groups

D, E, and F, except Groups G, H, and I encountered one additional positive (instead of a negative) presentation.

CHAPTER IV

RESULTS

Introduction

As mentioned earlier, the current study examined Media Richness Theory in two research settings: first impression bias and order effects. The research instruments were developed to test whether participants responded differently when offered information presentations, specifically executive annual-report addresses using the alterative media formats (video, audio, and text), in these research settings. Study participants were identified and the research instruments were completed online. A discussion of study results based on the data collected by the instrument follows. The discussion includes descriptive statistics of participants, analysis derived from the statistical tests performed, and an analysis summary.

Descriptive Statistics

The experimenter, as previously discussed, obtained participants from a participant panel service provided by the online survey software company employed. The experimenter selected the service's panel of self-reported English-speaking, ordinary investors to draw potential

participants for the present study. Before individuals became participants and started the online experiment, these individuals answered a series of screening questions (discussed in an earlier section). The experimenter selected screening questions and settings aimed at obtaining a diverse sample and avoiding inclusion of individuals with specialized knowledge greater than that of an ordinary investor.

For the hypotheses advanced in the current study, the goal was to obtain 180 responses or twenty (20) responses for each of the nine conditions described in Tables 2, 3, and 4. An unexplained error occurred and only 179 "acceptable" responses were collected. The instrument included comprehension questions that appeared after the demographics questionnaire. In this section, participants viewed the same information presented earlier again and were asked to identify if the information was considered positive, neutral, or negative. Settings in survey software accepted only responses from participants who passed these comprehension questions. Additional analysis of the data collected revealed that one participant held a Juris Doctor degree and other participants recorded responses in the experiment that were inconsistent with their responses to the comprehension questions. Therefore, the experimenter excluded from the analysis responses with inconsistencies as having failed manipulation checks. Also, the experimenter excluded the response from the holder of the Juris Doctor degree, even though the individual may not have practiced law. The resulting sample contained 174 useable responses. The results of the demographic questions appear in Table 5 below:

TABLE 5

Descriptive Statistics

Educational Background	n	Age Groups	n	Gender	n
High School	27	20-29	34	Male	92
Some College	9	30-39	37	Female	82
Associate's Degree	7	40-49	34	**Total**	174
Bachelor's Degree	84	50-59	34		
Master's Degree	33	60+	35		
Doctorate Degree	7	**Total**	174		
Vocational/Other	7				
Total	174				

The demographic questionnaire inquired about participants' gender, age group by decade, and highest level of education achieved. The sample included a majority (84%) of participants with some form of post-secondary education, including 84 participants holding at least a bachelor's degree (48%), 33 participants (19%) who held a master's degree, and 7 participants (4%) holding a doctoral degree. After excluding responses of participants with manipulation check issues, the age-group composition targeted for the sample varied slightly, with the largest group represented (37 participants in the thirties) edging over the twenty-percent goal at 21%. Gender representation met expectations, with the ratio of males to females in the sample achieving a desirable 53% to 47% split. Overall, the descriptive statistics of the sample drawn suggested that data collected from a diverse group of participants was free of obvious forms of bias from gender, age, or educational differences.

The experimenter applied data analysis techniques to test the data collected, with one other consideration in mind. As mentioned in the research design discussion, the study employed "Step-by-Step" approach in capturing data. Under this arrangement, measurements are taken after each presentation is made, in place of taking only one measurement at the end

(which is referred to as "End of Sequence".) The Step-by-Step method permitted the experimenter to test data collected from three groups of participants for both Hypothesis 2A (using the second response measured) and Hypothesis 3B (using the third response measured). The experimenter reorganized the data collected into two datasets. One dataset for Hypotheses 2A and 2B related to First Impression Bias consisted of 117 responses. Another dataset for Hypotheses related to Order Effects consisted of 116 responses. For this reason, the results of statistical tests applied will report calculations based on response counts listed above in place of the total number of acceptable responses (174) described in the descriptive statistics.

Hypotheses Testing

Media Richness Theory served as the major theoretical support in this study. Briefly, the theory states that richer media communicates messages in more than one (natural as well as non-verbal, body) language and more than one channel (visual and verbally, with its nuanced inflections). Furthermore, making investment decisions requires more than a simple objective type (yes-or-no) decision as to whether companies meet financial projections; evaluating investment opportunities also encompasses discernment of subjective qualities expressed in companies' communications. Media Richness Theory suggests that richer media communicates the companies' subjective messages more fully than a leaner media. Hypothesis 1 stated that investors' tendency to invest will be greater when the executive annual report address is made using a richer media presentation. Thus, H1 predicted an "overall" effect of media richness. Based on the results of Hypothesis 2 and Hypothesis 3 testing, as reported below, this prediction is not supported.

Hypotheses H2a and H2b predict the effect of media richness in the first impression bias

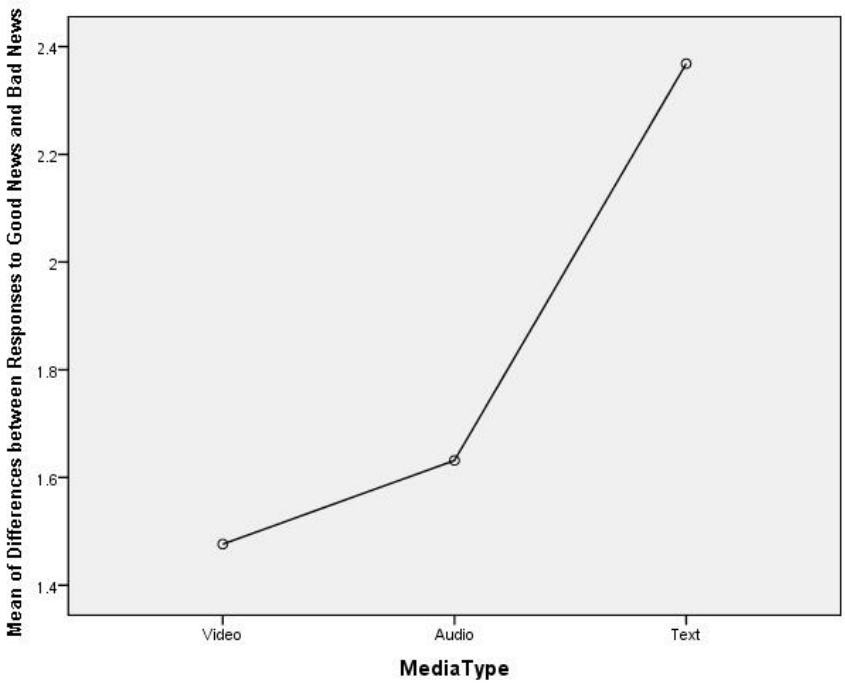
setting. Specifically, H2a predicts that the difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address after negative news is disclosed. To test H2a, a one-way (1 x 3) ANOVA, with media presentation as the independent variable, was performed to compare differences between the second and first measurements recorded in Groups D, E, and F. The results are presented in Table 6:

TABLE 6
Tests of Between-Subjects Effects for Differences
Between First (Negative) and Second (Annual Report Address) Presentations
on Dependent Variable: Likelihood to Invest

Panel A: ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F	*p*
Between Groups:					
Media Presentations	8.869	2	4.434	3.180	.049
Within Groups	78.080	56	1.394		
Total	86.949	58			

Panel B: Plot of the means:
Mean Differences in Response to Executive Annual-Report Address
Following Bad News - By Media Type



As shown in Table 7, the model is significant at the $p < 0.05$ level. The plot of the means shows a pattern that requires post-hoc testing for the differences among the three media presentations in

three possible combinations of comparisons. The results of these tests are presented in Table 7:

TABLE 7

Post-Hoc (Pairwise) Tests of Media Choice for Differences Between First and Second Presentations on Dependent Variable: Likelihood to Invest

(A) Media Type	(B) Media Type	Mean Difference (A - B)	Standard Error	*p (two tailed)*
Video	Audio	-.155	.374	.679
Video	Text	-.892*	.374	.020*
Audio	Text	-.737**	.383	.060**

*. The mean difference is significant at the 0.05 level.

** The mean difference is marginally significant at the 0.10 level.

As shown in Table 8, there are differences in responses between Video and Text (p = 0.02), and between Audio and Text (p = 0.06). These differences, however, are in the direction opposite to the media richness hierarchy presented in Figure 2: Leaner media, the text version of the executive annual-report address in this setting, is more likely to produce a tendency to invest in the company. Therefore, the H2a is not supported.

H2b predicts that the difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual report address *before* negative news is disclosed. To test H2b, a one-way (1 x 3) ANOVA was performed to compare differences between the second and first measurements recorded in Groups A, B, and C. The results are presented in Table 8:

TABLE 8

Tests of Between-Subjects Effects for Differences
Between First (Annual-Report) and Second (Negative News)Presentations
on Dependent Variable: Likelihood to Invest

ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F	*p*
Between Groups: *Media Presentations*	.031	2	.015	.008	.992
Within Groups	102.866	55	1.870		
Total	102.897	57			

Table 8 shows that the model is not significant in this setting. The results of the post hoc tests show no significant differences between any combinations of any two media presentations. Thus, H2b is not supported.

Hypotheses 3a and 3b consider Order Effects. H3a predicts that the difference in investors' tendency to invest will be greater with a richer media presentation of the executive annual-report address *after* negative news following positive news is disclosed. A one-way (1 x 3) ANOVA, with media presentations as the independent variable, was performed to compare the differences between the second and third measurements. The results are presented in Table 9.

TABLE 9

Tests of Between-Subjects Effects for Differences
Between Second (Negative News) and Third (Annual Report) Presentations
on Dependent Variable: Likelihood to Invest

Panel A: ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F	*p*
Between Groups:					
Media Presentations	5.193	2	2.596	1.703	.192
Within Groups	82.316	54	1.524		
Total	87.509	56			

Panel B: Plot of the means:
Mean Differences in Response to Executive Annual-Report Address
Following Initial Good News and Bad News
By Media Type

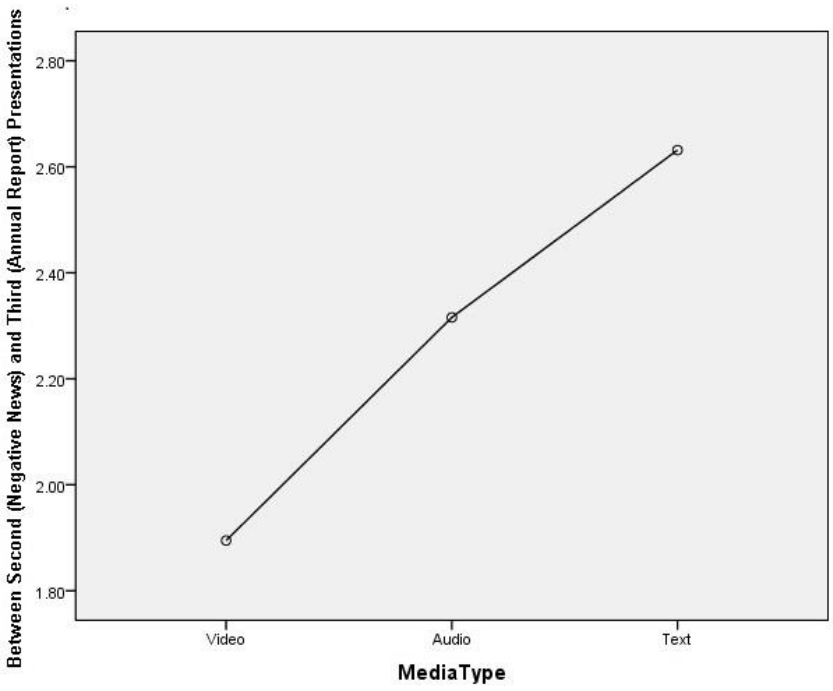


Table 9 shows that the model is not significant. The post hoc testing, as reported in Table 10, however, shows that mean responses between Video and Text are marginally significant (p = 0.071). Again, the difference is in the direction opposite to the prediction. H3a is not supported.

TABLE 10

Post-Hoc (Pairwise) Tests of Media Choice for Differences Between Second (Negative News) and Third (Annual Report) Presentations on Dependent Variable: Likelihood to Invest

(A) Media Type	(B) Media Type	Mean Difference (A-B)	Standard Error	*p*
Video	Audio	-.42105	.40057	.298
Video	Text	-.73684**	.40057	.071**
Audio	Text	-.31579	.40057	.434

** The mean difference is marginally significant at the 0.10 level.

H3b predicted that the difference in investors' tendency to invest would be greater with a richer media presentation of the executive annual-report address following previous negative news *before* new negative news is disclosed. A one-way (1 x 3) ANOVA, with media presentations as the independent variable, was performed to compare the differences between the second and third measurements. Table 11 reports the results of testing.

TABLE 11

Tests of Between-Subjects Effects for Differences Between Second (Annual Report) and Third (Negative News) Presentations on Dependent Variable: Likelihood to Invest

ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F	*p*
Between Groups: *Media Presentations*	2.694	2	1.347	1.237	.298
Within Groups	60.967	56	1.089		
Total	63.661	58			

Table 11 shows that the model is not significant in this setting. The results of the post hoc tests

show no significant differences between any pair of media presentations. Thus, H3b is not supported.

As an additional measure, the final five screens of the online instrument presented a brief multimedia learning preference questionnaire, developed by educational psychologists (Mayer & Massa, 2003). The results of this learning preference questionnaire and the randomly assigned media-type were analyzed. The self-reported learning preference did not significantly correlate to the media-type in neither the first impression bias nor the order effects dataset.

CHAPTER V

CONCLUSIONS

Summary of Results

This study investigates how different media presentations – video, audio, text – of a publicly traded company's executive annual-report address may influence ordinary investors' investing decisions. According to the Media Richness Theory, richer media is generally more influential than leaner media. Presented in this order, video—audio—text, reflects the study's range from richness to leanness. The theory is tested in this study in two investment decision settings: (1) the "first impression" setting and (2) the "recency effect" setting. The results suggest that the theory, in its general form, may not be applicable in the two investment decision settings implemented in this study, or that it may not be applicable in the investment decision setting involving accounting and other information in general.

The study, being exploratory and preliminary as it is, however, provides interesting findings regarding the most effective or influential media presentation, among the three forms of media, in the two investment decision settings. The results show that the executive annual-report address delivered as an on-screen text message is significantly more influential than the same message conveyed by video or audio, and the results are consistent in the two settings. Secondly, this study is the first to examine the effects of video and audio – two media

presentations (communication forms) frequently used financial reporting related events – side by side in the frame of Media Richness Theory, and the results show no difference between the two.

Contributions and Implications

This study is the first to test Media Richness Theory in its general form in the investment decision setting. This study is also the first to examine order effects with media richness. Greater access to high-speed Internet connectivity and the public's increased interest in viewing multimedia has encouraged public companies to post informative video clips to attract attention. Among them, the popularity of companies using online video posting of the executive annual-report address and other communications for the same matter, such as conference call as a way of earnings announcement, motivated this study. To enhance the experimental validity, an online video was designed and produced for this study. The results suggest that, contrary to the general predictions of the Media Richness Theory and prior research (but in different setting, such as Lim et al, 2000), text message appears more effective in influencing investors to purchase the company's stocks. It seems that factors affecting investment decisions are far more sophisticated than the richness of the media. Yet, media form, as far as this study is concerned, is a relevant factor. This exploratory study is the first in this field contributing to initial establishment of this conclusion. It may be speculated that the text form better fits the accounting information involving in investment decision making.

The results also suggest that, again perhaps contrary to the common perception or common beliefs (such as those likely shared by the companies that are now posting the online video), video communication provides no more influencing power than audio. The direction of the possible differences between video and audio (the sample of this study does not have

statistical power to ascertain them) suggests that the video message can potentially be worse than audio. In other words, company executives could simply read the annual-report address in much the same manner as they do in quarter conference calls.

Limitations and Suggestions for Future Research

This study has the common limitations of an experimental study. In addition, there are a number of specific limitations in this study. First, the experiment was conducted online without direct controls by the experimenter. Even though instrument was designed to minimize errors and encourage subject engagement, online participation greatly lacks the quality controls available in a traditional experiment. Second, the use of a fictional company and fictional executive spokesman is necessary to ensure the experimental validity, but the tradeoff is the reduced level of realism–although the video was professionally produced. Third, like all other experimental studies on investing decisions, the information set provided in the study is limited. An effort to address this issued made for this study includes the consultations with finance and investment experts in addition to prior studies in determining what information to be included in the research instrument and two pilot tests.

The results suggest a number of opportunities for further research. First, alternative theories, such as Media Synchronicity and Media Naturalness Theories, are more developed and sophisticated forms of Media Richness Theory need to be explored for its applicability in the investment decision setting, especially given the consistent results that the text message is significantly more effective than the other two. Use of video and new media continues to grow in business and society. As reporting of accounting numbers continues to evolve, new opportunities to consider how media choice may affect decision-making will likely expand.

Conclusions

This study offers a number of conclusions. First, media choice in conveying the executive messages deserves further study. As noted in the literature review, research in impression management suggests company executives conscientiously influence investors through means under their control. After completing calculations of sales and earnings figures, remaining means that managers may choose to ethically sway investors include the communication media chosen and the choice of words employed in conveying their message. Research in the use of multimedia in reporting remains scant.

Second, Elliot et al (2012) report evidence suggesting, in the instance of a financial report restatement, differences in investor trust when manipulating media choice and message attribution (assignment of responsibility between internal and external parties). Using experienced, professional managers as participants, the researchers report investors are more willing to recommend investing when the CEO accepts responsible in a video and less willing when the CEO blames outsider parties in video announcements. In light of restatement-media choice study, does the current study suggest greater skepticism among ordinary investors, even reporting "good news"?

Lastly, the results of this study suggest that a statistically significant difference in media choice does exist in the research settings. As noted by Elliot et al (2012), the transition from paper-based reporting to electronic-based reporting continues. Finding a statistically significant difference, albeit an unexpected one, represents a noteworthy discovery that is suggestive of further study. The further refinement in the instrument and theoretical underpinnings will assist in advancing exploration of this relatively pristine field of study.

Additional Analysis

The experimenter performed additional analysis of investor dataset for Hypotheses 2A (First Impression setting) and 3A (Recency Effects setting) as well as data collected from surrogates, specifically graduate business students. The overall investors' demographic distribution was also reviewed. For Hypothesis 2A, analysis of the investor dataset by age group suggested greater influence of younger participants (ages 20-29) by text as a media compared video or audio largely account for the overall results. Statistical testing suggested only a marginally significantly more influential use of text over video among participants 30 or older in the First Impression setting. For Hypothesis 3A, analysis of younger participants (ages 20-29) suggested no statistical significance. Analysis of participants 30 or older, however, agreed with the overall result; analysis again suggested marginal support for greater influence of text over video. In addition, results of the entire student-surrogate dataset suggested no statistical significance among media choices. Finally, the demographics information of the investor dataset was reviewed. In eight of the nine Groups A-I, highest level of education achieved was a bachelor's degree. Bachelor's degree holders make up more than one-half of the participants in six of those eight groups. Gender distribution was largely even and did not exceed a 60/40 split in most cases; only two exceed a 67/33 split and only one was a 74/26 split. The age distribution varies widely among twenty-year-olds. Among groups in the First Impression research setting (Hypothesis 2B), only one participant appears in Age Group 20-29 in the group receiving the video treatment while those receiving the audio and text treatments were 5 and 6, respectively. Distribution among groups in the second research setting (First Impression Hypothesis 2A and Recency Effects Hypothesis 3B) varied less in number (video, audio and text treatments were 3,

4, and 5, respectively). Among groups in the Recency Effects research setting (Hypothesis 3A), seven participants in Age Group 20-29 appeared in the group receiving the video treatment, while only two appeared in the group receiving the audio treatment and another two appeared in the group receiving the text treatment.

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LIST OF APPENDICES

APPENDIX A

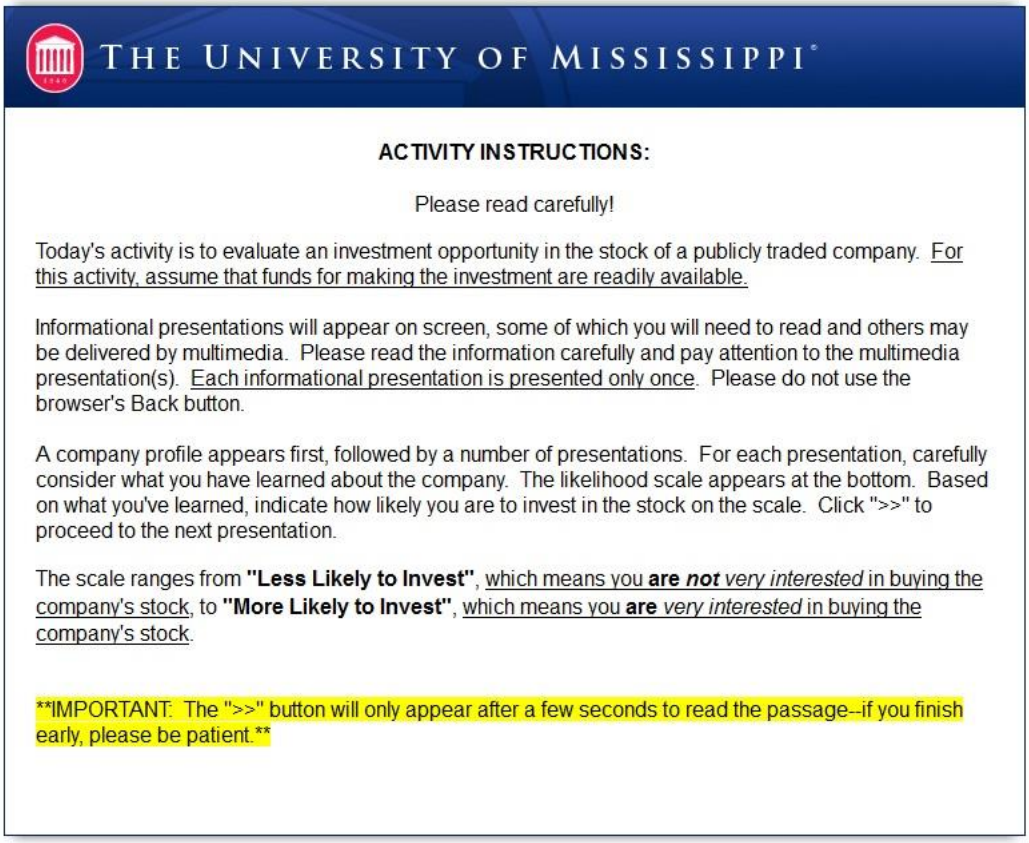
Discussion of Web Survey Company

The University of Mississippi obtained a site license of the online survey tools owned by Qualtrics.com, a leading global supplier of enterprise data collection and analysis (Source: the company website "About Us" page). According to the company, Qualtrics.com is primarily a private marketing research firm whose proprietary survey software gained such popularity with its customers that the online-survey business grew as a natural extension of existing business.

The site license grants access to all Ole Miss faculty and students. Users of Qualtrics.com may deploy existing sample surveys, modify those samples as needed, or create new instruments using Qualtrics' intuitive online interface and free customer support. Qualtrics.com has access to willing participants for its research business. For a separate fee, Quatrics.com will create a job for its production department, actively distribute a client's survey to a panel of its participants, and continue the distribution until the prescribed number of responses are obtained. Customers specify a participant profile to obtain responses from appropriate subjects. Questions at the beginning of the instrument inquire about participants' professional experience, interest in investing in the common stock of U.S. companies, gender, and age group. These filtering questions aided in obtaining a diverse sample (in terms of both gender and age groups) of "ordinary" (i.e., those self-reporting employment outside of financial services industry) who are interested in investing in U.S. common stock. As evidence of authenticity, Qualtrics.com does not report names, but does record the IP addresses of its participants.

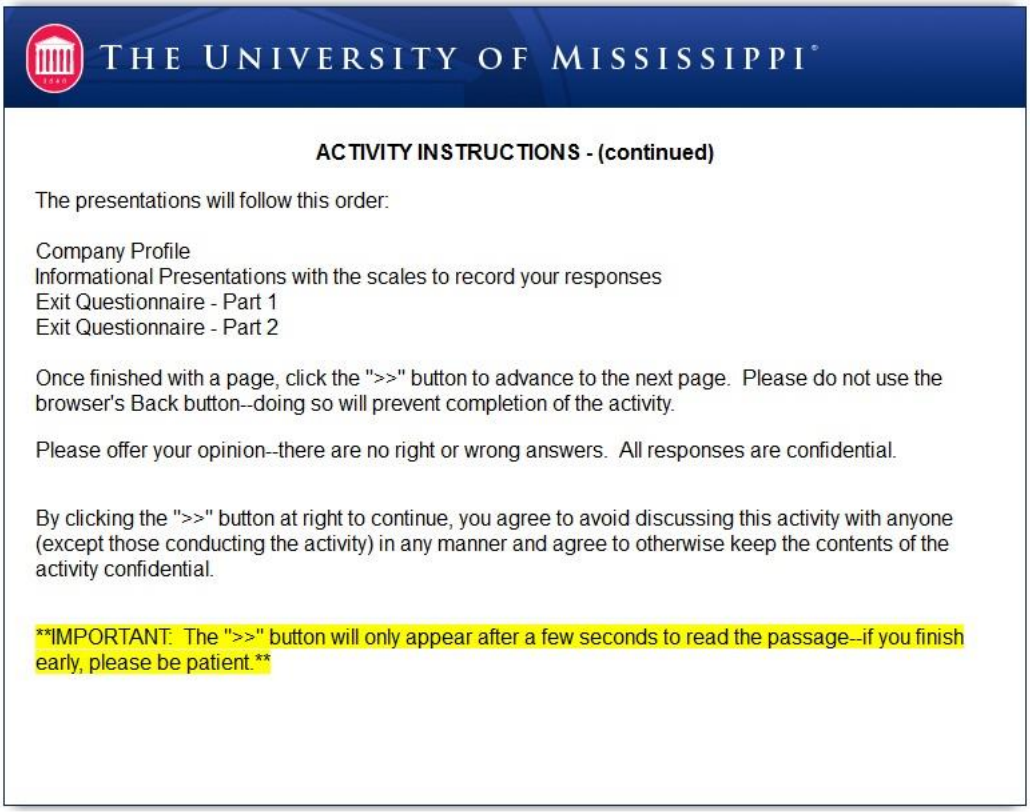
APPENDIX B

Instructions – Screen 1



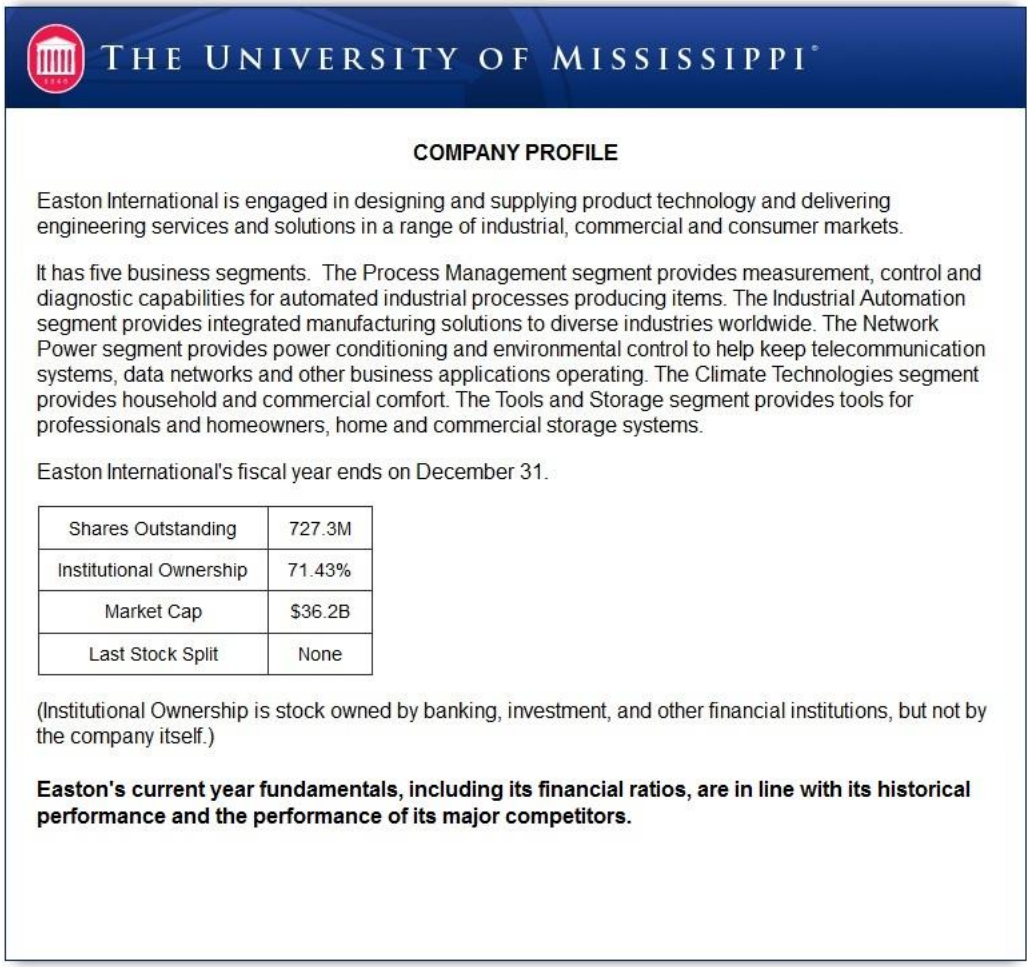
APPENDIX C

Instructions – Screen 2



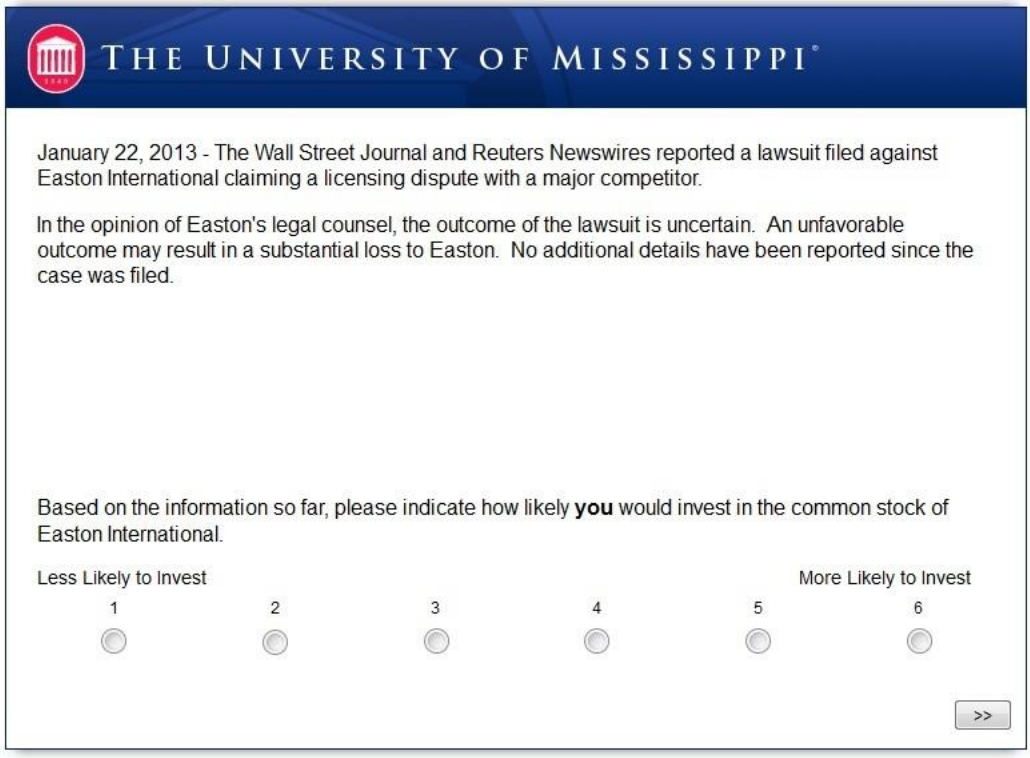
APPENDIX D

Company Profile and Advisor's Comment



APPENDIX E

Negative News Stimuli with Response Scale

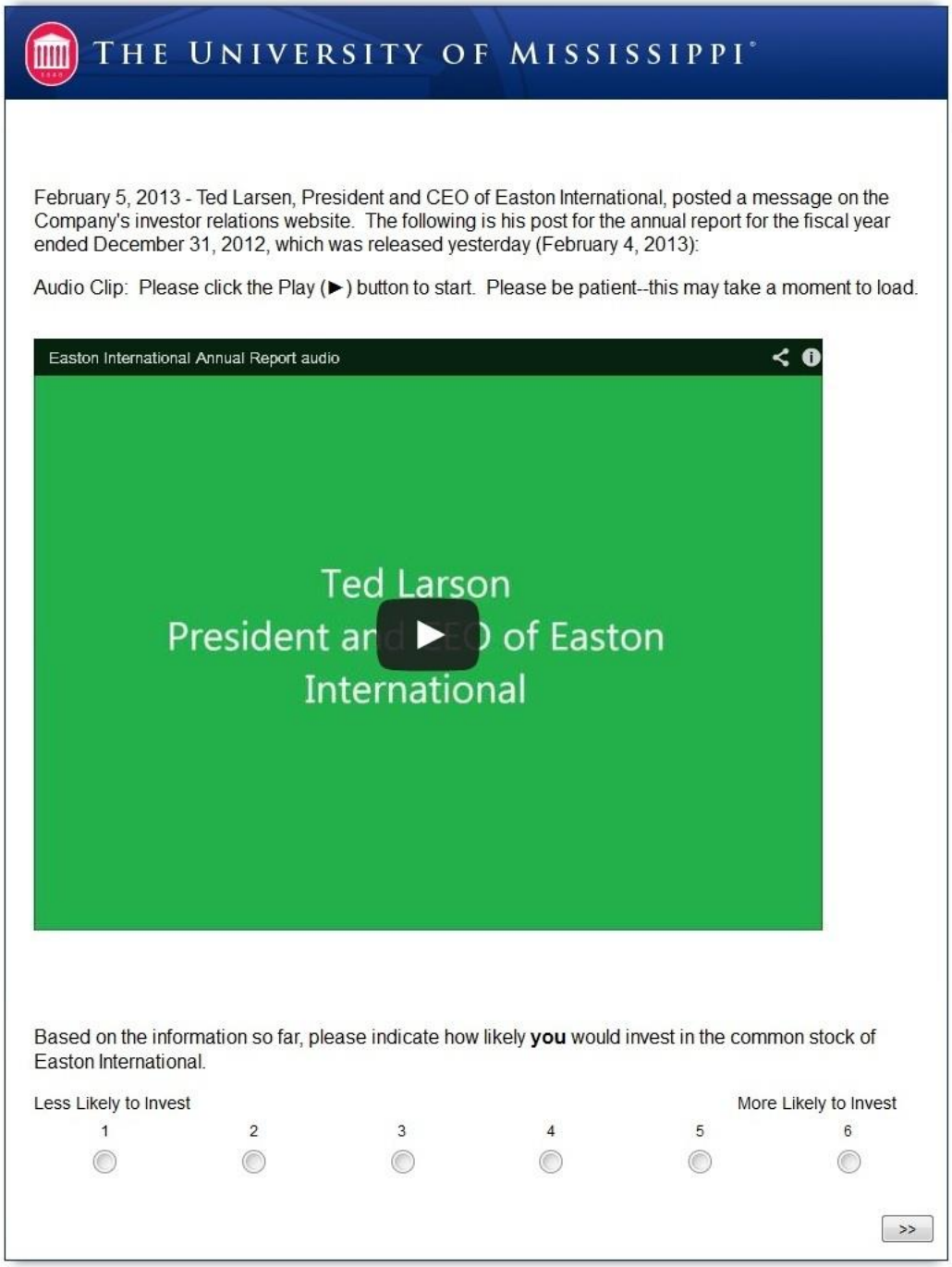


APPENDIX F

Executive annual-report address – Video Version with Response Scale

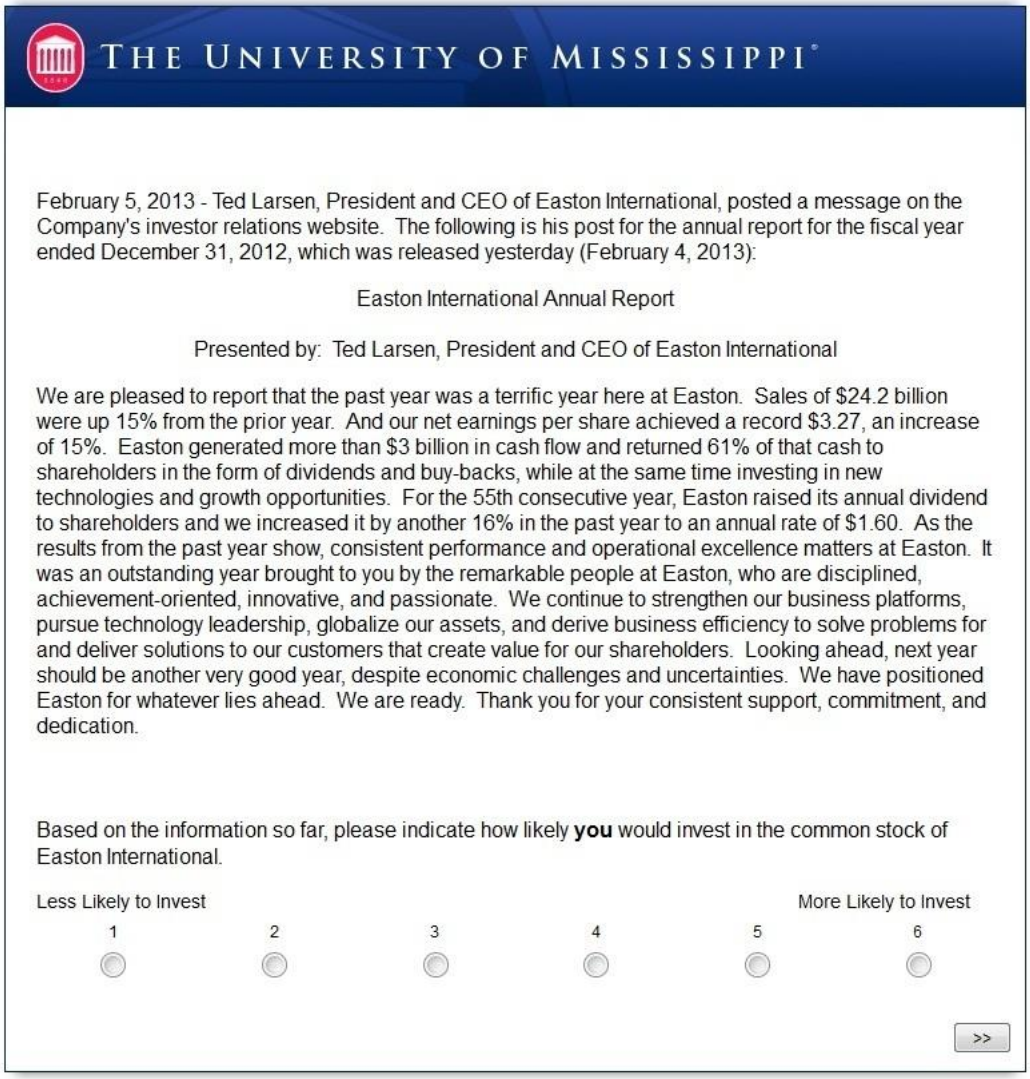
APPENDIX G

Online Annual-report address – Audio Version with Response Scale



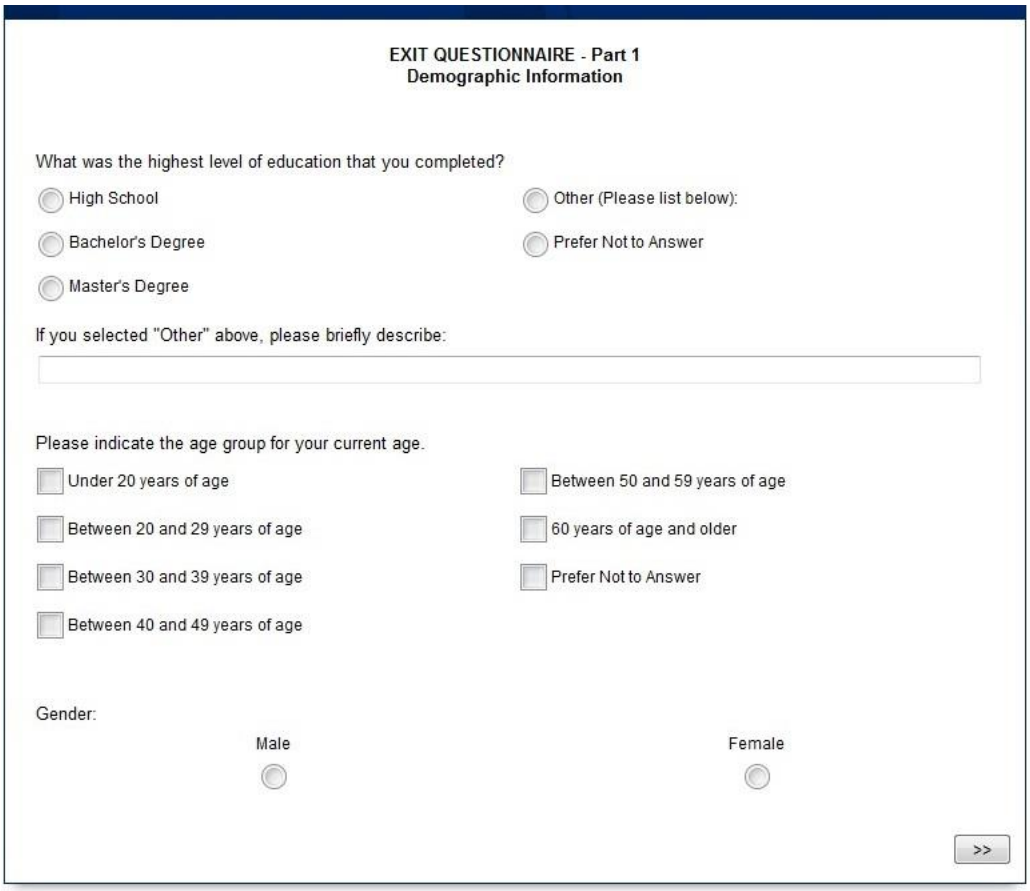
APPENDIX H

Executive annual-report address – Text Version with Response Scale



APPENDIX I

Demographic Questionnaire



EXIT QUESTIONNAIRE - Part 1
Demographic Information

What was the highest level of education that you completed?

- High School
- Bachelor's Degree
- Master's Degree
- Other (Please list below):
- Prefer Not to Answer

If you selected "Other" above, please briefly describe:

Please indicate the age group for your current age.

- Under 20 years of age
- Between 20 and 29 years of age
- Between 30 and 39 years of age
- Between 40 and 49 years of age
- Between 50 and 59 years of age
- 60 years of age and older
- Prefer Not to Answer

Gender:

Male

Female

>>

VITA

JACK L. WINSTEAD, CPA

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EDUCATION

Ph.D. in Accountancy, School of Accountancy, The University of Mississippi, Oxford, MS. Research interests: Use of multimedia in reporting, use of information systems in managerial and audit settings, accounting education. Dissertation: *Does Media Choice in Online Annual-Report Addresses Influence Investment Decisions?* Chair: Dr. Karl Wang.

Master of Accountancy, The University of Tennessee at Martin, Martin, TN. December 1998.

Bachelor of Science in Business Administration, The University of Tennessee at Martin, Martin, TN. Major Field: Accounting. December 1991. Graduated *Cum Laude*.

TEACHING EXPERIENCE

The University of Mississippi

Instructor: Systems (ACCY 310)—Summer 2013

Guest Lecturer (XBRL): Systems (ACCY 310)—Spring 2011

Instructor: Introduction to Accounting Principles II (ACCY 202)—Spring 2013, Spring 2012, Fall 2011, Spring 2011, Fall 2010, Summer 2010, Summer 2009, and Fall 2008

Instructor: Introduction to Accounting Principles I (ACCY 201)—Spring 2010 and Fall 2009

Guest Lecturer: Cost Control (ACCY 309)—Fall 2011

The University of Tennessee at Martin

Instructor: Managerial Accounting Information for Decision Making (ACCT 202)—Fall 2006, Spring 2006, and Fall 2005

PROFESSIONAL EXPERIENCE

1996-2008 Chief Financial Officer/Controller – Jiffy Steamer Company, LLC (Manufacturer)
(First two years) Hired to coordinate and supply expertise in transition from mini-computer/terminal configuration to a local-area network system (post-hardware installation). Created various accounting policies and procedures needed to take advantage of the reporting capabilities of newly acquired ERP software.

(Ongoing) Maintained accounting systems, including resolution of software-related system issues--both within accounting software and with other systems (including issues with external company website). Prepared internal financial statements and other management reports. Performed other daily duties, including monitored accounts receivable, decided credit worthiness of customers, and assisted and advised ownership/management as needed.

1993-1996 Legislative Auditor II – Tennessee Division of County Audit (External Auditing)
Performed financial audits of governmental funds and fee offices. Assisted in preparing annual financial reports (CAFRs).

1991-1993 Internal Auditor/Payroll Manager – E.W. James & Sons Supermarkets, Inc.
Performed store audits assessing compliance with standard operating procedures. Prepared payroll and weekly payroll/sales reports for a regional grocery chain.

PROFESSIONAL CERTIFICATION

Certified Public Accountant, State of Tennessee (Current Status: Inactive)

FELLOWSHIPS AND ASSISTANTSHIPS

Doctoral Dissertation Fellowship, Fall 2012, Graduate School, The University of Mississippi

Summer Research Assistantship, Summer 2012, Graduate School, The University of Mississippi

Graduate Teaching Assistantship, Fall 2008—Summer 2013, School of Accountancy, The University of Mississippi

PRESENTATIONS

Winstead, Jack L. (2011, May). *What Systems Proficiencies Should Accountants Possess Upon Entering the Job Market? Differences in Perceptions between Practitioners and Academics.* Paper presented at Ole Miss School of Accountancy Doctoral Colloquium in Oxford, MS.

Winstead, Jack L. (2011, April). *What Systems Proficiencies Should Accountants Possess Upon Entering the Job Market? Differences in Perceptions between Practitioners and Academics*. Paper presented at the 2011 American Accounting Association Southeast Regional Meeting, held in Destin, FL. (Abstract published in the proceedings of the meeting.)

Winstead, Jack L. (2009, April). *Trumpet Records: Its History From the Accounting Papers*. Paper presented at the 2009 American Accounting Association Southeast Regional Meeting, held in Oxford, MS. (Abstract published in the proceedings of the meeting.)

WORKING PAPERS

Winstead, Jack L. *Does Media Choice in Online Annual-Report Addresses Influence Investment Decisions?* (Dissertation)

Winstead, Jack L. and R. Mitchell Wenger. *Practitioners Speak Up: What Should Accountants Know About Systems When Entering the Job Market?* (Formerly *What Systems Proficiencies Should Accountants Possess Upon Entering the Job Market? Differences in Perceptions between Practitioners and Academics*) Accepted to the 15th Annual AIS Educators Conference in Laramie, WY.

Winstead, Jack L. *Using an ERP Implementation to Address Operational and Internal Control Issues: An Instructional Case*

ADDITIONAL RESEARCH EXPERIENCE

Editorial Manager, ***Journal of Business and Economic Perspectives***, Editor, Dr. Saul Z. Barr. August 1990 – August 1991

PROFESSIONAL DEVELOPMENT

Service

Reviewer, ***Accounting Historians' Journal*** (2011)

Session Moderator, AAA 2010 Southeast Regional Meeting, Mobile, Alabama

Session Moderator, AAA 2009 Southeast Regional Meeting, University, Mississippi

Other Conference Activities

2011 AAA Southeast Regional Meeting, Destin, Florida

2011 AAA Information Systems Section Mid-Year Meeting and AIS New Scholars Consortium

2010 AAA Auditing Section Mid-Year Meeting and Auditing Doctoral Consortium

2010 AAA Information Systems Section Mid-Year Meeting and AIS New Scholars Consortium

Continuing Education

Mid-South Doctoral Consortium, hosted by The University of Memphis, October 19, 2012

Accountancy Weekend, hosted by The University of Mississippi, April 29, 2011

Mid-South Doctoral Consortium, hosted by The University of Mississippi, November 12, 2010

Accountancy Weekend, hosted by The University of Mississippi, April 23, 2010

Mid-South Research Consortium, hosted by Mississippi State University, February 6, 2009

Accountancy Weekend, hosted by The University of Mississippi, April 24, 2009

Affiliations

American Accounting Association

Institute of Management Accountants

ISACA—formerly Information Systems Audit and Control Association

Institute of Internal Auditors