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Full text available at: http://dx.doi.org/10.1561/1400000024
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Foundations and Trends® in Accounting, 2012, Volume 7, 4 issues. ISSN paper version 1554-0642, ISSN online version 1554-0650. Also available as a combined paper and online subscription.
Speech Analysis in Financial Markets

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Abstract

The ways in which managers communicate information to capital market participants go far beyond financial statements and accounting numbers. Managers communicate economically relevant information both verbally, in documents distributed and available to investors (such as annual reports and SEC filings), and nonverbally, through meetings and conference calls with analysts and investors. We review research on the information contained in nonverbal communication, particularly vocal communication that occurs in organizational contexts. We also explore possible ways in which accounting researchers can draw useful insights from investigating managerial vocal communication. The advances in computerized voice analysis coupled with the increasing availability of audio files containing managerial communication presents promising research opportunities.
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Full text available at: [http://dx.doi.org/10.1561/1400000024](http://dx.doi.org/10.1561/1400000024)
Introduction

“Accounting is the language of business”

The American Accounting Association defines accounting as “the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information.” The role that accounting, more broadly, and financial information, in particular, plays in capital markets has been the subject of considerable research over the last four decades.\(^1\) However, much of this research focuses on the role of numbers reported in the financial statements, either in the main body or the footnotes. The ways in which managers communicate information to capital market participants go far beyond financial statement numbers. In particular, managers communicate economically relevant information both verbally in documents distributed and available to investors (such as annual reports and SEC filings) and nonverbally through meetings and conference calls with analysts and investors. Over the past five years, advances in computational linguistic software and

\(^1\) For a review of empirical research on relation between financial reporting and capital markets, we refer the reader to a detailed survey article by Kothari (2001).
availability of large repositories of corporate text have facilitated an explosion of studies examining the information contained in verbal communication from management (see Li 2010 for a discussion). In this monograph, we review research on the information contained in nonverbal communication that occur in organizational contexts, and explore ways in which accounting researchers can draw useful insights from investigating managerial nonverbal communication.

Nonverbal communication refers to the communication process that is distinct from verbal usage (that is, the use of language and word choices). It includes facial expressions, gestures, postures, body movements, vocal tone, and other physical ways in which people express themselves (Burgoon et al. 2010). Nonverbal communication is ubiquitous in our daily life and is central to our well-being. The relevance of nonverbal communication has been studied as early as the nineteenth century by Charles Darwin among others. Charles Darwin, in one of his treatises, The Expression of Emotions in Man and Animals, says:

“The movements of expression in the face and body, whatever their origin may have been, are in themselves of much importance for our welfare. They serve as the first means of communication between the mother and her infant; she smiles approval, and thus encourages her child on the right path, or frowns disapproval. We readily perceive sympathy in others by their expression; our sufferings are thus mitigated and our pleasures increased; and mutual good feeling is thus strengthened. The movements of expression give vividness and energy to our spoken words. They reveal the thoughts and intentions of others more truly than do words, which may be falsified.”

Darwin (1892)

Nonverbal communication is no less important in a corporate context, as organizations are represented by a collection of individuals who interact and communicate to achieve a common collective pursuit. Research in social psychology suggests that nonverbal behavior of
individuals within organizations differs based on status and power and this differential behavior is crucial for relationship building and sustaining organizational hierarchy (Remland, 2006). Thus, communication by individuals both within and outside the organization can have important ramifications for corporate success.

Considerable anecdotal evidence exists that suggest the importance of nonverbal communication between corporate management and the firm’s outside stakeholders. Eighty percent of analysts in a recent survey by Deloitte preferred to meet face to face with management to assess their ability to lead the firm, with one analyst stating explicitly “to me, it’s very important to listen to them” (Deloitte, 2012). Managers no doubt are aware of this. CFOs note that they get calls from analysts who are trying to “get a read on the quarter” based on their “tone of voice” (O’Sullivan, 2006) and hedge funds employ ex-CIA agents trained in reading nonverbal cues to assess public statements of management (Javers, 2010). Given the interest in nonverbal cues, best practices in earnings conference calls suggest that managers should rehearse, record, and listen to their calls in advance to better control the message that is ultimately communicated through their speech (Cossette, 2009).

Relatedly, recent academic research has found evidence broadly consistent with the notion that nonverbal communication is important. In a laboratory setting, Elliott et al. (2012) show that when managers provide online videos to explain firm performance rather than merely reporting performance in a press release, the nonverbal communication influences both the investors’ investment levels and their perceptions of trust in management. Using archival data, Kimbrough and Louis (2011) show stronger stock market reactions to merger announcements that are accompanied by a conference call relative to announcements made by a press release alone, suggesting perhaps that analysts and investors perceive the signal to be more credible when managers discuss mergers through direct interactions with investors. The precise component of nonverbal communication that influences investor perceptions is not well understood, however.

Challenges to understanding the influence of nonverbal communication in a corporate context include the difficulty in isolating the
multiple channels through which nonverbal communication can occur. For example, in an online video of a CEO, facial gestures, vocal expressions, and body movements can each convey nonverbal information in a single interaction. Further, tools for the systematic measurement in real-life settings are far less advanced for voice and kinesics than tools for analyzing text. Nevertheless, attempting to gain a better understanding of nonverbal aspects of communication is essential particularly because they may contain important and relevant clues for decision making by various interested parties, particularly the investor community. For example, nonverbal exchanges may help reveal important clues about a manager’s inherent characteristics. In addition, they may also help evaluate managerial emotions that can contain clues about a firm’s financial future as well as managerial truth-telling behavior. Research on the extent to which managerial communication can supplement information contained in other disclosures provided by management would be quite useful for investor decision making.

This monograph focuses on nonverbal communication from voice, with a particular emphasis on discussing voice analysis from the standpoint of a researcher interested in conducting empirical archival assessments. In Section 2 we discuss the research approaches to speech analysis and the importance of identifying speech corpus. In Section 3 we review the existing literature on voice analysis in accounting and finance that focuses primarily on management communication. Section 4 details the challenges facing the literature and offers some directions for future research. Section 5 offers concluding remarks.
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