

It's All in the Voice

Study: Leaders might unveil their profit potential—by their tone of voice

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By Pamela Bat

A **recent study** found that CEOs and chief financial officers' vocal intonations on earnings calls can help predict the firm's profitability.

Researchers said given the growing number of audio and video files of CEOs, such analysis will become an important tool for investors, analysts and auditors.

"If emotions stem from events occurring within the firm, and emotions can be measured systematically from voice, then CEO speech can give clues as to what is going on inside the firm," said co-author **William J. Mayew**, an associate professor of accounting at Duke University's Fuqua School of Business.

Mayew co-authored the report, **The Power of Voice: Managerial Affective States and Future Firm Performance** with Fuqua accounting professor **Mohan Venkatachalam**. The study was to be published in the **American Finance Association's Journal of Finance**.

The pair used commercial software to analyze voices during earnings calls for nearly 700 major U.S. corporations in 2007. The audio files were obtained from Thomson Reuters StreetEvents, an online archive of corporate transcripts, briefings, filings and reports.

Positive vs. Negative

They monitored subtle cues indicating positive or negative emotional states and then pored through financial records to see if earnings, stock prices or analysts' recommendations corresponded.

When leaders were excited or in a positive emotional state, the stock went up, earnings rose unexpectedly and firms put out positive news releases in the following six months. A negative emotional state was viewed as bad news—and the more negative it was, the more returns dipped, according to the study.

In the Fuqua study, stock market response was greatest when company leaders underwent pointed questioning, and positive and negative effects on stock prices were highest when there was analyst and investor scrutiny—possibly because emotions are easier to observe when being questioned, Mayew said.

Analysts were slower to respond to negative signals. Even after interrogations, they did not revise their stock recommendations to reflect negative vocal cues. Mayew said it is consistent with other research: If analysts hear something negative, they want to confirm it before making a formal recommendation.

"The market picks up much faster on the positive side than on the negative side," Mayew said. "We are trying to understand that negative side a little better. If it's true that negative news is going to come out, what are those triggering events that make that happen?"

While there are plenty of positive and negative emotions they could have focused on, Mayew and Venkatachalam chose excitement (positive) and those arising from cognitive dissonance or discomfort created when there's a conflict between what someone believes or knows and new information (negative). For an executive, the latter might happen when putting a positive spin on an upcoming inspection where problems might be discovered.

Mayew said ongoing research has also found a "very strong association" between negative emotions and financial misreporting, based on financial restatements.

Detecting Tone

Mayew studies corporate voluntary disclosure, with a focus on conference calls, so the topic intrigued him. Regulation Fair Disclosure, adopted by the Securities and Exchange Commission in 2000, made publicly broadcast conference calls commonplace.

"Popular press back then said it would be a great way for individual investors to assess the 'tone' of what management was saying," Mayew said. "In real-life conversations, however, people say things that give out information. But to us it wasn't clear whether that 'tone' would matter for corporate executives who also give out hard numbers and well-vetted facts."

Fuqua researchers used digital vocal emotion analysis software provided by **Nemesysco Ltd.**, based in Natania, Israel, that detects changes in speech. Amir Liberman, Nemesysco's CEO, said his company's Layered Voice Analysis (LVA) technology monitors the speakers' speech wave patterns, and identifies any deviation.

"Some of these pattern deviations are created due to different 'reactions' that occur in the speakers' brain while they speak and recall additional information that triggers a stressful thought, positive excitement or conflict," Liberman said.

Liberman said LVA is gaining in popularity and is used by security organizations and corporations alike, "assisting the assessment of insurance claims for fast-track processing and speeding up formal (and informal) investigation procedures and assuring quality of service in call centers."

Unveiling Embarrassment

While other academics study specific vocal characteristics that mark emotions, Mayew said technology is evolving to the point where "such an analysis can move out of the laboratory and into the real world."

Joseph C. Nunes, an associate professor of marketing at the Marshall School of Business at the University of Southern California in Los Angeles and Ph.D. candidate Young Jeon Han used the same software to measure embarrassment in a marketing context in "Please Read the Signal but Don't Mention It: How Acknowledging Identity Signals Leads to Embarrassment."

They first confirmed the software's ability to pick up embarrassment by giving undergraduates condoms or instant oatmeal and asking them to describe the product. LVA software detected a significant increase in embarrassment for those who described condoms, but not oatmeal.

Researchers then used the software in a field study that found consumers who displayed more conspicuously branded goods became far more embarrassed when complimented during an interview.

"You can really get at underlying emotions that might influence judgment and choice without relying on self-reports or suffering from social demand effects—what people think they should say about how they feel," Nunes said of the technology.

Ethical Dilemmas

Liberman said while LVA can provide "a very in-depth and unbiased view into the human thinking processes and reactions in a variety of life settings," its understanding "is not trivial and must always be taken in the proper context. LVA technology," Liberman said, "is not a 'lie detection' technology—what LVA technology analyzes is not the actual spoken word, but the internal reaction of the speaker to what he just said."

Nunes said he sees no ethical issues using the software to monitor someone's voice as he did in a research setting. His study required the University's Institutional Review Board consent to ensure that its use was ethical. Participants were briefed about the research and told they were being recorded and that their voices would be analyzed. But he said he's not sure what ethical issues might arise in other domains.

"One can imagine a variety of scenarios in which analyzing people's emotional state might be problematic, particularly if the people doing so do not obtain their consent," Nunes said. "What are the ethical boundaries and in what cases would you need consent? In academia, we tend to be overly cautious. In business or government, I am not sure what guidelines would apply."

Mayew said he sees no ethical ramifications to the Fuqua study because there is "nothing unethical about analyzing a public disclosure. Firms don't have to have audio broadcast—they could, in theory, have analysts text their questions, and managers could text back the answer in a public forum."

He added that companies like Boston-based **Business Intelligence Advisors** hires ex-CIA agents to listen to and watch—if video is available—earnings conference calls for important information clues.

Persuasive Coaching?

Mayew said there is a possibility that business leaders could be coached or taught to sound different on earnings calls and with "beat" technology.

"What we don't know is the proportion of emotion in voice that is on purpose vs. the proportion that will leak out no matter what," he added.

But should they? That presents a conundrum, Mayew said. For instance, Apple Inc., in a highly competitive market, likes to keep new products under wraps until they are ready to make a big public announcement.

"You'd hate to have the corporate executive sound too excited, so there might be some times when it would be a good idea to mask emotions," Mayew said.

But the flip side is that "you might have something bad you want to hide or fix—and that might be a bad reason for having coaching or voice training, so it could go both ways," Mayew added.

Diane DiResta, CEO of DiResta Communications Inc. in New York and a former speech pathologist and executive speech coach who works often with C-level executives, said that voice analysis will become an important tool because it can identify "micro-expressions" scientifically in the voice. But, she added, there's a danger if people "start to use this lie detector test."

For example, a CEO might be in a low affective state for another reason—a personal problem at home, for instance—while giving the company's earnings report.

"People who use this sort of software and analysis need to be careful with the interpretation," DiResta said. "I don't think machines or software trump people. I think they are adjunct to people."

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