

Does the Decrease in Vocabulary Specificity During Accounting Fraud Help to Detect Accounting Fraud?

Keisuke Miyago, Natsuki Sato, Ayuko Komura and Hirohisa Hirai

Department of Industrial Engineering and Management

Kanagawa University

Kanagawa, Japan

r202370170oe@jindai.jp, r202170129yo@jindai.jp, komura-a@kanagawa-u.ac.jp,

hirai@kanagawa-u.ac.jp

Abstract

Accounting fraud is the intentional material misstatement of financial statements or disclosures (in notes to financial statements or SEC filings), or the commission of an illegal act that has a direct material effect on financial statements or financial disclosures. Accounting fraud reduces public confidence in capital markets and impedes economic development. Studies are underway to develop a model for detecting accounting fraud using the descriptions in Form 10-K and other reports. This is because researchers believe that by identifying linguistic patterns that mask accounting fraud, a fraud-detection model with high detection accuracy can be built. This study examines the linguistic characteristics that occur when accounting fraud is committed within the text of the MD&A section of an annual securities report, constructs a fraud-detection model, and evaluates its effectiveness. Based on interpersonal deception theory, we hypothesize that during accounting fraud periods, managers do not refer to their company's business conditions in detail and use more general language, thus reducing word specificity. The results of measuring vocabulary specificity using Inverse Document Frequency (IDF), which calculates word scarcity, demonstrated that IDF was lower during the accounting fraud period than during the non-fraudulent accounting period. This indicated a significant decrease in vocabulary specificity. Based on these results, we constructed a model for accounting fraud detection using IDF-weighted features and found that the detection accuracy improved.

Keywords

accounting fraud, Bog of Words, linguistic features, interpersonal deception theory, classification algorithm

Biographies

Keisuke Miyago is a graduate student of the Department of Industrial Engineering and Management at Kanagawa University, Japan.

Natsuki Sato is a graduate student of the Department of Industrial Engineering and Management at Kanagawa University, Japan.

Ayuko Komura is an assistant professor at the Department of Industrial Engineering and Management at Kanagawa University, Japan. Her research topics include operating profit stability and management controls. She earned her PhD in Business Administration at Meiji University. She received a fellowship from the Japan Society for the Promotion of Science between 2017 and 2019.

Hirohisa Hirai is a professor at the Department of Industrial Engineering and Management at Kanagawa University, Japan. He earned his PhD in Engineering at Osaka University. His research is an empirical study of management

accounting, firm analysis, and applied statistics, particularly firm valuations. He has received awards from several academic societies in accounting and management.