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Financial Sleuthing using Benford's Law to Analyze Quarterly Data with Various Industry Profiles

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Quarterly revenue and earnings per share data from 2001 and 2002 were obtained from CNN's Money website, Highlight Reports (Highlight Reports n.d.). The data were analyzed using Benford's digit placement probabilities and Drake and Nigrini's (2000) mean absolute deviation to ascertain the degree of conformance. Results show general agreement with Benford's probabilities and support, "close conformity" or "acceptable conformity" for data in both years. Nevertheless, when the digit probabilities are analyzed individually across the three data profiles investigated it is shown that firms tend to "manage" small losses into small gains and/or report smaller negative earnings per share (EPS). Particularly interesting are results associated with the financial and technology sectors. These sectors were selected for special analysis because they were moving in opposite directions financially during the periods examined. By comparing and contrasting the data with the Benford probabilities within each sector, it was determined that management was engaging in data enhancement techniques, to either increase revenues or earnings per share. Specifically, both sectors revealed revenue increases, while the financial sector appears to have "managed" EPS upward and the technology sector "managed" EPS downward. In those instances where the digit placement percentages were not in conformance with Benford, explanations and reasons for the deviations are presented.

Keywords: Benford, digital analysis, earnings management, fraud, mean absolute deviation

INTRODUCTION

Motivation for performing this research was to examine data sets where earnings management might be expected to occur. Prior research in earnings management has shown how and why managers manipulate data; studies using Benford's law have shown the effectiveness of this tool in identifying biased data. Our study extends past research by applying Benford's law and Drake and Nigrini's Mean Absolute Deviation classification model to three distinct profiles of quarterly data for two years – 2001 and 2002 – a time period of significant market adjustments. Revenue and earnings per share data were obtained from the