Auditing:
A Journal of Practice
& Theory
Vol. 16, No. 2
Fall 1997

The Use of Benford's Law as an Aid in Analytical Procedures

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SUMMARY

This study introduces and describes digital and number tests that could be used by auditors as analytical procedures in the planning stages of the audit. The mathematical basis of the tests is Benford's Law, a property of tabulated numbers that provides the expected frequencies of the digits in tabulated data. Several empirical studies suggest that the digit patterns of authentic numbers should conform to the expected frequencies of Benford's Law. Thus, auditors could test the authenticity of lists of numbers by comparing the actual and expected digital frequencies. The results could assist auditors in determining the nature and extent of other audit procedures. Several tests are presented that examine data for conformity of the digital frequencies to Benford's Law, and a successful illustration at an oil company is described. Other case studies from practice illustrating the detection of suspect items are briefly presented.

Key Words: Analytical procedures, Benford's Law.

Data Availability: The data used in the study are confidential current corporate data, and therefore are not available to readers. Contact the first author for software that can be used to duplicate the tests on other data sets.

SAS No. 56 requires auditors to use analytical procedures in planning the nature, timing and extent of other auditing procedures (AICPA 1988). This study introduces and illustrates how Digital Analysis could be used as an analytical procedure.[1] Digital Analysis focuses on digit and number patterns, and is based on a mathematical phenomenon known as Benford's Law (Benford 1938). Recent declines in the cost of the computing power of desktop and laptop computers have contributed to the feasibility of using Digital Analysis in analytical procedures.

Analytical procedures are defined by SAS No. 56 to be evaluations of financial information made by a study of plausible relationships among both financial and nonfinancial data (AICPA 1988). Analytical procedures are required in planning the examination, and in the overall review of the financial statements during the completion phase of the audit. Akresh et al. (1988) believe that SAS No. 56 places a

[1] Digital Analysis is a new label given in the study to the analysis of digit and number patterns with the objective of detecting abnormal recurrences of digits, digit combinations and specific numbers. Usually the term Digital Analysis would imply that the digit and number frequencies were compared to Benford's Law, but recent applications in practice have included comparing the digit patterns to other expected digit distributions, such as the historical norms for that type of data set.

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We thank Dick Chesley, David Griffiths, Jim Searing, Mark Zimbelman and participants at the University of Kansas accounting workshop for their valuable comments on earlier versions of this paper. We also than Jim Adams and Hope Anderson for allowing the publication of corporate data. An earlier version of this paper was presented at the AAA Auditing Section Midyear Meeting in January 1997. The editors, Bill Felix and Ted Mock, and the reviewers made important contributions in improving the quality of the manuscript.