

## Conducting a Pro-Active Fraud Audit: A Case Study

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For years, it has been argued that one of the most effective ways to detect fraud is to use the “red-flag” approach which involves identifying ‘red flags’ or indicators of fraud and following up on them to determine whether they represent fraud or are the result of other factors. In recent years, with advances in technology, using red flags has become formalized into a fraud detection method called the *fraud hypothesis testing approach*. This approach requires the formulation and testing of many null hypotheses, each stating that there is no fraud of a particular type. This approach requires the identification of frauds that may exist in particular situations, the identification of red flags that each of those particular frauds would create, and the design of customized queries to search for those specific red flags or combinations of red flags to test each of the specific fraud hypotheses. The purpose of this study is to provide empirical evidence about the plausibility of using the fraud hypothesis approach to detect fraud. Using actual operating data for a large oil refinery where fraud had not yet been discovered, the fraud hypothesis approach was used to determine if fraud existed. The approach involved the five-step process of (1) studying the operations of the refinery to identify the kinds of frauds that could occur, (2) identifying the red flags possible frauds would generate, (3) creating customized queries and data warehouses for each red flag, (4) using commercial and customized firm- and fraud-specific data mining programs to search for and analyze red flags, and (5) following up on red flags observed to determine whether they were indicative of fraud or were being caused by other, non-fraud factors. The study resulted in the identification of a number of red flags that appeared to represent fraudulent activities. While the follow up work on some red flags is still taking place and while some Type I and Type II errors were found, several actual frauds were discovered using the fraud hypothesis approach.

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### PURPOSE OF THIS STUDY

The purpose of this study is to provide empirical evidence regarding the plausibility of using fraud hypothesis testing as a method of detecting fraud. This study differs from previous fraud research in that it attempts to formalize the use of red flags to pro-actively detect fraud that has not yet been discovered. All previous research has examined frauds that were already discovered. As a result, even in those studies that used control groups to determine