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Analyzing Proactive Fraud Detection Software Tools and the Push for Quicker Solutions

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Analyzing Proactive Fraud Detection Software Tools and the Push for Quicker Solutions

Economic Crime Forensics – Corporate Fraud

Kerri Aiken
La Salle University
May 6, 2016
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This paper focuses on proactive fraud detection software tools and how these tools can help detect and prevent possible fraudulent schemes. In addition to relying on routine audits, companies are designing proactive methods that involve the inclusion of software tools to detect and deter instances of fraud and abuse. This paper discusses examples of companies using ACL and SAS software programs and how the software tools have positively changed their auditing systems. Novelis Inc., an aluminum and recycling company, implemented ACL into their internal audit software system. Competitive Health Analytics (Division of Humana) implemented SAS in order to improve their overall health analytics and databases. The use of these tools enabled them to monitor the safety of their products and detect red flags related to healthcare fraud. Though fraud is rampant through our systems, this paper will investigate how these different software programs have helped detect fraud in schemes such as asset misappropriation, bribery and corruption, and financial statement fraud. This paper posits that companies can quickly uncover potential fraud schemes without exhausting a lot of significant amounts of time and money by implementing proactive fraud detection software tools. The paper will also address software tools used for managing the risk of fraud along with specific benefits incurred through use of these tools.
Defining Fraud

Before discussing the importance of proactive fraud detection software tools within companies, we must examine the topic of fraud and understand the impact of major categories of fraud. In 2014, the Association of Certified Fraud Examiners surveyed cases between 2012 and 2013 and concluded that companies around the world lost an estimated $3.5 trillion or five percent of their annual revenue to occupational fraud (Sullivan & Manning, 2014). According to the book Forensic Accounting and Fraud Examination, fraud is an “intentional deception, whether by omission or co-mission, that causes its victim to suffer an economic loss and/or the perpetrator to realize a gain,” (Kranacher, Riley, Jr., & Wells, 2010). Fraud, also known as theft through deceptive means, can arise in many different forms. The most common categories of fraud include asset misappropriation, bribery and corruption, and financial statement fraud.

Asset misappropriation is the intentional theft or mishandling of assets that belong to a corporation. The Association of Certified Fraud Examiners determined that asset misappropriation schemes were involved in more than 91% of all internal fraud schemes (Coenen, 2008). The monetary loss from these schemes within a company averages over $145,000. There are various asset misappropriation schemes that financially and psychologically impact companies including fraudulent disbursements, larceny of inventory and other assets, theft of cash receipts, and skimming revenues.

Bribery and corruption within the corporate world involves the intentional and unlawful abuse of business transactions in order to attain personal benefits from business deals (Kranacher, Riley, Jr., & Wells, 2010). Bribery and corruption schemes usually impact international corporate transactions between businesses because of the lack of monitoring
programs and enforcement from officials. There are several schemes classified under bribery and corruption including illegal gratuities, purchasing schemes, and economic extortion.

Financial statement fraud entails the intentional falsification of company information, whether financial or nonfinancial, that impacts the fiscal decisions of individuals. Individuals are misled by the misstatements on reports, which influences their overall decisions. Financial statement fraud does not occur as often in the workplace as asset misappropriation and bribery and corruption schemes, however, the monetary loss is much greater in financial statement fraud cases (Nilson, 2010). Some examples of financial statement fraud schemes include fictitious revenues, incorrect disclosures, and understating and overstating liabilities and expenses.

Figure 1 illustrates the three major categories of occupational fraud mentioned by the Association of Certified Fraud Examiners. The figure represents a “fraud tree” that categorizes and groups various types of fraud schemes under asset misappropriation, bribery and corruption, and financial statement fraud. As seen in Figure 1 and documented in numerous reports, asset misappropriation schemes are one of the largest and most common threats to small or large companies.
The three major categories of fraud mentioned in the paper, asset misappropriation, bribery and corruption, and financial statement fraud, have been linked to monetary losses totaling billions of dollars throughout companies for many years. Corporations have relied on
routine audits and internal control management systems to detect and deter instances of fraud and abuse. By implementing software tools and designing proactive methods, along with regular audits to combat different types of fraud, companies can quickly uncover potential fraud schemes. Accompanied with audit data analytics and traditional audit procedures, proactive fraud detection software tools can transform auditing techniques and systems.

**Audit Data Analytics**

Along with traditional audit procedures, Audit Data Analytics has aided companies in implementing proactive fraud detection software tools and finding quicker solutions to detect and prevent possible fraudulent schemes without draining too much time and money. According to the AICPA, Audit Data Analytics is the “science and art of discovering and analyzing patterns, identifying anomalies, and extracting other useful information in data underlying or related to the subject matter of an audit through analysis, modeling, and visualization for the purpose of planning or performing the audit,” (Byrnes, Criste, Stewart, & Vasarhelyi, 2014). ADA and proactive fraud detection software tools have transformed typical auditing systems and routine audits by recognizing patterns and detecting red flags that may have been overlooked by employees and auditors. ADA also identifies risk management through analysis of the organization and assessing and monitoring resources of development. Through effective technological audit data procedures and proactive fraud detection software tools, companies can manage the risk of fraud and benefit from designing specific methods for their programs.

Figure 2 represents Audit Data Analytics and two groups of methods conducted during the planning and performing of the audit for a company. These methods, analytical procedures
and traditional file interrogation, are heavily relied upon by the auditor and are frequently used to understand the organization and draw conclusions from the audit.

*Figure 2*

![Diagram showing ADA, Analytical Procedures, and Traditional file interrogation]

Source: [www.aicpa.org/FRC](http://www.aicpa.org/FRC)

For many years, corporations have always trusted auditors and accountants to examine their financial statements and conclude their findings in a report. According to the *Journal of Accountancy*, with the addition of proactive fraud detection software tools and ADA, financial statement auditors can improve audits by:

- Testing complete sets of data instead of parts and samples
- Helping assess risks through patterns and detecting anomalies
- Comparing business data of other companies with the organization, resulting in further investigation
• Looking through general ledger systems and analyzing audit evidence (Murphy & Tysiac, 2015)

Traditional Audit Procedure – Is That Enough?

While companies have relied on routine audit procedures to evaluate and assess the gathered audit evidence, traditional audits are not independently sufficient in this modern day. As this paper will discuss later, implementing proactive fraud detection software tools into company systems will further help detect and deter occurrences of potential fraud and abuse. Because technology and perpetrators of fraud are evolving every day, the need for additional proactive methods is in high demand.

A traditional audit begins when there is a prearrangement between an organization and the auditor. According to the AICPA, the audit “typically proceeds with a risk assessment and formulation of an audit plan delineating the scope and objectives of the audit; auditors collect and analyze audit evidence and form opinions pertaining to internal controls as well as reliability of the information provided by management,” (Byrnes, Al-Awadhi, Gullvist, Brown-Liburd, Teeter, Warren, Jr., & Vasarhelyi, 2012). At the end of an audit, the auditor summarizes his/her findings in a report and presents their opinion to the company.

In addition to routine audits, automated fraud detection software tools and programs are being incorporated into company systems to help pinpoint anomalies and unusual patterns as well as revealing potential red flags. Corporations demand timely security data intelligence analysis and results of potential risks and fraud. By administering fraud detection software tools to company programs and audit procedures, organizations benefit from quick solutions and innovations.
Proactive Fraud Detection Software Tools

As technology advances and perpetrators of fraud evolve over time, corporations are concerned about potential occupational fraud and abuse within their structure. In addition to routine audits and traditional methods, organizations are implementing fraud detection software tools into their systems. There are many different types of data analytic software tools on the market that assess security intelligence, fraud, and risk for an organization. According to the book *Forensic Accounting and Fraud Examination*, “computer software using a targeted risk assessment can be utilized to scan the database information for several different types of information, resulting in output that highlights red flags,” (Kranacher, Riley, Jr., & Wells, 2010).

Examples of different functions that are performed by software tools include:

- Sorting data
- Recording selection and extraction
- Joining files
- Multi-file management
- Correlation evaluation
- Examining relationships between numbers and categories
- Compliance with company policies
- Duplicate searches
- Vertical ratio analysis
- Horizontal ratio analysis
- Date functions
- Recalculations
- Transactions and balances exceeding expectations (Kranacher, Riley, Jr., & Wells, 2010).
In order for proactive fraud detection software tools and programs to be effective within corporations, organizations and customers of software programs should analyze and design specific processes to ensure successful monitoring and detection. Before committing to a data extraction and analytic software program, companies should assess their business and manage their overall objectives and goals for implementation. Some examples of objectives and goals include specific data that should be monitored, the amount of money they are willing to spend to implement the fraud detection software tool, tools and techniques used for evaluating possible fraud, benefits from implementing the fraud detection software tool, amount of time willing to commit to application, and developing reports and conclusions from analysis of the programs.

Figure 3 illustrates an overall examination process that entails six steps for proper fraud analysis within companies. Companies do not have to necessarily follow the six steps in the order presented, but it is highly recommended that they should always assess the steps according to changes in business and data sets. The six steps are direction, collection, evaluation, collation and description, analysis, and dissemination (Spann, 2014).
Although there are many different types of proactive fraud detection software tools out on the market, this paper will focus on ACL and SAS software programs and how these software tools have positively changed auditing systems within organizations. ACL’s software program is one of the leading tools in the industry and delivers audit data analytics to customers who want to oversee activities within their companies. The purpose of implementing ACL into digital systems allows corporations to quickly uncover potential fraudulent schemes without exhausting a lot of money and time. Some functions of ACL software programs include audit data analytics,
monitoring and auditing of the company, investigating and detecting fraudulent activity, ensuring compliance within company policies, and setting up secure data access for all users (Kranacher, Riley, Jr., & Wells, 2010). If companies decide to purchase ACL programs for their systems, they must evaluate the data analysis technology for audits. The five areas that should be considered are data accessibility, audit-specific abilities, automation and logging of users, appropriate enterprise-class placement, and the organization implementing the program (Spreadsheets...Analysis). Data gathered through ACL software programs can be presented in Excel worksheets making it easier for individuals to read and comprehend. ACL Services Ltd. offers tutorial programs, webinars, and other online resources for individuals and companies that want to reduce the risk of fraud along with benefitting from the implementation of fraud detection software tools. According to an article printed in 2010 from Computer Business Week editors, “the new complimentary anti-fraud materials from ACL include: 3 Fraud Tests in 10 Minutes, a tutorial on how to use data analytics to identify suspicious transactions, vendors and RFP bids; 7 Steps to Tackle Fraud Using Data Analytics, an eBook on how to implement a successful fraud management program, and an article written by ACL Director of Technology Application Peter Millar,” (Computer Business Week).

When it comes to financing ACL software programs and tutorials for individuals, the cost of services can vary from company to company. The price of the product for each individual company depends on factors such as already using or owning project management software, the number of users that need to access the software, and the type of industry the company is located within, among other components. It is hard to give an exact price quote for companies because every organization has different needs and factors. Before committing to ACL software program services, corporations should discuss specific components they want implemented within their
organizations with ACL specialists. This will enable them to garner an estimate and benefit from designing proactive methods and reducing the risk of fraud. Another proactive fraud detection software tool leading the audit data analytics market are SAS software programs.

**SAS**

SAS software programs are also leading the innovative way for companies who want to manage the risk of fraud along with detecting and deterring instances of occupational fraud and abuse. Just recently, SAS celebrated their 40th year of record revenue of over $3 billion, which has stemmed from helping customers strengthen their audit data analytics and overall software programs. By implementing SAS software programs within company systems, individuals can sort through huge amounts of gathered records and envision high-performance data linked to advanced analysis.

Similar to ACL software programs, individuals can comprehend data analytics through Excel spreadsheets and manage information. Big data and management control has brought large challenges to corporations, but SAS analytics can assist in directing and sorting through overwhelming information and detecting and preventing instances of fraud and abuse. In regards to auditing and fraud detection through SAS software programs, companies can evaluate any discrepancies or duplicate data that is analyzed and processed through SAS. According to the State Auditor’s Office located in Texas, “SAS includes procedures for least squares regression, discriminant analysis, logistic regression, and cluster analysis – which could be very useful in analytical explorations concerning fraud,” (Winn). These procedures and different methods related to fraud detection within systems can assist audit management in detecting and preventing potential fraudulent schemes.
Figure 4 represents how SAS software tools have offered services for data analytics and has generated revenue from the different industries. The largest software revenue from 2015 was from the banking industry; this accounted for 26% of SAS’s revenue for that year.

Figure 4

<table>
<thead>
<tr>
<th>Industry</th>
<th>Revenue Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking</td>
<td>26%</td>
</tr>
<tr>
<td>Government</td>
<td>15%</td>
</tr>
<tr>
<td>Services</td>
<td>11%</td>
</tr>
<tr>
<td>Insurance</td>
<td>10%</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>7%</td>
</tr>
<tr>
<td>Communications</td>
<td>7%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>6%</td>
</tr>
<tr>
<td>Health Care</td>
<td>5%</td>
</tr>
<tr>
<td>Retail</td>
<td>5%</td>
</tr>
<tr>
<td>Energy and Utilities</td>
<td>3%</td>
</tr>
<tr>
<td>Capital Markets</td>
<td>3%</td>
</tr>
<tr>
<td>Education</td>
<td>2%</td>
</tr>
</tbody>
</table>


By examining Figure 4 above, SAS software programs are provided to many different industries such as retail, education, manufacturing, and health care, etc. The need for data analytics has expanded throughout those industries because of the rise of potential fraudulent schemes within organizations. According to James Ruotolo, principal for insurance fraud solutions at SAS, “insurers are realizing how technology lets them analyze large sets of data and use predictive modeling; SAS recommends a hybrid approach that combines multiple
technologies including business rules, anomaly detection, supervised predictive modeling and social-network analysis,” (Bacheldor, 2014). SAS frameworks can analyze data and manage the risk of fraud through all company departments.

In comparison to ACL software programs, the cost of services can vary from company to company. The price estimates depend on various factors that should be discussed by companies and SAS experts. In the end, customers are paying for industry-leading data analytics and software that can save the company time and possible loss of money from fraudulent schemes. Before instances of fraud and abuse escalate within a corporation, individuals can implement anti-fraud SAS programs to monitor compliance and data access.

While facts and data point to the efficiency of ACL and SAS software programs, there are two real-life case studies that support the information presented in the paper. In addition to routine audits and monitoring programs, Novelis Inc. implemented ACL, and Competitive Health Analytics (Division of Humana) implemented SAS software tools into their databases. The positive change to their overall auditing systems has assisted the organizations in preventing and deterring potential occurrences of fraud and abuse.

Case Study 1

Novelis Inc.

In 2005, Alcan Inc. expanded its operations into four regions: Asia, South America, Europe, and North America and created the company Novelis Inc. to manage tasks in those specific regions. Novelis Inc. is one of the global leaders in rolled aluminum sheets and products and delivers better solutions for sustainability. The company has quickly grown since 2005, signing contracts with Ford and other companies along the way. According to Dave Bigsby, the
Senior Manager of Internal Audit at Novelis, the old audit management system took six months to implement and train employees. When the company needed reports and data from other regions, the old system was too slow and would time individuals out of the program. The spreadsheets that documented issues throughout the regions were too long and no one in the company had time to analyze the information. The old system made the audit group inefficient because people were looking at their own reports that they individually documented during work, instead of relying on the spreadsheets.

ACL software tools provided to Novelis, Inc. quickly changed the audit management system around and immediately had an impact. The company implemented ACL software programs within two and a half weeks and trained employees for one day. Current employees and future employees received an ACL manual that answered questions about tutorials and how the software program would benefit Novelis. According to Novelis, Inc., “the corporation saved 71% per year in costs by switching to ACL analytics,” (ACL, 2015).

Novelis Inc. truly believed ACL software tools turned around their audit management system because they had a better understanding of their internal controls. Executive management was impressed with the ACL systems because of the solid platform and the visualization of big data. Groups within Novelis Inc. turned to the internal audit staff and wondered why their data and information was documented so efficiently throughout the company. Bigsby has stated that other groups within the organization were looking to implement ACL software tools into their processes.

There were numerous benefits of implementing ACL software tools into Novelis audit management systems. Because the company relied on global collaboration, ACL had increased the speed of the audit process immensely and the different regions communicated through ACL.
software tools. Everyone throughout the company, whether they were in different regions or not, connected and collaborated with other individuals within seconds. The cost of implementing ACL software tools has quickly paid off for Novelis Inc. They can easily manage the risk of fraud and fraudulent schemes by analyzing documents and data throughout their systems. This has deterred instances of fraud within the company.

Case Study 2

Competitive Health Analytics (Division of Humana)

When Humana wanted to expand research and analytic services to additional health care industries, the company developed Competitive Health Analytics. Since Humana already implemented SAS Analytics into their business systems years ago, without any hesitation they implemented SAS software tools within CHA. CHA “performs comparative effectiveness studies, drug safety analysis and subgroup analysis to find drugs that work particularly well in certain types of patients,” (Get…analytics). Employees within CHA work with Humana and search through large databases that store patient information and products of the company. Without continuous monitoring and auditing of the databases, CHA would easily fall victim to fraudulent schemes.

By using SAS software tools, CHA has grown their business more than 50% within one year. According to SAS, CHA has had various successes using the software tools:

- “Studying prescription and medical use for patients later diagnosed with opiate abuse. CHA and another pharmaceutical company wanted to see if there were any trends or patterns of medical utilization.
• Identifying the price point for prescription co-pays within a benefit plan, so that the member/patient could still afford to fill the prescription. CHA and another pharmaceutical company concluded that the higher co-pay actually cost the plan because people were not filling their prescriptions. This led to patients repeatedly visiting the hospital.

• Analyzing the value of specific drugs within a class designed to treat a particular illness,” (Get…analytics).

CHA implemented SAS software tools within company systems because of the successful implementation of data analytics in Humana. CHA improved their overall health analytics and databases, while also monitoring high-performance data and secure information. Any signs of healthcare fraud or different fraudulent schemes would have raised red flags within SAS analytics programs. The software tools implemented in the systems safely managed patient information and medical history without any causes for concern. Medical information and patient data is one of the most sought after by perpetrators of healthcare fraud. The adoption of SAS analytics within CHA has positively changed the company’s systems.

**Suggestions for Companies**

While companies decide whether or not they believe data analytic software tools can help alleviate potential fraud losses, the ACL mentions seven steps that organizations should follow:
1) “Create a profile that includes a list of many different areas in which fraud may occur and the types of fraud that are possible in this area. This could really be sort of a top-down approach in terms of where fraud is likely to occur in your business.

2) Quantify the risk of fraud and the overall exposure to the organization. Deal with the high priorities by monitoring them on an ongoing basis.

3) Do some ad-hoc testing to look for indicators of fraud in these areas and based on this analysis, establish a good risk-assessment and determine where you’re going to pay closer attention. Investigate patterns and indicators that emerge.

4) Communicate the monitoring activity throughout the organization so employees and vendors are aware of the fact that you’re paying very close attention to what’s going on.

5) Provide management with immediate notification when things are going wrong. Better to raise any issues right away than explain why they occurred later.

6) Fix any broken controls immediately. Segregation of duties is important. If I can initiate a transaction, approve the transaction, and also be the receiver of the goods from the transaction there’s a problem.

7) Expand the scope and repeat,” (Detecting…Analytics, 2013).

**Conclusion**

As fraud continues to grow within company systems and structures, organizations must implement proactive fraud detection software tools. In today’s world, companies should not rely
soley on routine audits, but include audit data analytic tools such as ACL and SAS software programs. Corporations can design proactive fraud methods and incorporate software tools that will assist in detecting and deterring possible instances of fraud and abuse. The case studies mentioned in this paper can attest to the successful implementation of ACL and SAS software programs. Organizations can quickly uncover possible fraud schemes without draining a lot of significant money and time when they switch to data analysis systems. If companies disregard the idea of proactive fraud measures, they will certainly fall victim to occupational fraud and abuse.

**Recommendation**

While companies should still complete routine audits, they should also implement proactive fraud detection software programs and tools in order to oversee company practices and procedures. Proactive fraud detection software programs and tools can help companies analyze big data and alert them when there are discrepancies with patterns and duplicate data. By talking to an ACL or SAS specialist about specific needs, companies can proactively determine methods that will assist them in deterring and preventing potential fraud schemes.
Suggestions for Continuation of Research

Proactive fraud detection software programs and tools can assist companies in preventing and deterring potential threats of fraud within companies and throughout companies’ systems. In order to garner a better understanding of pricing for ACL and SAS services, there should be additional research documenting the different components that relate to a monthly or annual price point for an individual company. Because a specific company was not specified during the initial stages of research, analysts at ACL and SAS could not give an accurate general price for their services. Many factors and needs depend on each individual company, which is why the analysts could not discuss a broad price point. The need for more exact information regarding pricing for ACL or SAS services and programs must be a top priority during the continuation of additional research. Economically, the pricing of fraud detection software tools and programs is a key component for any company looking to enhance the prevention and detection of fraudulent activity.

Another suggestion for continued research would be to compare multiple fraud detection software programs and tools, and determine a pros and cons list for each individual program and tool. Some examples of additional programs and tools are Arbutus Audit Analytics, ActiveData, Fraud and Compliance by Argo, etc. By researching and documenting the various types of fraud detection software tools, this will assist consumers and companies in understanding what components will fit their needs in deterring and preventing fraud.
Lessons Learned

While researching proactive fraud detection software tools and the push for quicker solutions in the different industries where fraud has been evident, the amount of tools and programs offered to companies that want to detect, deter, and prevent potential instances of fraud are alarming. There are numerous programs out on the market that will assist companies and consumers in combating fraud, but all programs offer services that range in price. In order for a company to address fraud detection software tools and looking to purchase services from a specific program, management must decide on specific components they need in order to monitor systems and prevent potential fraudulent schemes. By designing proactive fraud detection methods, companies can further observe and evaluate their current audit structure and make necessary changes.
References


Appendix

Abbreviations

AICPA – American Institute of Certified Public Accountants

ADA – Audit Data Analytics

ACL – Audit Control/Command Language

SAS – Statistical Analysis System

ACFE – Association of Certified Fraud Examiners

CHA – Competitive Health Analytics