A Case Study in Fraud Prevention: Charlene Corley

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I) INTRODUCTION:

This paper discusses fraud and both preventive and detection methodologies as they might apply to a historical case study (United States of America vs. Charlene Corley[i]). Criminal fraud cases have emerged with greater frequency over time leading to improved detection methodologies such as Embedded Audit Modules and Benford's Law, and preventive methods including budgetary controls. These methodologies can help to ensure that companies maintain compliance with policies developed by regulatory agencies.

Fraud and errors in accounting dates back to the 13th century where Europe became a monetary economy and began to develop bookkeeping. Luca Pacioli had developed the Double-entry Bookkeeping system in the late 14th century which led to more in-depth and accurate transaction recording. Since it was developed, today we are continuously improving this system, but as we improve it, recurring problems appear through a diverse volume of cases.[ii]

According to Jim Powell, author of America's First Great Champion for Liberty and Peace, historical fraudulent schemes date back to the time of Philip Ford in the 1700's; At the time Philip Ford embezzled large sums from the profitable estates owned by William Penn by means of getting Penn to sign a deed that would then transfer Pennsylvania to Mr. Ford. This scheme resembles patterns that still happen today and have led to an increase in accounting fraud throughout the years. [iii]

Darlene and Charlene Corley were twin sisters from Lexington, South Carolina. Charlene worked at the South Carolina budget and control board while Darlene was a school teacher. In 1991 they both decided to open up their own small hardware store C&D Distributers. C&D Distributors LLC, was a registered government contractor with the Department of Defense which supplied hardware components, plumbing fixtures, electronic equipment and various other items

to various military installations worldwide. In 1993 they began distributing hardware to the military; AKA the Department of Defense.

In July of 2000, there was an accounting error in the shipping costs which had been paid. They received five thousand dollars and at first weren't sure from where it came from but as soon as they figured it out that it was due to a loophole in the Department of Defense's automated payment system, they leveraged the situation. The Department of Defense had been using a system that had been automatically accepting shipping expenditures, it is known as the Defense Finance & Accounting Service (DFAS). It is the payment service center of the Department of Defense based in Columbus, Ohio and controls invoices submitted by government contractors for shipping costs paid electronically by DFAS. The sisters found out about this system and were able to charge any amount they wanted for shipping and the Department of Defense would pay for it. They were submitting bids and inflated shipping costs for those items. At this time the military was at war, supplying our soldiers as fast as they could, approving all costs that were needed; as in this case for bolts and screws. Shipping charges of tens of thousands of dollars eventually increased into hundreds of thousands of dollars. In all, they submitted almost seventy-two million dollars in fraudulent shipping costs and a little over twenty million were paid. With their lucrative scheme they bought several beach houses, matching Mercedes cars, and took lavish vacations. They even opened a Nestle Toll House franchise called Dough and Cookie LLC.

The scheme was uncovered when the sisters sent two invoices for the same contract. The system "kicked it out" which lead to further review and discovery that the charge shipping charge for two lock washers that were nineteen cents each was nearly a million dollars. At that time, when both Charlene and Darlene Corley realized the Department of Defense found out

about their scheme, the sisters tried to mend the situation by paying back four and a half million dollars, sending the message that they will repay their debts. Investigators came to see Darlene, where she asked them to let her gather her thoughts and papers and to return the following day. However, Darlene chose instead to commit suicide. Charlene, left to defend herself, stated that her sister had been in charge of the entire operation. However, it was noted that "Charlene Corley was the president of the company, she was the managing partner and she was the designated contact for the Department of Defense." Hence this case concluded that Charlene was actually in charge. On August 16th of 2007, Charlene Corley pleaded guilty for wire fraud and money laundering. It was looked at as an anti-American crime, taking money away from our soldiers and our country. It ended with Charlene being sentenced to six and a half years in prison.

"Fighting fraud has become an escalating war. Even those firms with the most advanced tools and processes to detect and prevent fraud feel like they are falling behind. The technical advancement and globalization of fraud will continue to provide new challenges to a firm's ability to manage fraud."[iv] It is clear that numerous firms have faced instances of accounting fraud since the 13th century and this highlights the need for Embedded Audit Modules and Benford's Law as representative detection tools, and budgetary controls to prevent fraud before-the-fact. In summary, the main question is: what particular methods might have been implemented to prevent fraud like the one in the Charlene Corley Case?

II)   METHOD: EMBEDDED AUDIT MODULES

Fraud has become prevalent in society.[v] One methodology that is used in this escalating war involves Embedded Audit Modules, which is a topic in embedded controls inserted into a system. These types of controls can be helpful to organizations by reducing costs, making

response times quicker, avoiding unnecessary business exposures and making multiple tasks more efficient. [vi] "By continuously monitoring core business processes, via embedded controls and mathematical modeling, you may locate material errors in real-time/run-time, strengthen the control environment, and manage down business risks. "[vii] These points of embedded controls are impressive elements that can be used for fraud prevention today with the application of their quick response time.

"Embedded controls, designed to prevent and detect fraud can be automatically reported in real time leveraging a predetermined work flow for investigation and remediation."[viii] Having embedded controls may have impacted on the criminal act involved in the Charlene Corley case. Even though embedded controls were used to detect and prevent fraud in the Corley Case they were developed only enough in this case to prevent the situation from escalating. In this case, shipping costs were paid without any indication that fraudulent actions were in the making. In the case hearing, the judge had said "Miss Corley was stealing from the Department of Defense during a nine year time period, and the majority of that time period this country was at war… And, as you know, the Department of Defense's mission is to protect this country, to preserve our national security. We had soldiers in Iraq and Afghanistan risking their lives for the Department of Defense and to preserve our freedom in this country and she was stealing $21 million from that agency." This clearly implies that embedded controls require improvements, especially given this time when everyone was very concentrated in the war and was not able to give their full attention to the charges being processed.

A particular embedded control segment mainly relevant to the Corley case is Embedded Audit Modules (EAM). "EAMs are software applications embedded in host systems or linked to host systems to externally monitor such systems. EAMs are applications that continuously

monitor flows of transactions, identify transactions that match certain pre-determined integrity constraints and, in the event of a constraint violation, alert the auditor and copy the transaction data to a file." [ix] Since EAMs are continuously monitoring flows of transactions they make for a valuable auditing tool. "Early examples of EAMs were implemented in proprietary accounting information systems and production systems." [x] In the Corley case the Department of Defense used the aforementioned DFAS which automatically accepted shipping costs. This system could have been strengthened by employing Embedded Audit Modules which would have connected with the system to help externally monitor the enduring course of transactions.

EAMs have certain characteristics including "an end-user environment that allows the auditor to establish a set of queries to test transaction integrity constraints either from a pre-defined suite of queries, the modification of the attributes of pre-defined queries, or by the creation of new queries by the construction of simple scripts." EAMs also permit the recording of transaction details which can then be reported electronically if a violation or query is observed. [xi] In the DFAS system there could have been EAM queries to allow some form of notification of violations that may be uncovered in the transaction that the system otherwise accepts as customary.

In an article by Daniel Draz, "According to the Institute of Internal Auditors (IIA), "responsibility for the system of internal control within a typical organization is a shared responsibility among all the executives, with leadership normally provided by the CFO."" [xii] This informs that a segregation of duties should be assigned, to monitor from time to time the processes of the system being used by the Department of Defense. Moreover, "An effective notification system operates over a central server, delivers event messaging to predefined employees in "real time," as the event occurs, and is sent directly to the employees and their

smart devices. This level of event notification ensures that the people who need to know about an incident are made aware in a timely manner and fosters immediate and unified response as required."[xiii] This is a system that could have helped prevent fraud during the arising active transactions in the Corley case.

In addition to improving on creating more queries in a company's system and creating Embedded Audit Modules, another factor that is included in the embedded control process is the point of segregating duties. Draz's article states that, "One way to strengthen internal controls is by improving the communication process". Another point made was to "include communication to employees regarding increased awareness, correct handling processes and policy adherence. It may simply be that employees performed as expected under the circumstances but there were insufficient internal control policies in place to guide their behavior. Lessons learned here will strengthen internal controls through the creation of new ones. "Since communication is such a large issue in embedded controls there shouldn't be one person or system to have sole authority over all transactions without appropriate sign off processes and differing levels of management approval." Draz emphasizes that "a lack of proper segregation of duty in company policies are most often the root cause of many fraud and theft events in companies without strong internal controls in this area." Having more people overlooking activities thought out a business can help detect fraud more easily at the time of the act, which could've been used in the time of the Corley case when the DFAS system had total authorization.

Embedded Audit Modules may have prevented the fraud in this case by having alerts sent that notify users of violations being attempted to be processed in certain transactions. With these internal controls there might also have been a segregation of duties to ensure that no specific individual can control both the recording function and the procedures relative to processing the

transaction. The DFAS system did both of these on its own without any other sources to overlook its processes. Besides using Embedded Audit Modules and other internal controls, another form of a detective control is Benford's Law.

III) METHOD: BENFORD'S LAW

In 1938 Frank Benford analyzed the digit patterns of 20 data sets with a total of 20,229 records. His results showed that 30.6 percent of the numbers had a 1 as the first digit, 18.5 percent of the numbers had a 2 as the first digit, with the 9 being the first digit only 4.7 percent of the time. The first digit of a number is the leftmost digit and any minus sign or decimal point is ignored Zero is never a first digit and so the first digit of both 2,214 and 0.0025 are a 2. Benford then noticed the logarithmic pattern in the actual digit frequencies, and derived the formulae for the expected frequencies of the digits in tabulated data. These are shown in Table 1. The expected proportions for the first, second, third, and fourth digits are shown in Table 1. From Table 1 it can be seen that as one moves from left to right, the expectation is that the digits tend towards being evenly.

Benford noted that his probability law was derived from "events" through the medium of their descriptive numbers and that it was not a law of numbers in themselves. In other words, the expected proportions are not a consequence of the number system itself.

Research papers have highlighted a number of data sets related to financial data that conformed to Benford's Law. In 1996, Mark Nigrini had shown that the digit frequencies of the interest received amounts on 91,022 tax returns for 1985, and 78,640 tax returns for 1988, had a close conformity to Benford's Law. The dollar amounts of 30,084 invoices approved for payment by a NYSE-listed oil company analyzed in 1997 (Nigrini and Mittermaier), and 36,515 invoices were approved for payments by a software company (analyzed in 2000 by Drake and

Nigrini) that had also conformed to Benford's Law. In 2005 Nigrini analyzed the revenue numbers from 4,792 quarterly earnings releases in 2001 and 4,196 quarterly earnings releases in 2002. The first digits of the revenue numbers conformed to Benford's Law. However, the second digits showed a pattern (excess second digit 0s and a shortage of second digit 9s) that was consistent with rounding up of revenue numbers around psychological reference points (such as $200 million). These papers (and other unpublished studies) show that as a general rule that financial data within and across companies conforms reasonably well to Benford's Law.[xiv]

TABLE 1: BENFORD'S LAW: EXPECTED DIGITAL FREQUENCIES

| | ------------------------- Position in Number ---------------------------- | | | |
Digit	1st	2nd	3rd	4th
0		.11968	.10178	.10018
1	.30103	.11389	.10138	.10014
2	.17609	.10882	.10097	.10010
3	.12494	.10433	.10057	.10006
4	.09691	.10031	.10018	.10002
5	.07918	.09668	.09979	.09998
6	.06695	.09337	.09940	.09994
7	.05799	.09035	.09902	.09990
8	.05115	.08757	.09864	.09986
9	.04576	.08500	.09827	.09982

Note: The number 312 has three digits, with a 3 as the first digit, 1 as the second digit, and a 2 as the third digit. The table indicates that under Benford's Law the expected proportion of numbers with a first digit 3 is 0.12494 and the expected proportion of numbers with a third digit 2 is 0.10097.[xv]

In Mark Nigrini's article "I've got your Number," he states "Benford's Law is quite counterintuitive; people do not naturally assume that some digits occur more frequently." This is seen in the Corley case when the Department of Defense didn't check their statements; they

could have used this method in order to detect a large amount of 9's. Benford's Law would have detected that an amount of this magnitude had never before been wired to that account number, as the test was designed to detect data errors[xvi]. This would have been a perfect method to be used around November of 2003 for detecting the beginning of this scheme.

"Benford's analysis tests for fraudulent transactions based on whether digits appear in certain places in numbers in the expected proportion." [xvii] This is first shown in the Corley case when there were a large cluster of transactions with shipping costs beginning with first-digit of four. Throughout the increase in transactions the proportions of the cost of the items and shipping costs grew larger and larger, till the point where the proportion grew to a nineteen cent lock-washer was charged over nine hundred thousand dollars for shipping expenditures.

Benford's Law is a great detective method for fraud prevention with its straightforward use of detecting data anomalies. This method would have been a good choice in the Corley case by means of detecting a large repetition of number that go in opposition to the parameter distribution of Benford's Law. Using this quick method could have potentially saved the military millions of dollars that could have been used to supply our soldiers.

The case document states that "the bottom line is that Miss Corley made choices, nine years of choices, and today she must be held accountable for those choices." The opinion here is that if Benford's Law had been used it would've detected these nine years of anomalies from occurring. Alternatively, if the Department of Defense applied this approach, it might have lessened the severity of the charges in the end. The next section proposes another approach, based on preventive control.

IV)   METHOD: BUDGETARY CONTROLS

A budget is defined as a formal written statement of management's plans for a specified future time period, expressed in financial terms. According to Wiley's Managerial Accounting book it is explained that a budget, "provides a basis for performance appraisal (variance analysis). A budget is basically a yardstick against which actual performance is measured and assessed. Control is provided by comparisons of actual results against the budget plan. Departures from the budget can then be investigated and the reasons for the differences can be divided into controllable and non-controllable factors."[xviii]

In an article about budgetary controls, the budget evaluation process was described as, "During the year the management accountant will prepare statements, as quickly as possible after each operating period, in our example, each quarter and setting out the actual operating costs against the budgeted costs. This statement will calculate the difference between the 'budgeted' and the 'actual' cost, which is called the 'variance'. "[xix]

The benefits of budgeting involve: planning ahead by formalizing goals on a recurring basis, creating definite objectives for evaluating performance at each level of responsibility, constructing the budget to act as an early warning system for potential problems before they get out of hand, using it to facilitate the coordination of activities within a business, build correlated goals of each segment of the company objectives which leads to an improvement in management awareness and to motivating personnel by applying a sense of achievement for acquired money saving goals. All these concerns represent points that could have been used during the time of the Corley case. The Department of Defense could have used a budget in order to achieve all these benefits. "The audit logic in this example is check for significant variances in the purchase price against the standard prices in a particular period."[xx] This check against variances and standard prices could've been seen if a budget had been established in the DFAS system which

controlled shipping expenditures it would have been easier to notice the large variance beforehand, preventing any other transactions from occurring before someone would verify historical recordings in the budget.

A cash budget is a specific type of budget limiting cash for a certain goal. It is thought of as a cash plan for a defined period of time. It summarizes monthly receipts and payments. Hence, it highlights monthly surpluses and deficits of actual cash. Its main uses are: to maintain control over a firm's cash requirements, e.g. stock and debtors; to enable a firm to take precautionary measures and arrange in advance for investment and loan facilities whenever cash surpluses or deficits arises; to show the feasibility of management's plans in cash terms; to illustrate the financial impact of changes in management policy, e.g. change of credit terms offered to customers." [xxi]

Creating a budget might have prevented this scheme from developing. A budget for shipping would most likely have exceeded allocations after the first few fraudulent transactions and would have been noticed within the first year of this case. Budgeting, as a method for corporations to track and control all different types of expenditures being used frequently all through business activities, may have positive implications on situations such as the Corley case.

V) CONCLUSION:

In summary, the methods discussed above might have provided both preventive and proactive approaches to addressing fraudulent activities such as those present in the Corley case. Embedded Audit Modules may establish fraud, for tasks done on an everyday basis in a company, by indicating any abnormal variances. This is an easy way for auditors and managers of a company to identify any red flags raised in the system. Companies might require there to be segregation among all duties being made to ensure better reliability.

Benford's is another impressive method that is cost efficient as well as time efficient, that can be used whenever checking quarterly reports for any business. By knowing this theory, any business owner can check that their financial statements follow the ruled first-digit distribution. It is a great method because it tells a person what the proportion of the first-digit numbers in a random set of numbers should look like before even calculating them yourself, it gives us a predetermined view of a business's financial statement. Companies can use this and correlate it using the Chi-squared test or other tests to set a range of variance that the proportions in Benford's Law could exceed.

Companies might "maintain budgets and review them monthly, investigating all major variances." Companies can accomplish this by using budgeting/ software can help eliminate one of the causes of fraud which includes manipulation of spreadsheets. One option would be to use the exception reporting in the software known as Calxa, to highlight large variances and then investigate the causes of them.[xxii] Budgets are overall a great method and inexpensive for all businesses to use as a foundation for preventing fraud before the fact.

In the hearing Corley was told that "people will remember for years to come the woman from Lexington who got a million dollars for shipping a 19-cent washer." This is the main issue she will have to think about, as regret, for the rest of her life. This could have been prevented before it escalated to that point, where she charged almost a million dollars shipping. Embedded Audit Modules, Benford's Law and budgets could have all prevented the fraudulent activity of Charlene Corley from intensifying the sum.

In conclusion, each company might use at least one detective and preventive control in their business in order to have some underlying basis of fraud prevention. Corporations can determine what method might be best; either underlines embedded controls like the Embedded Audit

Modules and Benford's Law or embedded controls with creating budgets. An emphasis on the role of audits can be established to speculate any variances in costs throughout all aspects; creating a foundation approximating how much is okay to be spent of all expenditures. These procedures can save corporations a substantial amount of money if used for establishing detective and preventive controls, comparatively to the costs associated with fraud. It had been noted, by Calxa (budget software producer), "Businesses who do not take preventative actions could be exposed to a greater risk."[xxiii] Businesses of any sort can get damaged for bountiful sums of money from schemes like the Corley case.

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