Educational Case

Manual journal entry testing: Data analytics and the risk of fraud

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ABSTRACT

Big Data is revolutionizing the business world as it enables companies to discover valuable insight from within the vast volumes of data now available to companies. The data analysis skills related to Big Data are in high demand, yet many accountants lack the data analysis skills necessary to improve decision making within a company or increase the effectiveness and efficiency of an audit. This case provides you with a hands-on opportunity to utilize the data analysis skills that are in such high demand. You will harness the power of Big Data while performing a procedure that is required on all financial statement audits – an analysis of journal entries for potential red flags of fraud. The case is completed in two phases. First, in Phase I, you will learn how to address one of the primary challenges in the use of Big Data – "validating" the data – which ensures that the files are complete. Specifically, you will import and analyze client files in IDEA to determine if the manual journal entry file is complete or if any records are missing from the file. In Phase II, you will validate data from a second client then perform a battery of tests aimed at identifying potential red flags of fraud. To complete the second task, you will need to consider factors such as who recorded the journal entries, when the entries were created, the description provided (or lack thereof), and whether the entries were back-posted or out-of-balance. You will also learn how to use fuzzy matching and Benford's Law.

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1. Case

1.1. Background information

Big Data is impacting all aspects of business and is quickly becoming a top focus for accountants regardless of their specialty – financial accounting, management accounting, auditing, forensic, tax advising, education, or regulation – both within the United States and internationally (AAA, 2016, CGMA, 2014, Cokins 2014, Maxwell, Steiner & Stein, 2013, Murphy, 2014; Novack, 2013). The term "Big Data" refers to the sheer volume and speed at which data is being generated through electronic transactions, website clicks, texts, Facebook activity, photographs, videos, and countless other means. Enterprising companies are finding that effective use of Big Data can provide valuable information about their customers. Beyond just demographics and prior purchases, companies can now use browsing preferences, website views and clicks, environmental

Table 1
Benefits of generalized audit software (GAS).

- Tests entire populations of data rather than just a sample
- Analyzes data from a variety of sources including report files and unique data formats from industry-specific software
- Aids in risk assessment by identifying trends and anomalies in the data
- Facilitates comprehensive analysis of general ledger transactions
- Processes large volumes of data almost instantaneously
- Maintains the integrity of the source data by storing and presenting imported data in a read-only format
- Performs common audit procedures with the click of a button
- Works with any file size and an unlimited number of records
- Creates a log of every action the user takes (Brown-Liburd et al., 2015; Murphy & Tysiac, 2015; Smith, 2015)

factors (such as weather), and social media trends to predict their customers' purchasing patterns, enhance customer satisfaction, and improve their own bottom line (Brown-Liburd, Issa, & Lombardi, 2015; Gray & Debreceny, 2010).

Big Data has provided opportunities to enhance accounting information and audit quality as well. In its earliest and simplest form, accountants began utilizing Big Data when computer assisted auditing techniques (CAATs) enabled the testing of entire populations of data, consisting of billions of records (such as the 1 million customer transactions Walmart generates every hour), rather than relying on sampling (Data, 2010). For decades, audit firms have relied on the use of data analysis software known as "generalized audit software" (or GAS) to enhance the quality of an audit. IDEA and ACL, the two most commonly used GAS packages, provide auditors with numerous benefits as listed in Table 1. Most audit firms have members of staff trained in the use of GAS and many expect even entry-level staff to perform data analytics.

As technological capabilities have improved, the profession has expanded to incorporate new nonfinancial sources of information. For instance, sentiment data from Twitter and other social media sources can predict product demand, an increase in product returns, or a decline in inventory value. Weather information can be compared with sales by geographic location to identify unexpected spending patterns; searching the content of electronic documents such as email can help companies identify deviations from company policies or red flags of fraud (Cao, Chychyla, & Stewart, 2015; Fay & Negangard, 2016).

The U.S. Securities and Exchange Commission (SEC) is drawing on data analytics tools to enhance the likelihood of detecting financial statement fraud in its registrants. It developed an Audit Quality Model, commonly referred to as "RoboCop," that analyzes the financial statements of public company for heightened fraud risk within 24 h of being submitted to the SEC. The model looks for risk factors such as when companies use accounting techniques to report aggressively high earnings while using an alternate method for tax that minimizes taxable income. More recently, the SEC has expanded the use of data analytics to assess the narrative information included in corporate filings for heightened risk of fraud. For instance, the software can scan the Management Discussion & Analysis for a particular list of words and phrases used by prior fraudulent filers, a negative tone, or language intended to obfuscate complex issues (Novack, 2013). Scott Bauguess, Deputy Director and Deputy Chief Economist of the SEC's Division of Economic and Risk Analysis (2016) cautions that the data analytics conducted by his division of the SEC does not reduce the need for human involvement. To generate high quality results, each risk identified through data analysis must ultimately be assessed by the SEC staff with significant experience and insights into the market (Bauguess, 2016).

The largest accounting firms are similarly embracing cutting edge technology to enhance the traditional audit. While GAS was the earliest, and currently the most widespread, implementation of Big Data in the accounting profession, the development of additional Big Data tools (e.g., telematics, drones, and text and unstructured data analysis, Hadoop, Distributed File System) has created opportunities for accountants and auditors (Applebaum & Nehmer, 2016, Brown-Liburd et al., 2015; Fay & Negangard, 2016). Big Data techniques can enable auditors to compare data from multiple sources within the company (such as using revenue or procurement cycle sub-ledgers to verify amounts reflected on the general ledger) and to evaluate the data in real-time. Additionally, Big Data allows auditors to gain a more thorough understanding of the client's accounting and processes which should result in more accurate risk assessments and ultimately higher audit quality. However, many believe that the "value of integrating Big Data and analytics into the audit will only be realized when used by auditors to... develop new skills focused on knowing what questions to ask of the data, and the ability to use analytics output to produce audit evidence, draw audit conclusions, and derive meaningful business insights" (Ramlukan, 2015, 12).

To that end, the largest accounting firms are using software and other cognitive technologies to identify patterns in data indistinguishable by the human eye. Most notably, KPMG has contracted with IBM to utilize Watson, the software best known for defeating Jeopardy's two greatest champions, to enhance its audit and advisory services. Watson can process large volumes of unstructured data and provide meaningful insights in English (and seven other languages) (Best, 2016; Claburn, 2016; IBM, 2016). KPMG Chairman and CEO Lynne Doughtie states, "KPMG's use of IBM Watson technology will help advance our team's ability to analyze and act on the core financial and operational data so central to the health of organizations and the capital markets. In addition to the unprecedented possibilities for enhancing quality, the potential for cognitive and related technologies to help us pursue new business offerings is extraordinary" (Lee, 2016). While the opportunities related to Big Data are virtually endless, a survey of 2000 companies found that 86% are struggling to find the valuable information buried amidst the overwhelming amount of meaningless data (Chartered Global Management Accountant (CGMA), 2014). Studies estimate the demand for data analytics will double in the near future, providing opportunities for professionals in information technology, finance, and accounting. McKinsey Global Institute (2011) forecasts a