
STANDING ADVISORY GROUP MEETING
THE USE OF DATA AND TECHNOLOGY IN AUDITS
MAY 24-25, 2017

Introduction

At the May 2017 Standing Advisory Group ("SAG") meeting, SAG members will discuss the use of data and technology in audits and the potential implications for PCAOB auditing standards.

Background

Companies are investing significantly in technology and data analytics for use in such areas as marketing, operations, financial reporting, and internal audit. One research firm projects worldwide spending for big data and business analytics will grow from nearly \$122 billion in 2015 to more than \$187 billion in 2019.¹ Just as companies are advancing their data analytics capabilities, many accounting firms are reporting significant investments in technology and new data analytic tools, which they have asserted could enable them to analyze large quantities of data more quickly and intelligently and enhance the audit by automating time-consuming tasks that are currently more manual and rote in nature. For example, one accounting firm reported that it has invested more than \$650 million in audit technologies for the future.²

¹ See Thor Olavsrud, *Big Data and Analytics Spending to Hit \$187 Billion*, CIO, May 24, 2016.

² See Deloitte, *2016 Global Impact Report* (2016).

This paper was developed by the staff of the Office of the Chief Auditor as of May 12, 2017 to foster discussion among the members of the Standing Advisory Group. It is not a statement of the Board; nor does it necessarily reflect the views of the Board or staff.

An increased use of these new data analytic tools could significantly affect the audit, including the nature, timing, and extent of audit testing, the amount of information available to auditors to make significant judgments in critical areas of the audit such as risk assessment, and the staffing of audit engagements. Although it is too early to predict how many of the tools being developed will eventually be used in practice, their use could also potentially impact audit risks. The auditor's ability to identify material misstatements could increase or decrease, depending on the effectiveness of emerging audit approaches using various data analytic tools and other technologies and firms' quality controls over their implementation.

SAG members have previously identified the increasing use of technology in audits as an emerging issue that the PCAOB should research.³ In December 2016, the PCAOB added a project to its research agenda to understand current and emerging practices in the use of data and technology in audits to assess how the PCAOB might respond. The PCAOB formed a multi-divisional research team to explore whether there is a need for guidance or changes to PCAOB auditing standards or other actions in light of changes in auditors' use of data and technology. Research is needed to understand current and emerging practices in this area to assess how the PCAOB might respond.

The research team is considering, among other things,⁴ new data analytic tools, related changes to firms' audit methodologies, academic research, and activities of others, including relevant initiatives of other standard setters and regulators. Two of those initiatives are:

- The International Auditing and Assurance Standards Board ("IAASB") has established a Data Analytics Working Group. In September 2016, the working group issued a Request for Input, *Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics*.⁵
- In January 2017, the UK's Financial Reporting Council ("FRC") published an Audit Quality Thematic Review, *The Use of Data Analytics in the Audit of Financial Statements*.⁶

³ See SAG meeting archives (Nov. 12-13, 2015 and May 18-19, 2016), available on the Board's website.

⁴ In addition to data analytics, the research team is also considering the implications for the audit of other advances in technology, such as blockchain, that may not yet be impacting audits.

⁵ See IAASB Request for Input, *Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics* (Sept. 1, 2016) ("IAASB RFI").

⁶ See FRC, Audit Quality Thematic Review – *The Use of Data Analytics in the Audit of Financial Statements* (Jan. 2017) ("FRC Thematic Review").

SAG members are encouraged to read these publications to gain a further understanding of the issues.

Use of Data and Technology in Audits

The PCAOB has observed that some firms are developing and using software audit tools to provide opportunities to perform audit work more effectively and efficiently and to increase the likelihood of identifying and testing audit areas associated with higher risk. Firms are moving in the direction of developing and using software audit tools to analyze full populations of accounting and financial reporting transactions to select transactions for testing rather than selecting a random sample of transactions for testing. Software audit tools used by the firms vary, and some firms have customized purchased tools or have internally developed their own tools. The PCAOB has observed that most software audit tools are being used for performing substantive audit procedures, while some tools may also be used for risk assessment.⁷

PCAOB staff has gathered information from a range of sources that indicate the following areas where changes in the use of data and technology are affecting or are expected to affect audit approaches:⁸

- Evaluating the three-way-match between purchase orders, delivery confirmation, and invoices;
- Using cognitive technology to compare recorded revenue to contract terms to help auditors assess the appropriateness of revenue recognition;
- Gathering external public data to evaluate financial statement risks and comparing company data with external data;

⁷ See PCAOB Staff Inspection Brief, *Information about 2016 Inspections* (July 2016) ("2016 Inspection Brief"), available on the Board's website; PCAOB Staff Inspection Brief, *Information about 2015 Inspections* (Oct. 2015), available on the Board's website.

⁸ See Gary P. Schneider, Jun Dai, Diane J. Janvrin, Kemi Ajayi, and Robyn L. Raschke, *Infer, Predict, and Assure: Accounting Opportunities in Data Analytics*, 29 *Accounting Horizons* 719-742 (2015); Deloitte, *Delivering Smarter Audits: Insights Through Automation* (2017) ("Deloitte Smarter Audits Report"); Ernst & Young, *How Big Data and Analytics are Transforming the Audit* (Apr. 2015) ("EY 2015 Report"); KPMG, *Data, Analytics and Your Audit: What Financial Executives Need to Know* (Nov. 9, 2015) ("KPMG 2015 Report"); PricewaterhouseCoopers, *Our Focus on Audit Quality* (2016) ("PwC 2016 Report"); IAASB RFI; Roger Nanney and Jon Raphael, *Audit Innovation Helps Private Companies Improve Performance*, *Accounting Today*, May 24, 2016.

- Analyzing structured and unstructured data to identify trends to assess fair value;
- Manipulating data to assess the impact of different assumptions (i.e., stress testing);
- Automating testing of investment companies' transactions through direct data feeds from the companies' service providers;
- Using trend and regression analyses to identify risks; and
- Developing predictive models to assess the future financial viability of a company and assess the risk of fraud.

Data analytics also could enable auditors to provide different and more meaningful insights and deepen the auditor's understanding of the company,⁹ which could enhance the auditor's judgments and ability to be appropriately skeptical. Management and audit committees have indicated they are looking for more perspectives from the auditor in areas such as financial statement risks, business processes, and internal controls.¹⁰ Auditor insights about the company and its risks could enhance the quality of the auditor's communications with management and audit committees.¹¹

Although the use of data analytics may enhance audit quality and make the audit more efficient, certain challenges and risks—both new and intensified—related to its use have been identified,¹² including the ability to:

- Efficiently and cost effectively capture the data from different client systems;
- Validate the accuracy and completeness of data and produce appropriate audit evidence;
- Maintain security of client data;
- Develop appropriate competencies and skills within the firm to effectively use data analytic tools and evaluate the results of such analysis;

⁹ See Deloitte Smarter Audits Report; EY 2015 Report; KPMG 2015 Report; PwC 2016 Report; IAASB RFI; Nanney and Raphael, *Audit Innovation Helps Private Companies Improve Performance*.

¹⁰ See Deloitte, *Audit Evolved: Results from the Deloitte Audit Value Survey*; EY 2015 Report; KPMG, *Harnessing the Power of Cognitive Technology to Transform the Audit* (2016); and IAASB RFI.

¹¹ See FRC Thematic Review.

¹² See Christine E. Earley, *Data Analytics in Auditing: Opportunities and Challenges*, 58 *Business Horizons* 493-500 (2015); EY 2015 Report; IAASB RFI; and FRC Thematic Review.

- Maintain quality control over the development and use of data analytic tools; and
- Avoid potential over-reliance on data analytic tools.

These challenges and other risks would need to be taken into account when developing and using new technologies.

PCAOB Inspections staff is working to understand the systems of quality control that firms have in place to provide assurance that (1) the tools used to analyze the data meet the audit objectives; (2) engagement teams are effectively using these tools and evaluating the results of screening large data populations; and (3) engagement teams are applying due care, including professional skepticism, when using these tools during the performance of the audit work, including the evaluation of results of that work.¹³

SAG Discussion

The research team seeks SAG members' input on the use of data and technology in the conduct of audits. On May 24, an academic who specializes in this area and a representative from a public accounting firm will introduce the topic by describing current and emerging uses of data and technology in the audit.

After the introductory discussion, SAG members and observers will form breakout groups to discuss the topic. SAG members are asked to discuss and provide input on the following areas:

- How auditors' use of data and technology could affect audit quality, including in the areas of:
 - Risk assessment
 - Nature and extent of audit procedures
 - Nature and sufficiency of evidence
 - Fraud detection
 - Internal control over financial reporting
 - Insights for audit committees and investors
- The risks auditors' use of data and technology might create, including in the areas of:
 - Controls over reliability of audit tools and their implementation
 - Auditor and specialist skills required
 - Access to and security over data

¹³ See 2016 Inspection Brief.

- Reliability of data
- Expectations gap regarding the assurance provided
- Independence
- Adaptability and alignment of standards with new approaches

On the second day of the meeting, a summary of the breakout group discussions will be provided and SAG members will have an opportunity to provide additional perspectives.

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The PCAOB is a nonprofit corporation established by Congress to oversee the audits of public companies in order to protect investors and the public interest by promoting informative, accurate, and independent audit reports. The PCAOB also oversees the audits of broker-dealers, including compliance reports filed pursuant to federal securities laws, to promote investor protection.