By Dr. Kamala Raghavan, CPA, CFF, CGMA, CFP

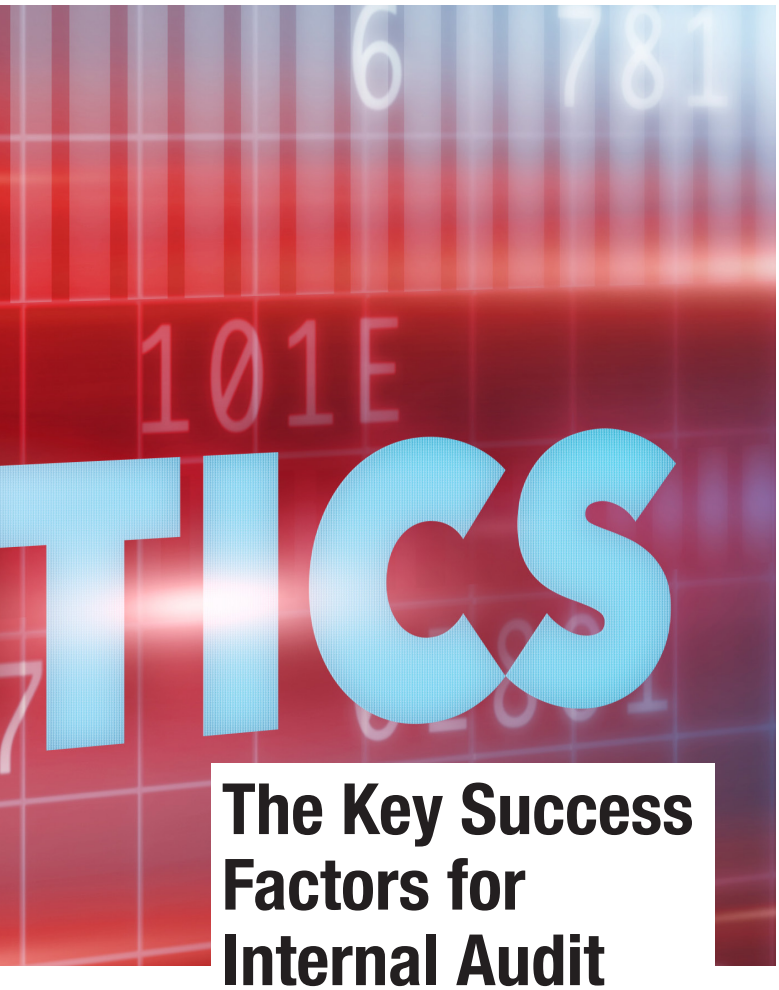
Internal auditors are dealing with competing demands of increased compliance workload due to regulations such as the Dodd-Frank Act, health care reform, anticorruption regulations, payment card industry regulations, the updated COSO internal control framework and strategic risk management responsibilities. However, many of them feel that the regulations have had positive impact on their companies and improved the governance and testing rigor, and are looking for ways to improve efficiency and emphasize value-added activities by using technology and data analytics, according to a Grant Thornton survey.

By strategically using the additional resources made available for meeting regulatory compliance challenges, internal auditors can add value by contributing to strategic, operational and financial risk management, promoting discussion across compliance functions at organizational units, upgrading staff skills, and utilizing technology and data analytics. The major findings from recent surveys can provide a road map for internal audit managers and educators to use in developing the future workforce. The following sections of this article outline the current state of data analytics used by internal auditors, its potential future applications and real-life case studies of data analytics tools used by businesses.

Current State

The Grant Thornton survey respondents felt that the regulations have had positive impact on their companies, and improved the governance and testing rigor. The same sentiment was echoed by management and audit committee respondents of an Institute of an Internal Auditors (IIA) survey. They offered suggestions to use compliance activities to strengthen the strategic risk management functions of internal auditors. Some of their recommended areas for improvement are:

- Staff skills – 40 percent of the IIA survey respondents felt that the available internal audit talent should be enhanced by conducting a skills gap assessment, providing the necessary training and/or acquiring the specialty skills.
- Technology – 33 percent of the respondents said their companies are using governance, risk and compliance-specific (GRC) technology to manage their departments and report audit plans and results, but are not effectively leveraging the technology.



The Key Success Factors for Internal Audit

- Data analytics – 60 percent of survey respondents are using data analytics and cited the top four benefits as increased efficiency; quick identification of patterns, trends and relationships; increasing internal audit coverage; and improving the strategic value of internal audit function.

The white paper "Reimagining Auditing in a Wired World" published by the Emerging Assurance Technologies Task Force of the AICPA Assurance Services Executive Committee (ASEC) explored the use of data analytics technology in future audit environments and recommended that the profession needs to achieve a "quantum leap" to redesign audit processes using today's technology, and that existing auditing standards and audit procedures should be modified to incorporate the concepts of "Big Data" (standard financial, operational and transactional data, and "unstructured" data such as tweets, social media and emails) and "continuous auditing."

Audit regulators are watching the technological developments to ensure that auditing standards facilitate improvements in auditing rather than being an obstacle to progress. The changes in audit approach needed to take advantage of the new environment will be ad-hoc and evolutionary, and audit practices will change in response to corporate processes. AICPA's Enhancing Audit Quality (EAQ) initiative is attempting to move the profession to using new audit technologies and methodologies that will facilitate continuous assurance and timely and relevant audit reporting. ASEC has also established audit data standards to identify key information and provided a common IT framework for audits.

The Institute of Chartered Accountants of England and Wales (ICAEW) issued the Program for Reform of Financial Disclosures in late 2015, and recommended changing disclosure requirements and rules to enable companies to "report separate information sets to different users, as long as all the information is available somewhere (e.g., online)."

In a business world with rapid changes and access to an unlimited supply of data, companies need to proactively anticipate and mitigate risks, and data analysis using real-time data that enhances the control environment is becoming an integral part of the process. Internal auditors are leveraging data to drive the scope and types of audits and risk assessment processes by using continuous auditing and continuous monitoring to provide more value to their employers. In continuous auditing, the internal audit staff uses technology to analyze data frequently for early identification of outliers and focus its resources. In continuous monitoring, analytics on key performance metrics are set up for management to review in real time and act on when necessary. These methods can enhance the timely, ongoing review of financial data and internal control at an organization.

Most financial professionals are limited by training and inclination to working with "structured" data that can fit readily into tables, Excel spreadsheets and financial statements, but the future may be dominated by "unstructured" data such as emails, social media messages and text, tweets, videos, photographs and the vast amounts of text floating free on the internet. Such unstructured data also includes the text found in the Management's Discussion and Analysis (MD&A) sections of company 10-Qs and 10-Ks, and in corporate press releases and interviews with corporate executives.

Use of Data Analytics Tools

Data analytics uses both traditional "structured" and "unstructured" data. An example of using analytics by a bank's call center is the technology called "natural language processing," which enables a computer to read millions of transcripts of phone calls and "diagram" sentences and phrases in mathematical terms. Companies are using data analytics in risk management by looking for patterns in their internal emails, internal audio files and on social media to spot and avert a plethora of potential risks.

The explosion of data being collected by companies of all sizes across industries and sectors has encouraged many high-profile data thefts, and has caused the corporate focus to shift from benefits of vast data in marketing to the risks of securing sensitive data. Massive thefts of data (names, credit card numbers, email addresses, passwords, etc.) beginning with the breaches of Target and Adobe

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Systems back in 2013, are continuing on a daily basis. Companies have begun to understand that data can be both a source of risk and a tool to manage the risk.

One example of assessing the data in both capacities is the "data-flow analysis," which involves tracing the location of data at different times during a business process. This method can be useful in detecting attacks on retail point-of-sale devices that copy debit or credit card data to an internal server and allows hackers to steal the credit card numbers at night from the server. Company risk managers can deploy data-flow analysis to detect an abnormally large number of queries being made on a specific aspect of a store's database during the week and compare it to normal trends. Observing an unusual number of queries can trigger a risk prevention response from the company. Another modeling technique used by credit card companies to find potential fraud is called "outlier analysis."

> **"IN A BUSINESS WORLD WITH RAPID CHANGES AND ACCESS TO AN UNLIMITED SUPPLY OF DATA, COMPANIES NEED TO PROACTIVELY ANTICIPATE AND MITIGATE RISKS."**

In addition to credit card transactions and other forms of "structured" data residing in spreadsheets or formal database records, a company's data also resides in "unstructured" form, such as the human speech used in natural language processing, chat rooms and email, and can play a role in increasing the risk. Risk managers are finding that technology to analyze unstructured data can provide them the ability to act almost immediately to avert hazards. Using unstructured data can limit the risks posed by the collection of more structured information, such as the items in the handwritten inventory lists traditionally employed by retailers. Among the vast array of sources of unstructured data that impact corporate risk, email ranks highest as the primary target of evidence collection for fraud examinations and in the context of lawsuits and regulatory investigations. Risk managers are finding that the unstructured data has a very rich layer of metadata revealing potential risks.

At Deloitte, email monitoring is an important part of the accounting firm's efforts to prevent the release of restricted information to the public, either accidentally or on purpose. Similarly, Dun & Bradstreet (D&B) has expanded the use of federal government compliance data culled by the credit-risk analysis firm to broader risk management purposes. Both D&B and Deloitte make use of information gleaned from the panoply of websites and applications, chat rooms, blogs and video-sharing systems collectively called social media. As the volume of messages on social media proliferate, many more companies will likely be engaged in efforts to avert the negative as much as accentuate the positive about themselves.

Future Trends

When combined with traditional auditing techniques, data analytics can provide internal auditors the ability to do continuous auditing and continuous monitoring to identify risks and anomalies as part of their system of internal control. Technology provides the opportunity to improve audits by testing complete sets of data, improve risk assessment through identification of anomalies and trends pointing auditors toward items they need to investigate further, and providing audit evidence through comprehensive analysis of companies' general ledger systems. Increased use of data analytics to aggregate data and provide information in auditing will complement the traditional skills of auditors to review, analyze and determine if the information is consistent with the auditor's expectations.

Some benefits realized by using data analytics in financial statement audits are in the audit planning and procedures to identify and assess risk by analyzing data to identify patterns, correlations and fluctuations from models. The use of such analytics is helping auditors to obtain better and new forms of audit evidence for their audit opinions and to understand fundamental causes of restatements, fraud and going-concern issues. Routine audit procedures such as bank confirmations, analytical procedures and journal-entry testing are being performed remotely, thereby freeing up auditors to focus on higher-risk and fraud testing.

The benefits derived from applying data analytics to auditing practices can far outweigh the costs by providing better risk analysis and management, a more efficient audit cycle, access to real-time data and more collaboration across units in the organization. Continuous auditing and continuous monitoring are providing benefits to be realized throughout the audit life cycle by multiple beneficiaries, including ethics and compliance, enterprise risk management and IT security functions. The real-time continuous monitoring process compresses the dynamic of audit identification and problem-solving so that the solution and status can be reported to the board along with the problem encountered.

Key Success Factors and Impact of Data Analytics

Crafting and implementing a big data and advanced analytics strategy demands the involvement of experienced managers who can apply institutional knowledge, navigate organizational hazards, make tough tradeoffs, provide authority when decision rights conflict and signal that leadership is committed to a new analytics culture. The key success factors for data analytics implementation are developing new mindsets, defining a strategy, determining what to build versus buy, securing analytics expertise, mobilizing resources, building frontline capabilities and putting leadership capacity where needed.

To be able to use the analytical tools, accounting students and professionals must become skilled in areas such as information technology, statistics and modeling. Universities are offering new

courses and majors, but face resistance from the existing rigid accounting curricula. AICPA conducted a practice analysis research study to define the content of the CPA examination in 2017, and revised the CPA exam to test candidates on skills in the areas of analysis, interpretation and defense of auditors' positions, and additional emphasis on professional skepticism, data analytics, critical thinking and the integration of topics.

Real-Life Corporate Experiences

KPMG: Global audit teams can now share information across borders and with clients in a secure environment. Data analytics software has enabled the auditors to review large amounts of data points simultaneously, identify risks, provide robust audit evidence and gain broader business understanding, enabling them to ask more meaningful questions and focus on high-risk areas.

HP: When HP managers were concerned about the frequency and volume of manual journal entries, the internal audit function initiated a dashboard to enable ongoing evaluations. HP adopted a continuous auditing and continuous monitoring approach to identify the root cause of such transactions, to enable better decisions through standardized entries made under improved controls. The findings resulted in reduction of the number and risk of journal entries. The company has used continuous auditing and monitoring to make improvements in several areas. Internal auditors performing traditional field work were asked to identify three to five leading and lagging indicators in the areas they were auditing that would sustain remediation and provide new metrics to monitor, and they are planning collaboratively with the risk/compliance function to adopt a strategic and future-focused approach.

Paychex: Payroll-services company Paychex uses data analytics to improve efficiency in its internal audit operations. Internal auditors worked with the information technology department, and data analytics is benefiting the company to grow and mature.

Auspicium: This construction auditing consulting company uses data analytics on a regular basis for recalculations and trend analysis. Data analytics tools have helped find misdeeds such as collusion and bid rigging, find missing data, validate efficient controls and effectively navigate around complex issues.

Trax: A Singapore-based firm, Trax provides an image-recognition app that gathers data from photos taken of shelves at retail stores. Analytics are used to measure patterns in its website use, and the analysis enabled the business to trim its headcount costs and capital spending.

An Opportunity for Internal Auditors

The combination of explosive growth in the volume of structured and unstructured data and data analytics technology presents internal auditors with an opportunity to gain a better understanding of their organization's business units, improve the internal control processes and add value in strategic risk management processes. Data analytics will give auditors new insights about the entity's risk environment and improve analytical procedures. Auditing standards and procedures need to be updated to get the maximum benefit from the available technology.

Accounting curricula need to be restructured to include analytics, data management and critical thinking skills so that audit professionals and aspirants can keep up with needed skills and take advantage of available technological tools. Companies of all sizes and industries spend significant resources to capture and store data. Internal auditors must learn to enhance their skills at using this data for analysis to enhance strategic risk management and improve the value of the organization. ■

Dr. Kamala Raghavan, CPA, CFF, CGMA, CFP is a graduate faculty member at Texas Southern University in Houston, Texas.