Advancing analytics and automation within internal audit

A look into the current maturity stages of internal audit analytics and how internal audit departments are further developing their analytics programs

EY

Building a better working world

Contents

Introduction

Within the past few years, financial services firms have increased their use of analytics for Internal Audit (IA Analytics). To measure these advancements, Ernst & Young LLP surveyed 16 banking and wealth management firms on their use of IA Analytics and compared these results to a similar study conducted in 2014. The results were telling. Roughly half of the 2017 survey respondents indicated leveraging data analytics in more than 50% of their audits, as compared to just 31% of survey respondents in 2014.

Since 2014, organizations have increased the use of data analytics within their organizations' audits.

	2017	2014
More than 50%	50%	31%
26%-50%	19%	23%
11%-25%	25%	23%
0%-10%	6%	23%
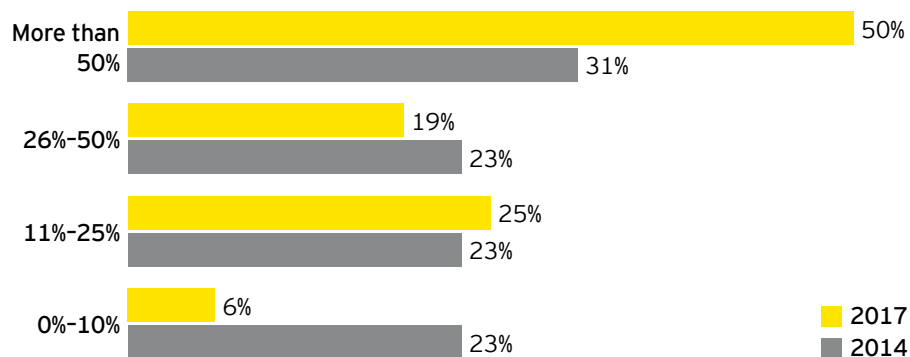
The 2017 survey results indicated an increased demand for IA Analytics, which led to additional questions: What is the current market landscape and maturity stage of the different IA Analytics programs? How can internal audit (IA) departments continue to be successful in advancing their analytics programs? To what level of maturity do IA departments want their analytics programs to be, and how can they get there?

We sought to answer these questions and more by facilitating a roundtable discussion with IA leaders across 16 banking and wealth management firms. This white paper is a compilation of the insights from the 2017 survey results compared to the 2014 survey results, as well as from the roundtable discussion with industry leaders, and is organized into the following sections:

▸ **IA maturity stages and current market landscape**

▸ **Analytics challenges**

▸ **Emerging trends**

IA maturity stages and current market landscape

Across the industry, IA departments have made significant progress in the development of their IA Analytics programs. Although the current development of IA Analytics programs may vary, the generalized path toward the growth of IA Analytics programs can roughly be categorized into three different stages: Analytics 1.0, Analytics 2.0 and Analytics 3.0.

‣ Analytics 1.0 focuses on incorporating analytics within the audit framework to increase efficiency through the development of documentation standards and show descriptive data analytics that may or may not be incorporated within advanced data analytics tools.

‣ The key focus of Analytics 2.0 is utilizing analytics to identify trends, develop thresholds and drive insights by incorporating advanced data visualization tools, shared cloud and big data services, and tools used to analyze unstructured data.

‣ Analytics 3.0 works to transform the "business of auditing" by using analytics to drive the audit process and risk identification. In this stage, the focus is on embedding analytics within the business, incorporating prescriptive analytics/risk identification and working to build a continuous auditing program.

While IA departments may currently be at different stages within this process, it is clear that the majority of respondents are continually working to enhance their analytics programs. Across 2017 survey respondents, the primary drivers for IA Analytics programs were increased audit depth, coverage and efficiency – a shift from previous years, which saw a rise in regulatory mandates as the primary motivation.

The primary drivers of analytics programs are focused on enhancing the audit program:

Driver	Percentage of respondents
Audit coverage	100% of respondents
Efficiency in audit execution	88% of respondents
Audit depth	81% of respondents
Risk management	69% of respondents
Regulatory mandate	38% of respondents

The current market landscape indicates that use of analytics in audit departments has become widespread. Respondents are implementing IA Analytics at a minimum stage of Analytics 1.0, specifically as a means to expand audit coverage and audit depth. Analytics lends itself to more easily repeatable processes, which reduces manual error and the level of effort required year over year, thus increasing the overall efficiency of an audit program. The following benefits are obtainable by audit programs that leverage analytics and are some of the distinguishing advantages of Analytics 1.0:

‣ Ability to perform repeatable analytics

‣ More population and control coverage; greater assurance

‣ Deeper business understanding and focus on risk

‣ More value to stakeholders

‣ Ability to meet regulatory expectations

With IA Analytics becoming more of a standard practice, the industry as a whole is progressing along the analytics maturity road map with a majority of IA departments implementing programs at the Analytics 2.0 stage. In addition to accessing the advantages of Analytics 1.0, IA departments at the Analytics 2.0 stage are implementing analytics to conduct the following:

- Examine a vast amount of data from both internal and external sources

- Identify attributes that were previously unavailable

- Discern relationships, anomalies and correlations that were never before visible

- Focus on potential issues

A key focus for programs at the Analytics 2.0 stage is working to better integrate themselves with the business audit teams. To achieve this, some programs have developed products such as self-service tools and other integrated training programs. The creation of self-service tools allows business auditors to further incorporate data analytics within their programs by analyzing data in real time while the analytics departments address the more complicated data analytics requests, such as conducting trend analysis and identifying anomalies.

Over one-third of organizations have a high degree of integration between the business and analytics audit teams
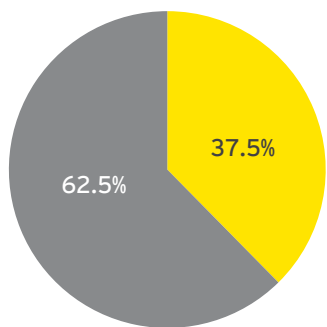
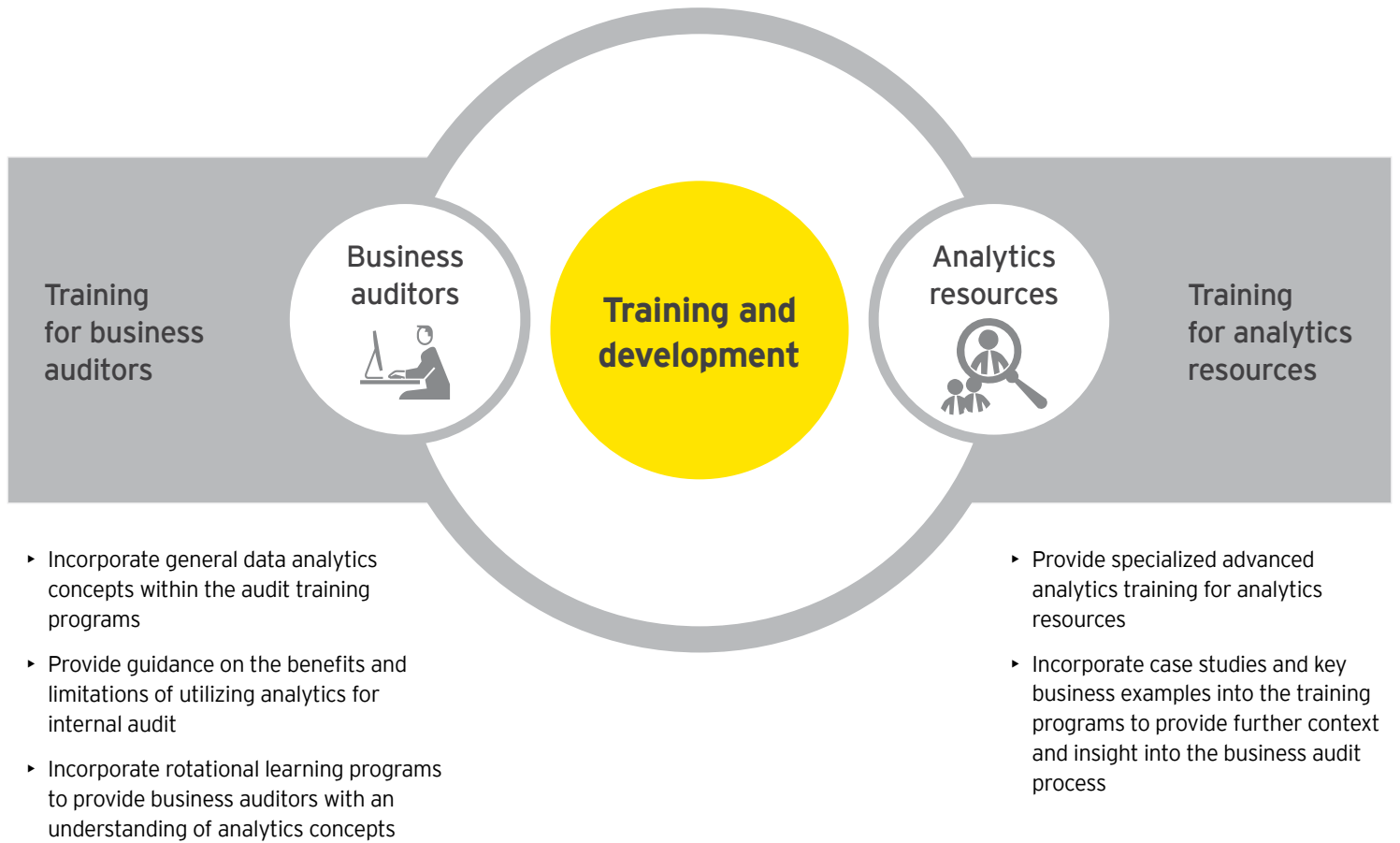- Very integrated
- Somewhat integrated

Concurrently, analytics programs have also added more personnel and have increased the training and skill sets of their resources. A quarter of 2017 survey respondents stated that analytics teams make up 6%-10% of the IA department, compared to just 15% of 2014 survey respondents.

The percentage of the IA department that is part of the analytics team:
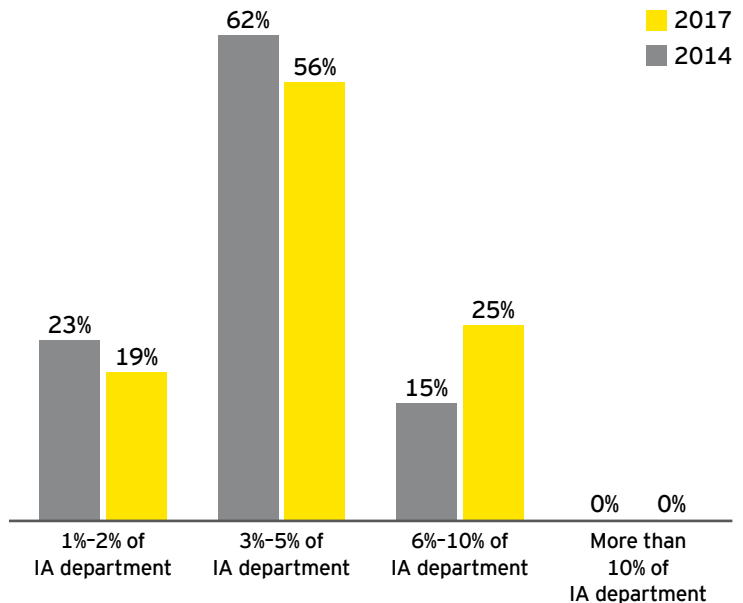
Furthermore, roughly 94% of 2017 survey respondents have incorporated, or are currently incorporating, data analytic concepts within both the business and advanced analytic training programs. By incorporating analytic concepts within general business auditor training, business auditors can receive guidance on the benefits and limitations of utilizing analytics for IA and gain an understanding of analytical concepts. Advanced analytical training programs may incorporate general business auditor knowledge through case studies and key business examples to provide further context and insight into the business audit process.

Training for business auditors

- Incorporate general data analytics concepts within the audit training programs
- Provide guidance on the benefits and limitations of utilizing analytics for internal audit
- Incorporate rotational learning programs to provide business auditors with an understanding of analytics concepts

Training for analytics resources

- Provide specialized advanced analytics training for analytics resources
- Incorporate case studies and key business examples into the training programs to provide further context and insight into the business audit process
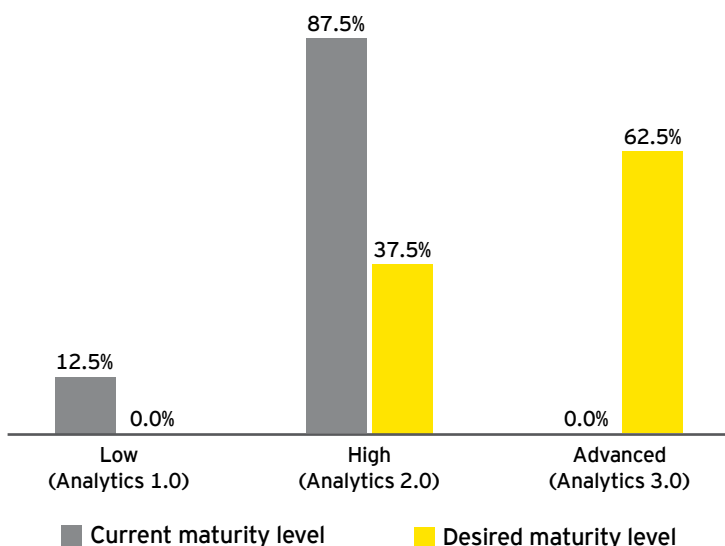
Though many IA departments have made advancements in their analytics programs and realized significant value from these advances, a majority of firms are continuing to improve their programs to be at maturity stage of Analytics 3.0. Firms are working to transform the "business of auditing" so that analytics is embedded within the business and will help drive the audit process and risk identification. Some major advantages and components of Analytics 3.0 include:

▸ Incorporation of prescriptive analytics

▸ Intelligent risk identification

▸ Sophisticated audit planning and execution

▸ Continuous auditing driven by analytics

Current vs. desired maturity levels of respondents' analytics programs

	Current maturity level	Desired maturity level
Low (Analytics 1.0)	12.5%	0.0%
High (Analytics 2.0)	87.5%	37.5%
Advanced (Analytics 3.0)	0.0%	62.5%

What is continuous auditing?

Continuous auditing is considered a mechanism performed by IA to conduct effective integrated auditing and monitoring by leveraging technology to continuously gather data. The timing of the audits is to report events in real time by continuously gathering data from management information systems and transition from sampling accounts and transactions to providing 100% coverage. This mechanism also helps to provide opinions on control breakdowns and changes/impacts to the control environment.
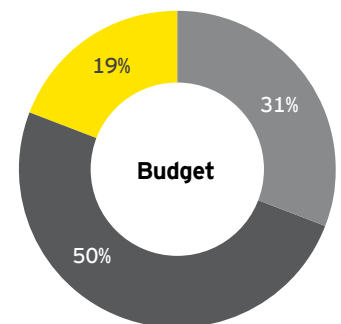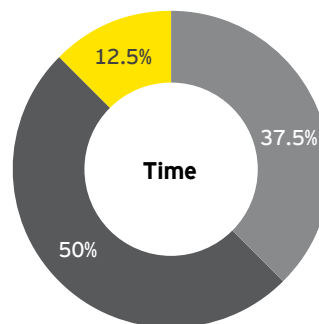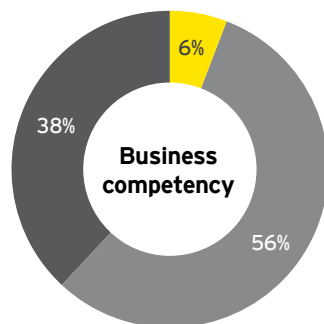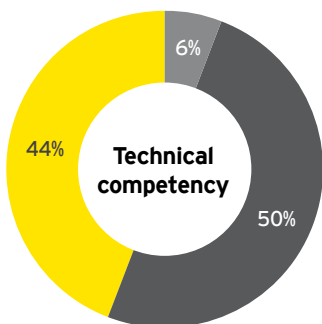
Analytics challenges

As IA departments are striving to further advance their analytics programs, deployment of a successful analytics program poses several inherent challenges. In order to produce meaningful insights within the audit process, an in-depth understanding of data science, technology and business requirements is needed. For this reason, collaboration between the audit department and analytics teams is critical for an effective IA Analytics program and can help overcome challenges that many analytics programs face, including:

1 **Business competency** – Ideally, IA Analytics teams are composed of individuals having expert knowledge of both data analytics and the business. However, given the technicalities of data science and the complexities of the financial services industry, this can be difficult for organizations to achieve. Thus, collaboration between analytics experts and auditors is key. The analytics teams need an in-depth understanding of the business to build insightful and accurate models. Similarly, the business needs to understand how, and when, analytics can be utilized within the IA process and to recognize that dependencies, such as quality of data, and limitations, including what analytics can identify, exist.

2 **Timing** – The audit life cycle often contains demanding time constraints that limit the availability of audit teams to be an active participant in the build-out of analytics. Tight time constraints and reduced contribution from auditors put pressure on analytics teams to deliver models that may have limited value and insight. Successful IA Analytics programs deploy analytics well ahead of scheduled audits. They deploy a formal methodology of incorporating analytics into the annual planning, audit planning and audit execution, which in turn increases the effectiveness and efficiency of planning and conducting audits.

While technical competency is not a significant challenge (44%), there is concern over business competency (94%):

Respondents found time (87.5%) and budget (81%) to be some of the largest challenges to using data analytics:

Technical competency: 6%, 44%, 50%
Business competency: 6%, 38%, 56%

- ■ Significant challenge
- ■ Somewhat challenging
- ■ Not a challenge


Time: 12.5%, 37.5%, 50%
Budget: 19%, 31%, 50%

- ■ Significant challenge
- ■ Somewhat challenging
- ■ Not a challenge

3 **Budget** – Audit departments are constrained not only by time but also by budget. Too often audit departments attempt to deploy analytics across all or many of their audits without the hours or budget necessary to drive real value in any one area. Successful IA Analytics programs have established budgets independent of the audit department. This allows analytics teams to concentrate efforts on developing analytics that will yield better returns.

4 **Access to data** – Hurdles in accessing data that is reliable, complete, and accurate impedes the execution of an effective IA Analytics program. Difficulty in accessing data not only delays the build-out of analytics but also delays identification of data quality issues. Quality of data directly affects the quality of results. Successful IA Analytics programs either submit data requests early on or have direct access to the data.

While access to adequate technology is not a challenge (25%), there is concern over access to the necessary data sets (50%):

Adequate technology: 25%, 75%

Access to data: 50%, 50%

■ Adequate
■ Not adequate
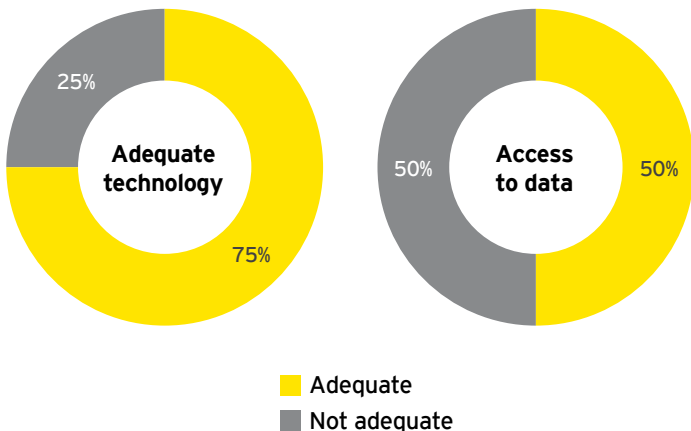
Emerging trends

As new emerging technologies continue to disrupt the financial services industry, IA departments are similarly affected. Key advancements in new emerging technologies provide IA departments with new methods to address the inherent budget and time constraints that they face. In addition, IA departments are also making significant investments in adapting their analytics programs to further cross-firm risk identification through continuous auditing and to better integrate themselves with the business audit teams. The investments that firms are making in their IA Analytics programs can be categorized into the following areas:

1 **Business integration** – Integration of analytics in the audit process has become crucial to the success of IA Analytics programs; it is a key enabler to overcoming many challenges. The most successful programs fully integrate their analytics programs throughout the audit life cycle, from annual planning to audit planning and audit execution.

‣ Annual planning

Incorporating analytics into annual planning allows IA departments to create a more intelligent design of the annual planning process. By identifying trends, anomalies and high-risk areas of prior year audits, IA departments make more informed decisions on where to focus their limited time and resources.

‣ Audit planning

The use of risk-based analytics and quantitative key metrics, as well as the qualitative assessment traditionally used in audit planning, provides additional mitigation to planning and execution risk. Sample testing and analysis of key metrics and market trends can serve in early identification of potential risks, allowing IA departments to more appropriately budget time and resources for the audit execution.

*In 2017 the primary methods that organizations incorporated data analytics within their **audit planning** phase was through identifying targeted higher-risk areas and to support a sampling approach.*

More than 93% of organizations incorporate analytics within their audit planning and scoping phases.
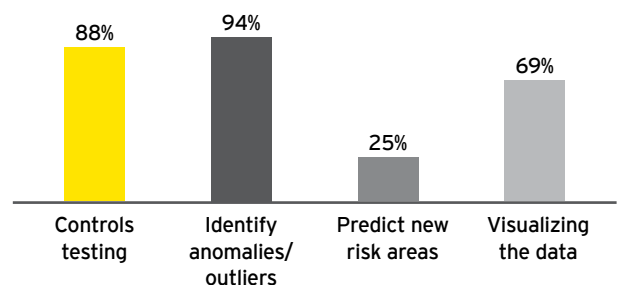

- Identify targeted high-risk areas — 56%
- Support sampling approach — 38%
- Not incorporated — 6%
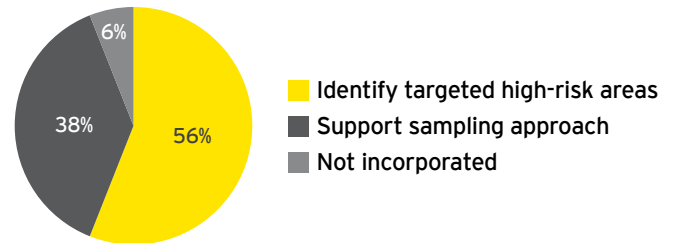
‣ Audit execution

With appropriate planning and deployment, the use of analytics drives efficiency and effectiveness of audits. Automating historically manual procedures and removing recurring costs allow for less time and fewer resources to execute audits. More advanced integration of analytics includes the creation of self-service tools to allow business auditors the ability to analyze data in real time while analytics departments address the more complex requests.

*In 2017, the primary methods for incorporating data analytics within the **audit execution** phase was through control testing and the identification of anomalies and outliers.*

Organizations incorporate data analytics into their audit execution phase by:
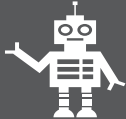

- Controls testing — 88%
- Identify anomalies/outliers — 94%
- Predict new risk areas — 25%
- Visualizing the data — 69%

2   **Advanced technologies** – IA departments are incorporating advanced analytics technologies within the analytics programs to provide increased insight and efficiency. While organizations have previously focused on utilizing data visualization tools within their audits, organizations are now evaluating the ways of incorporating robotic process automation and text analytics within their IA departments.

▸ Robotic process automation (RPA)

RPA represents technology that optimizes business processes in a repetitive, auditable and controlled manner. RPA enables financial services organizations to automate existing high-volume, deterministic, computer-based tasks as if the business users were doing the work. Software-enabled robots work 24/7, sit alongside existing IT infrastructure and are governed by IT and the operations teams. Robots do the **what**, freeing up humans to focus on the **why**. Cost reductions and productivity efficiencies are the expected outcomes, which create opportunities for organizations to better focus their resources on driving innovation and expanding their business.

Progressive IA departments within financial services are exploring opportunities to transition the manual, nonjudgmental, repetitive tasks to technology-enabled robots. This transformation will allow IA departments to invest increased time with their auditees to foster enhanced creditability as a trusted advisor, focus on the critical risks and develop deeper relationships and competencies to keep pace and connect with the business (e.g., cybersecurity, new product development). In turn, IA departments will create stronger risk professionals that can rise to the challenge to achieve the do-more-with-less philosophy.

IA departments recognize that a virtualized workforce may facilitate these downstream benefits, and it is therefore vital to remain aligned with the broader organization direction, leverage humans for their financial services and technical competencies and maximize the advantages of RPA.

Compatibility
Integration with existing systems and infrastructure

Accuracy
Correct calculation, result or decision from the onset

Consistency
Identical processes and tasks, eliminating output variations

Reliability
No sick days; services are provided 365 days a year

Auditability
Fully maintained logs essential for compliance

Productivity
Available human resources for higher-value tasks

Right shoring
Geographic flexibility promotes enhanced cost-effective delivery

Retention
Shifts human effort toward more stimulating tasks

Scalability
Instant ramp-up and down to match demand peaks and troughs
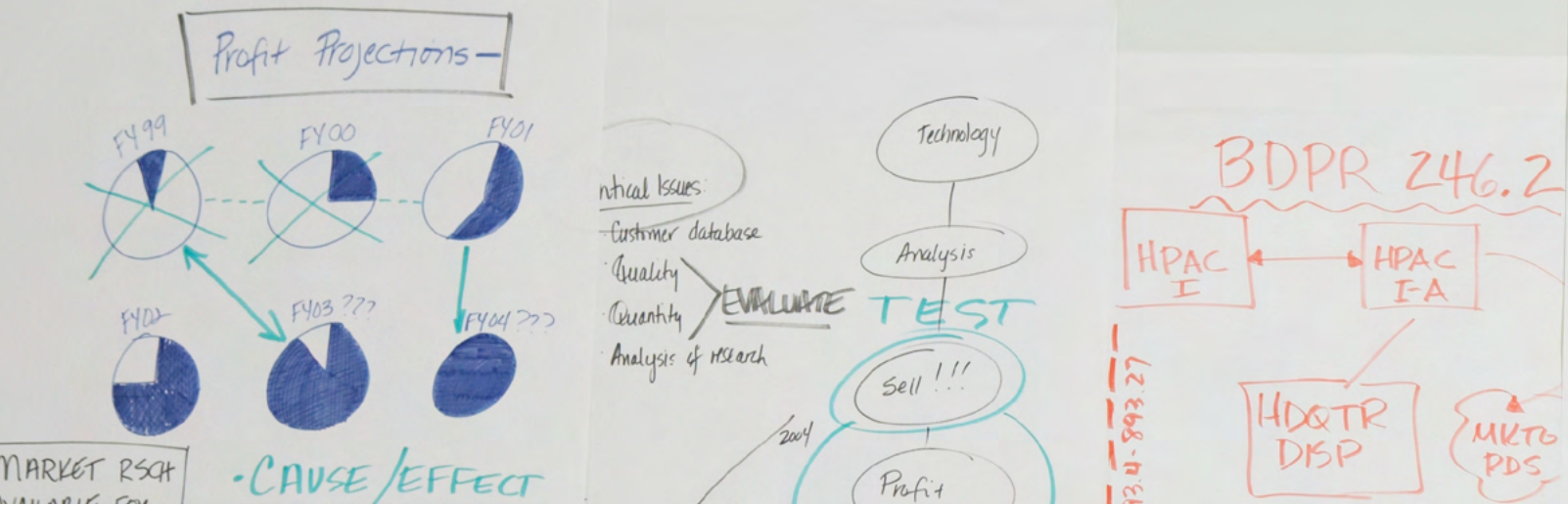
▸ Text analytics

Text analytics allows users to identify emerging themes within blocks of texts (e.g., qualitative assessments, risk narratives, case notes, agent comments) to enhance the understanding of the underlying risks. Organizations are utilizing text analytics within the internal audit process to analyze customer complaints for risk identification and enhancement of the risk evaluation process. By identifying key trends in the customer complaints data, analytics programs are able to further identify certain target areas that can be prioritized in audits and analytics. In addition, analytics programs can use text analytics for mapping risk areas to regulatory rules and requirements and validating risk evaluations in risk and control matrices (RCMs). By using advanced analytics tools, analytics programs can source and aggregate regulatory rules and requirements; then, through text analytics, these requirements can be mapped to risk areas to support the assessment process. Subsequently, key issue areas can be identified based on descriptions and appropriately classified. Furthermore, key words and themes can be analyzed within the "comments" section of RCMs in order to further validate the risk evaluation and ranking.

3 **Continuous auditing** – IA departments are looking to transform the audit process to conduct effective integrated auditing and monitoring by leveraging technology to continuously gather data. By continuously gathering data from management information systems, IA departments can move from sampling accounts and transactions to providing 100% coverage with real-time reporting. IA departments are making considerable efforts in developing continuous auditing programs.

Continuous auditing is "innovating" the audit process by helping to analyze how risk is imbedded across the firm. Unlike continuous monitoring, where IA reacts to changes in the risk and control environment, continuous auditing provides opinions on control breakdowns and changes/impact to the control environment, helping to provide increased assurance that key processes and controls are operating effectively and risks are appropriately mitigated. The key focus of a successful continuous auditing program is not responding to every exception but developing a robust program with certain rule sets and trigger points for response that provides confidence in the audit process.
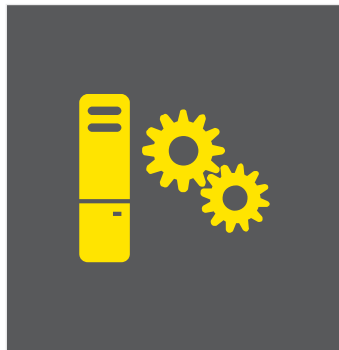
The following framework should be used in order to implement a successful continuous auditing program:
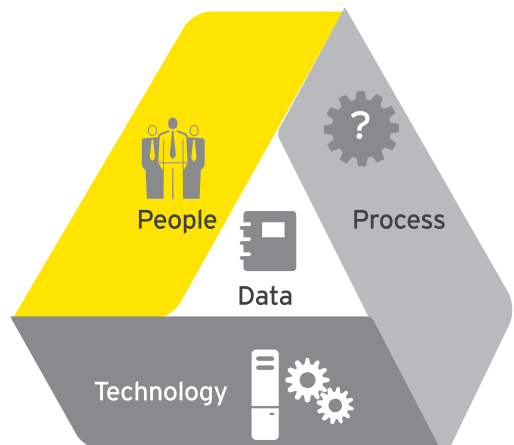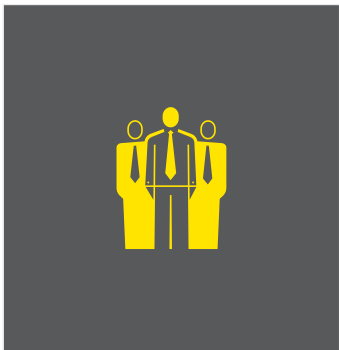
Support (People)

The choice of people will drive the organization on how continuous auditing is supported.

Foundation (Technology)

Defining technology drives a continuous auditing program. Technology should be chosen to support scalability and ease of use across the audit enterprise.

Sustainability (Process)

The people and technology drive the process, which determines how you implement continuous auditing and gain coverage on significant transactions.

Life-line (Data)

Data will be used to drive insight and make critical business decisions. Data acquisition and quality will need to be assessed for an effective continuous auditing program.

Conclusion

As IA Analytics programs continue to develop, there is an increasing shift away from utilizing analytics purely to increase audit efficiency/coverage toward leveraging analytics to identify certain trends and anomalies, and ultimately to develop a continuous auditing framework. By incorporating new emerging technologies, analytics programs are less hindered by budget and time constraints and can focus their attention toward cross-firm risk identification and identifying key trends and anomalies that cannot be identified without testing the entire population.

However, as IA departments continue to push forward toward Analytics 3.0, it is critical that they don't lose sight of the importance of integrating themselves within the business audit process and the business audit teams in order to be effective. Concurrently, the audit department as a whole will need to adapt and change. Methodology, planning, training, budgeting and execution should be updated to focus on integrating the business audit teams with the analytics programs and addressing the increasing importance of cross-firm risk identification.

Authors

Phil Andriyevsky
Principal, Ernst & Young LLP
+1 212 773 9329
phillip.andriyevsky@ey.com

Mudit Gupta
Executive Director, Ernst & Young LLP
+1 212 466 9986
mudit.gupta@ey.com

Derrick Steele
Principal, Ernst & Young LLP
+1 212 773 4753
derrick.steele@ey.com

Brian Portman
Principal, Ernst & Young LLP
+1 412 644 0495
brian.portman@ey.com

Sameer Gupta
Principal, Ernst & Young LLP
+1 212 773 5234
sameer.gupta@ey.com

Natasha Malik
Senior Manager, Ernst & Young LLP
+1 703 747 1325
natasha.malik1@ey.com

EY | Assurance | Tax | Transactions | Advisory

ey.com