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Effective adoption of internal audit analytics in financial services institutions

By capitalizing on the wealth of data now available—from your own business activities as well as external sources—Internal Audit (IA) can generate valuable new insights, provide greater assurance, and rewrite the rulebook on traditional auditing techniques.

Given the surge of big data and the belief that traditional notions of IA testing are no longer sufficient in providing assurance, embedding analytics into internal audit plans has taken root. New economy business models, disruptive technologies, and ever increasing expectations by global regulators have elevated the importance of effectively applying analytics to IA. A recent global survey[1] of 240 chief audit executives of financial services institutions foreshadows a dramatic increase in the use of advanced analytics. The research shows that about 20 percent of the surveyed participants are using advanced analytics in at least 75 percent of their audits, with that number expected to double in the next three to five years.

As internal auditors seek new ways to innovate in their roles, and gain impact and influence within their organizations, analytics is proving to be a key differentiator. By embedding analytics in every phase of the audit process, IA can help the business navigate a world that has become vastly more volatile, uncertain, and complex. We call this new approach to embedding analytics "insights-driven auditing."

1. Evolution or irrelevance? Internal audit at a crossroads—Global Chief Audit Executive survey; Deloitte Touche Tohmatsu Limited; July 2016; www.deloitte.com/globalcaesurvey

Setting the vision for internal audit analytics

There are a multitude of options to consider when implementing or enhancing analytical capabilities and delivering analytics-enabled audits: How and where to host the capabilities and solutions? What is the right technology to deploy and when? Who are our ideal resources to drive the efforts? And how does this affect the internal audit process and communication of results? These decisions will impact not just how you audit, but what and when you audit.

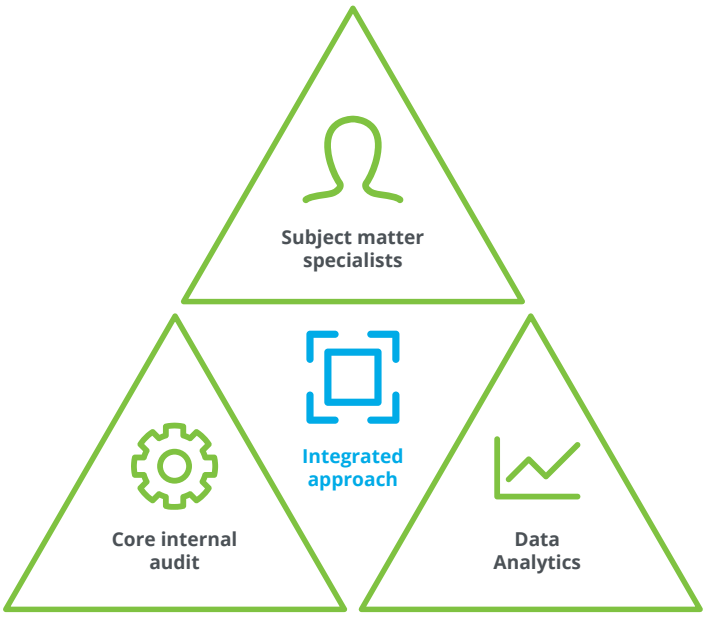
Data analytics can not only support the internal audit process, but it can also lead to the production of useful and actionable insights for decision-makers through modeling, visualization and forecasting. Insights can be historical, real-time, or predictive and can also be risk-focused (e.g. controls effectiveness, fraud, waste, abuse, policy/regulatory noncompliance) or performance-focused (e.g. increase revenue, decreased costs, improved profitability). Data analytics can also provide the "how?" and "why?" answers to the initial "what?" questions that arise after viewing the data. The IA function can use data analytics to advise the business in non-traditional ways by collaborating with other functions such as compliance, accounting, and risk management in areas such as strategic planning.

Delivering the strength of a multidisciplinary, insights-driven audit approach

Analytics is more effective when delivered as an integrated team. This means your core IA professionals are working together with the data science and analytics professionals and calling on subject matter specialists as appropriate (see figure 1). By co-developing scope, risk objectives, and approach for the internal audit, and jointly participating in walk-throughs, internal auditors significantly enhance effectiveness of the analytics. In addition, a shared understanding of the process and outcomes ultimately results in an audit with a greater impact on the business.

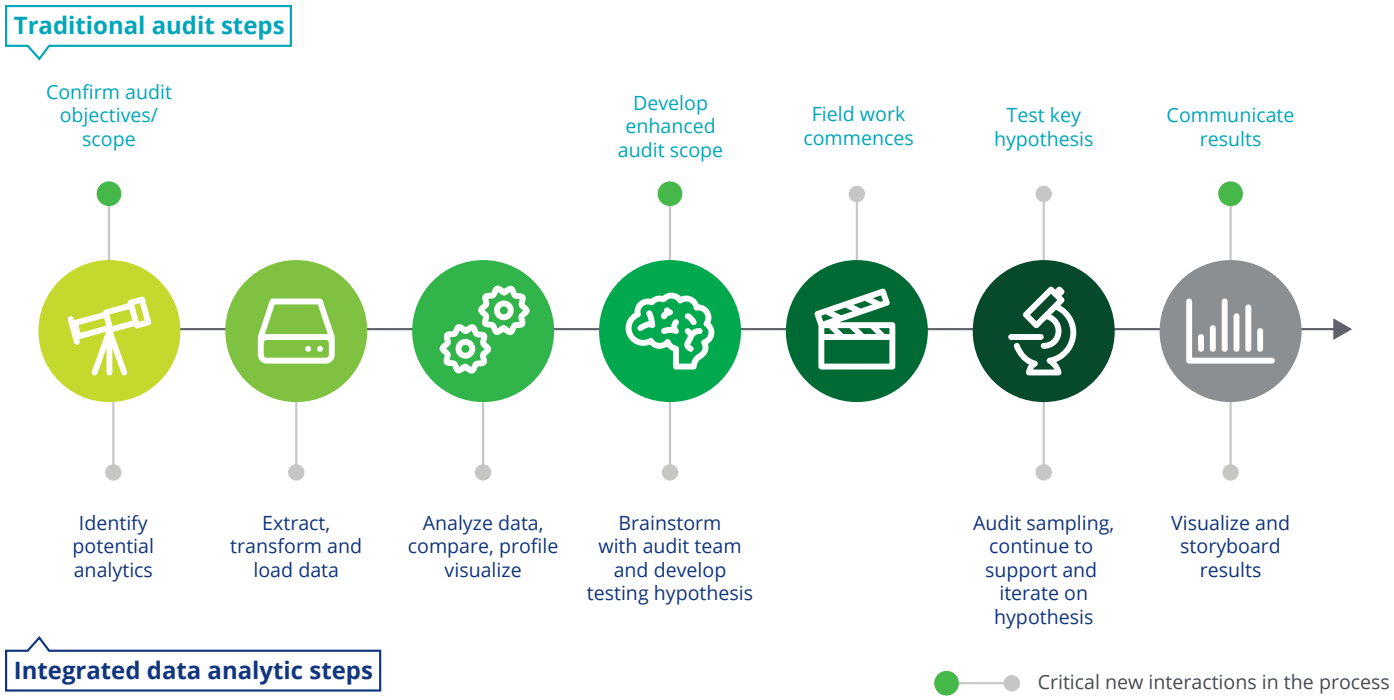
The effectiveness of any analytics-embedded internal audit is linked to those demonstrable results that can transform your organization, particularly when they translate to financial benefits. When seeking insight from data, it is important to ask the right questions and to always challenge yourself with "so what?" for any insight produced. Linking questions to key testing hypotheses—or "what could go wrong"?—can help drive the analytics approach. Hypothesis development needs to happen prior to scoping your audit to deliver the greatest benefit. Analytics as a "bolt-on" to the audit (i.e., during fieldwork alone) drives incremental rather than transformational benefit. Figure 2 illustrates the insights-driven audit approach.

Figure 1: Enhanced audit integration model



Refreshing the audit approach: Embedding analytics

Figure 2: Enhanced insights-driven audit methodology



Benefits of an insights-driven approach

The benefits of an insights-driven audit can be summarized into four simple statements:

Perform the same audit faster

For example, improving your access to data and developing key insights before fieldwork commences; making connections and comparing performance and key benchmarks between products, processes, and business units means you focus only on what is of utmost importance and avoid merely confirming the obvious; or assessing transaction risks in real time.

Perform the same audit cheaper

For example, connecting the auditor directly to the process, through the data with risk analytics and data visualization, allows exploratory analytics to drive a more focused audit, while still testing 100% of the population. Moving to automated routines over manual saves time and money.

Perform better audits

For example, combining data from inside and outside your organization to add new richness and granularity to insights and understanding of risk. Benchmarks, comparative analysis, and trending enhance on-the-job learning and development while delivering a more impactful result to business stakeholders.

Make innovation a centerpiece

For example, providing a rich combination of data science disciplines and use of a new generation of technologies to enhance, automate, and continuously improve the audit process, reporting, and service delivery.

Analytics is more effective when delivered as an integrated team.

What does 'success' look like?

To deliver effective analytical insight as an everyday part of the internal audit process means IA must broaden its focus beyond data and technology. The goal is to develop cost-effective solutions that are targeted, underpin the internal audit process, and achieve a more efficient and effective audit delivery model.

Becoming an analytics-enabled function

For many IA leaders, knowing where to start on their analytics journey is one of the tougher decisions they'll have to make. It will begin with an owner who sets out a vision and remains ultimately accountable for decision making at every stage; a strategy in the form of a roadmap, which describes and sets out the vision and objectives two to three years in the future; and an agreed set of processes that take into account everything from the order and priority of key tasks, including technology- and human resources-related decisions, to the steps required to identify, map, and extract data for use in your first analytic embedded audit.

If a key element is missing, the vision will likely not be met. Your brand, along with the business, could be damaged. To help overcome this, we recommend a simple three-stage approach:

1. **Assessment**. Analyze current analytics capabilities both within IA and across the business and rapidly develop proof of concepts to identify challenges and opportunities.
2. **Roadmap**. Create a long-term strategy and vision for analytics; scope and prioritize projects to achieve this.
3. **Deliver and monitor**. Initiate the program, deliver the roadmap, and monitor your implementation successes against key performance indicators.

Becoming analytics-enabled relies on the fundamental building blocks of people, process, data, and technology, all being informed by an analytics strategy. This enables the embedding of analytics into the audit lifecycle, focusing on the right risks at the right time while aligning analytics to the IA strategy and value drivers of the business. The questions below can help form the basis of your current state assessment and implementation roadmap.

To deliver effective analytical insight as an everyday part of the internal audit process means IA must broaden its focus beyond data and technology.

Analytics strategy: In order to implement or enhance analytic capabilities, IA leaders first should develop an upfront vision of the IA future state, define objectives for the proposed initiative(s), and set the overall strategic direction for the function. Along the way, questions they should consider asking include:

- What do we want the department to look like two to three years from now?
- How can we use analytics to be more strategic?
- Does executive leadership understand the importance and benefits of embedding analytics into the IA function?

Process: Shifting from a "checklist" or sample approach to insight-driven decision making requires a sustainable process framework that staff can follow, regardless of attrition or other changes. Some questions to consider in building this framework include:

- When is the right time to identify analytics projects? Which are the best projects to focus our efforts?
- What are the steps we need to take to ensure that these projects are effective?
- How will analytics change the approach of our current audits and what is the impact of this change?
- What are the steps we should be taking to extract and load data timely?
- How will we measure our progress and capture lessons learned?

Technology: Insights-driven auditing relies on analytic technologies to enable new ways of gathering, analyzing and presenting data. Accordingly, many believe that technology should come first when building a sustainable analytics function. However, in our view, it should come last. The overall strategy for the analytics function, along with the vision of its future state, should drive technology selection and deployment. With this in mind, IA leaders should consider:

- What technologies do we need not only to process the data but also to present the results in a meaningful way?
- Are these technologies already licensed by the business?
- Are these tools scalable and are they capable of supporting our long-term vision?
- How can we most effectively collaborate with IT?
- What kind of technical support is available?
- How will we document and map the data landscape to support our long-term vision?

Data: Through analytics, IA leaders can harness vast amounts of data with greater accuracy and efficiency. It also helps IA leaders to understand and identify potential risks and opportunities farther into the future. Questions to consider include:

- Where does one set up an analytics hub?
- What data do we need to answer the important questions?
- From where is it sourced (i.e., internal, external, licensed, open, etc.)? Can internal efforts such as BCBS 239 be leveraged?
- How do we bring it together and what are the technical and governance challenges in transforming, linking and publishing it?
- What about quality and accuracy?

People: IA leaders will need to think through the human resources aspects of delivering insights-driven audits, including roles and responsibilities, skill sets, staffing needs, competency models, and training requirements. Questions to consider include:

- Who is the accountable IA owner?
- What organizational structure do we need to put in place to support our analytics strategy?
- Do we need new skill sets, such as statistical know-how, data-management expertise, and visualization and presentation skills? (see figure 3)
- Who do we need to engage in other departments as well as our own?
- How will we train our staff?

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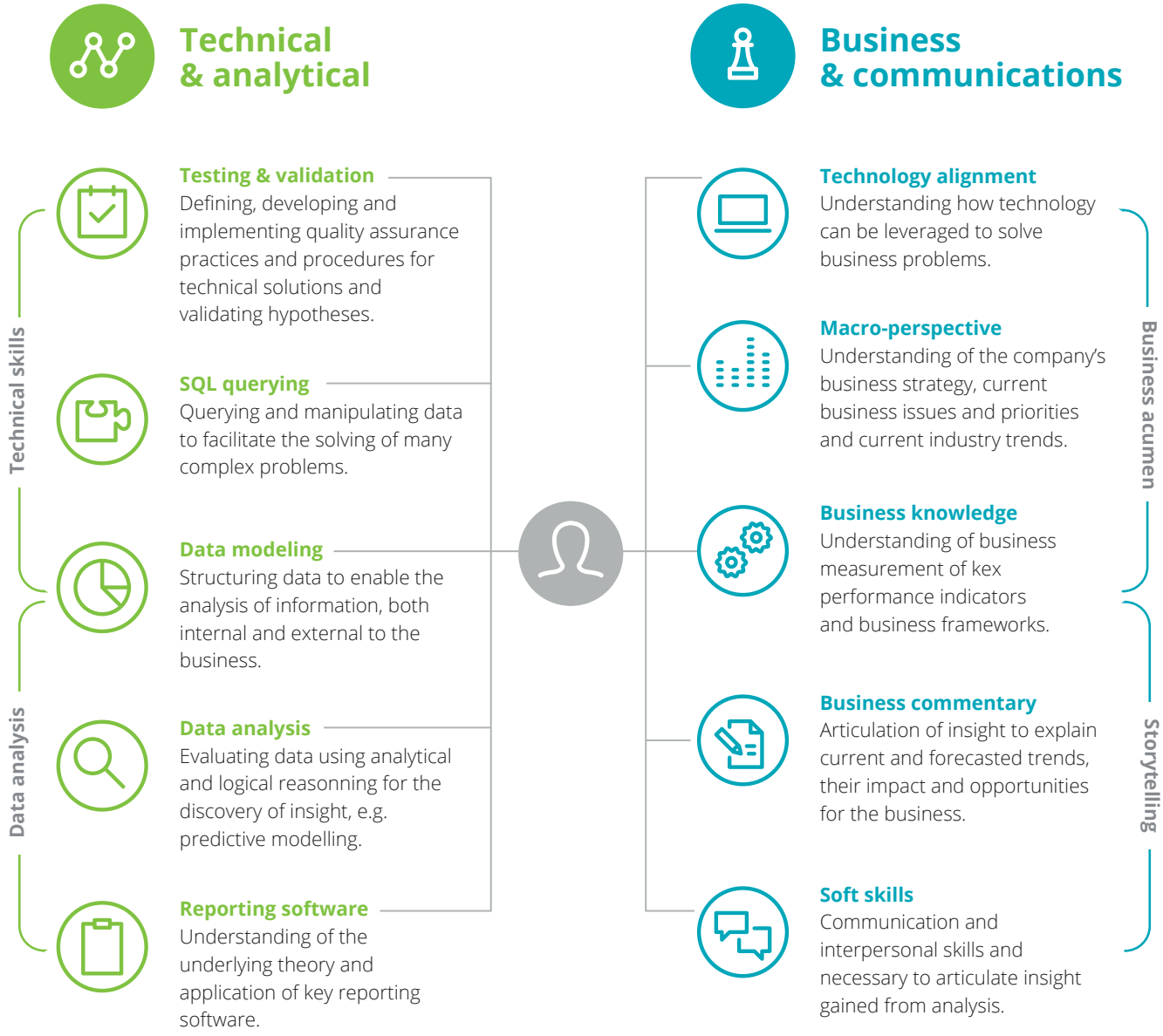
Figure 3: Data analytics competency model



Getting started

A proof of concept can serve as a feasibility study to provide a current state assessment of the organization's analytics capabilities and the strength of the insights that can be produced. To begin, the IA team would identify key business issues or important questions facing their department. We call this process "hypothesis development." The IA team can use the proof of concept to share visible, tangible insights with their business stakeholders and get to the heart of the issue.

Plan around roadblocks

Leveraging advanced analytics for internal audit may result in significant cost savings across an organization; however, many IA teams are not garnering the efficiencies afforded by its use. While many audit teams use analytics techniques in their fieldwork, survey data[1] indicates that a minority leverage the more advanced and vastly more valuable procedures during risk assessment and audit scoping. This suggests something is holding them back, and cultural change is a likely culprit. One of the most formidable obstacles in building a sustainable analytics capability for IA is changing the traditionalist mindset. Forward planning is essential and often requires a rethink of the audit methodology and approach to allow for analytics (see figure 2).

Survey results[1] also show other barriers to the effective use of internal audit analytics —primarily the availability of quality data and internal audit's ability to effectively extract, transform, and load that data for use in audits. Solving for these data problems requires a focused approach that brings together the major stakeholders for data within the organization. Internal Audit should invest in the talent and solutions that enable reasonable and timely access to data while effectively addressing concerns related to privacy and security.

The path forward

While traditional IA functions may leverage analytics to select samples, extrapolate results, or identify exceptions, insights-driven auditing goes beyond this basic process in order to better address business issues and risks and provide new and valuable insights to management. It can help IA professionals ask the right questions, improve confidence in audit results, and identify the most appropriate actions.

While few organizations are on the cutting edge right now, our experience suggests that insights-driven auditing will become pervasive among leading companies by 2020. Soon, effective IA departments will integrate analytics as a core capability across their function and throughout the audit lifecycle. By acting now, IA leaders can get ahead of this trend, generating valuable new insights and more effectively help their business to navigate the future.

Leveraging advanced analytics for internal audit may result in significant cost savings across an organization; however, many IA teams are not garnering the efficiencies afforded by its use.

The power of this method lies in the fact that the grouping is not stipulated by the analyst or auditor, but rather is purely driven by the data, and can therefore offer a robust way of circumventing potential auditor bias when developing an analysis

Internal audit objective: Conduct an internal audit of a real estate asset management firm's debt portfolio

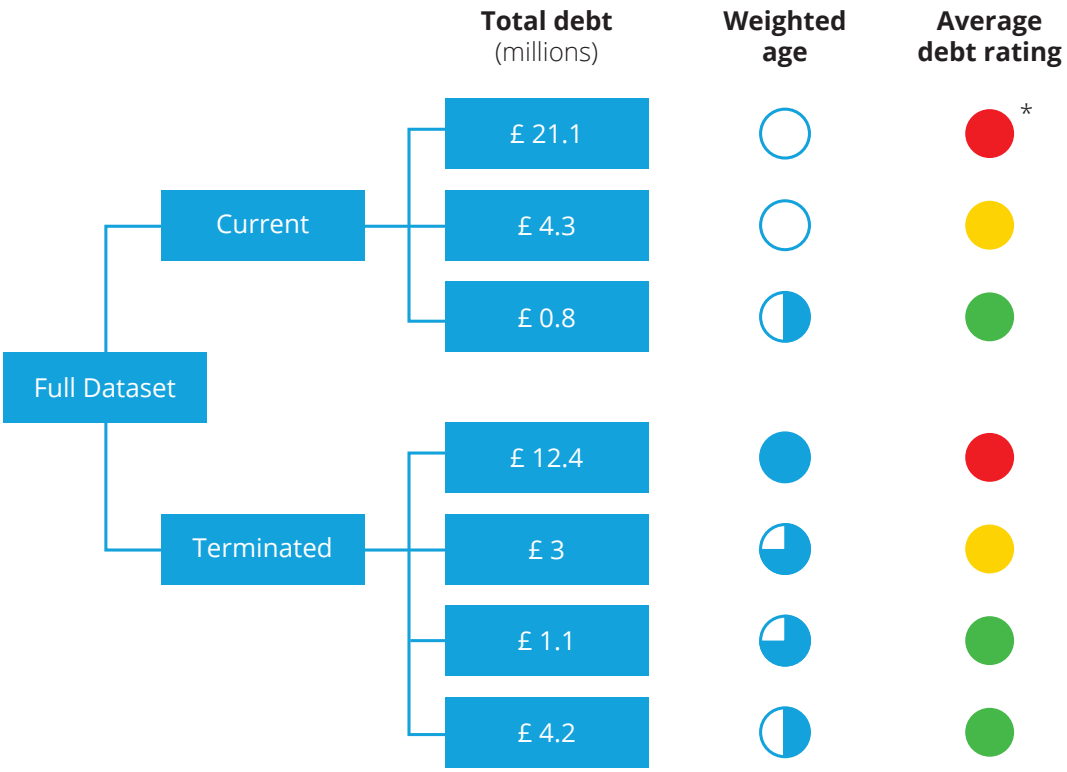
Initial approach and challenge: The audit team used analytics testing based on a set of risks drawn up by the business audit team based on their subject matter expertise. However, this approach may not have considered potential unknown risks due to auditor bias.

Removing auditor bias through clustering: To address potential auditor bias, the team leveraged an anomaly detection technique known as *clustering*.

The power of clustering lies in the fact that the grouping is not stipulated by the analyst or auditor. Rather it is purely driven by the data and can circumvent potential auditor bias when developing an analysis.

They began by gathering a dataset containing key information about the debt portfolio such as value of debt, age of debt and various characteristics of the fund and property managers (Figure 4). Then, every debt item in the dataset was grouped together based on shared characteristics (Figure 5). Any data point that is not grouped within any of the main clusters can be given an outlier score. This is a single, purely data-driven number that ranks how atypical each item is.

Figure 4: Dataset of key information



* This cluster contained a large volume of poor quality debt and was eventually written off by the business in order to recover tax.

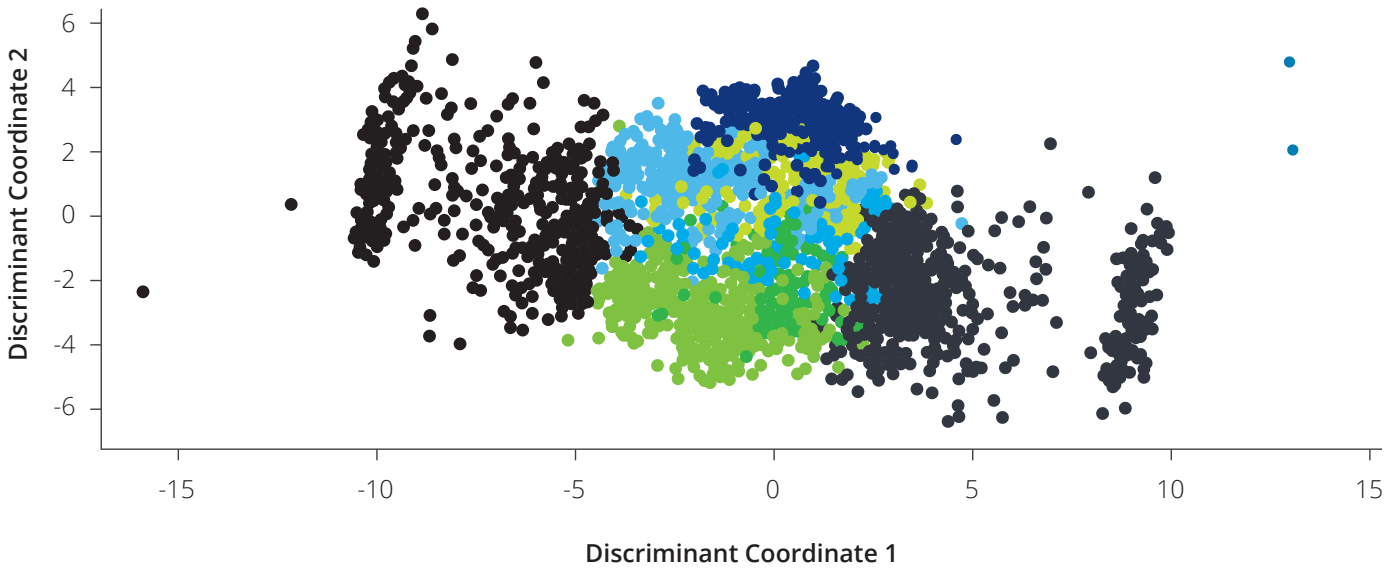
Analysis and outcomes: The clustering identified seven groups of aged debt items spread across the portfolio. Analyzing each of the clusters, the team employed a targeted approach to address each one. In particular, one group was a pocket of debt with particularly high risk. The finding helped lead the asset manager to the decision to write off the debt, allowing the business to claim back tax.

Additionally, analysis of the outliers uncovered multiple debts which were of moderate value and age that were not classified as high risk per the business audit team's original analytics. However, they were atypical as both the relevant fund and property managers had left the real estate firm, making them a high 20246challenge in terms of recovery. A follow-up, in-depth investigation of these individual items ensued and led to the subsequent re-assignment of responsibilities to current employees.

Key learning: Using the advanced analytics method, clustering, allowed the audit team to carry out a more robust evaluation of the debt portfolio and address outstanding debt more efficiently and effectively, and without bias.

The risks uncovered can be incorporated into standard internal audit analytics to be implemented in subsequent audits. The same cluster analytics can be used year-over-year as the method is designed to uncover anomalies in any dataset, irrespective of whether there have been changes to the underlying business processes creating the data.

Figure 5: Clusters can be visualized using scatter plots



These plots make it easy to identify atypical points in a visual fashion. The outlier shown here was one of the debt items where both the fund and property managers had left the organization.

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