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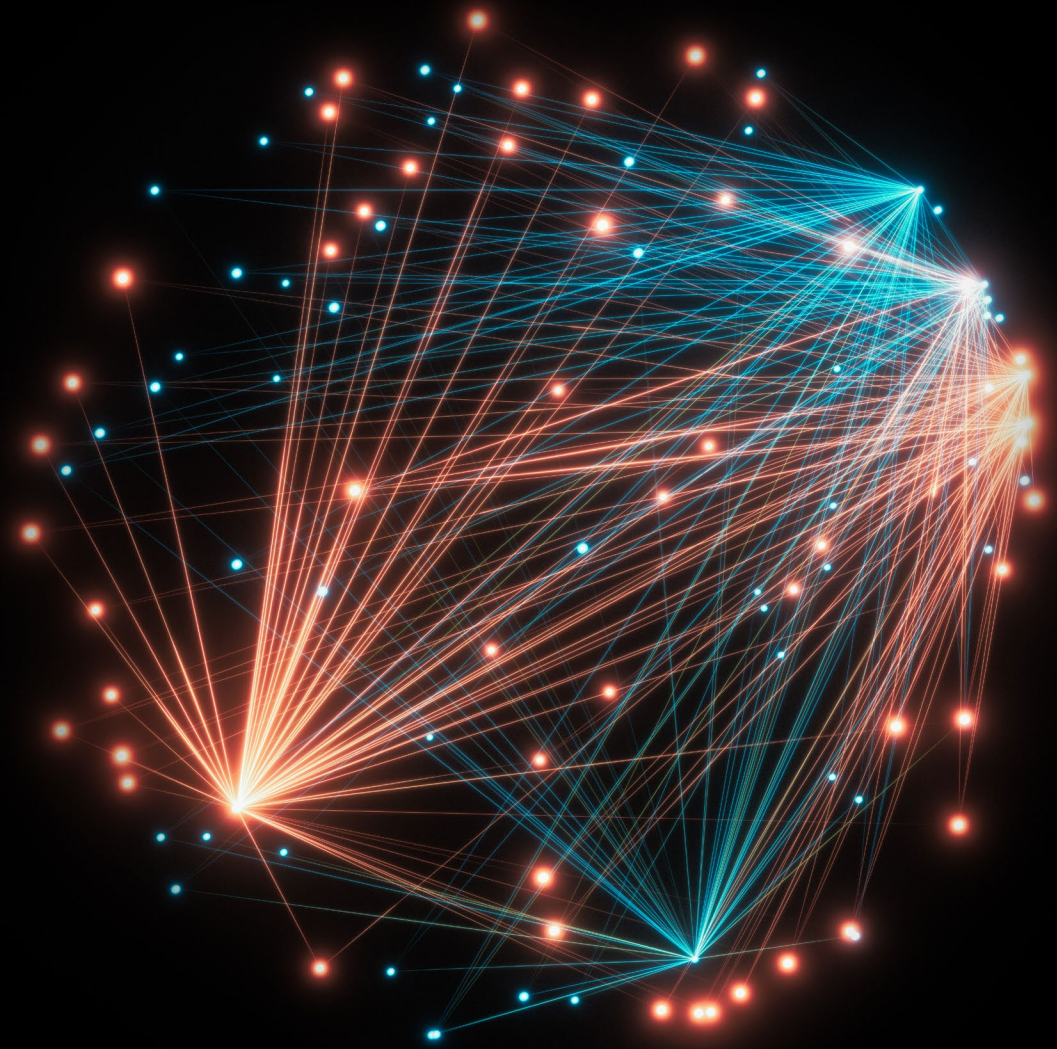


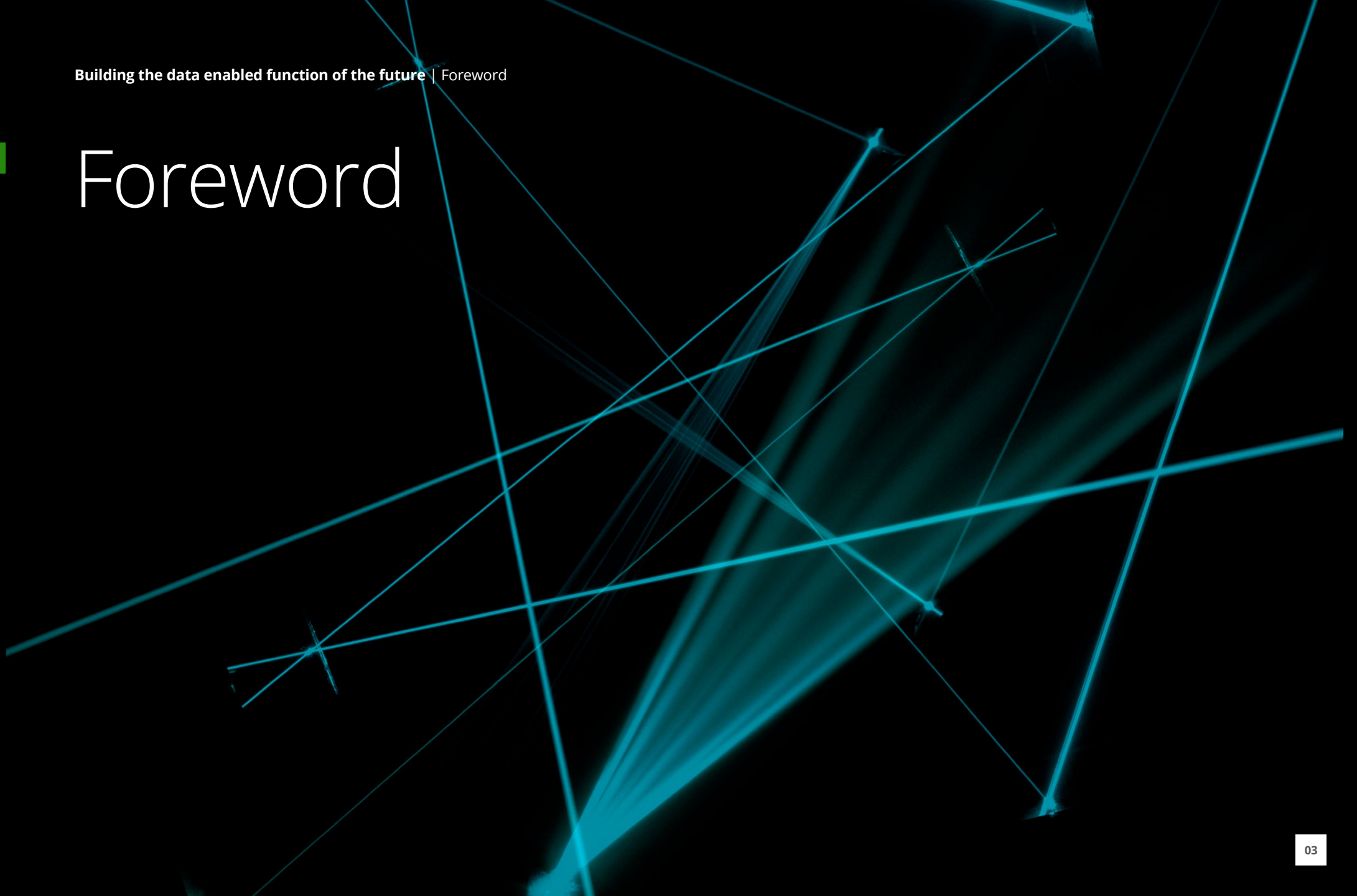
Building the data enabled function of the future

Internal audit digital and analytics survey 2021

MAKING AN IMPACT THAT MATTERS since 1845

Contents

Foreword



We are pleased to welcome you to our latest **digital and analytics internal audit survey.**

The wider topic of data analytics, and the principle of applying data interrogation or statistical analysis techniques to increase the level of assurance Internal Audit provide is, of course, not new. However, in recent years, it has gained growing attention by Board Audit Committees and Chief Audit Executives (CAEs) and has been broadened as a topic to align to the wider data and digital transformation of the Internal Audit function.

A transformation that seeks to enhance the level of impact and influence of internal audit by providing assurance more efficiently, advising management more insightfully, and anticipating risks more proactively.

Functions are realising that to be able to mirror (if not surpass) the digital maturity of their businesses, leverage technology-enabled techniques, and continue adding value, they need to evolve and innovate as rapidly as the threats they face. This requires a desire to reduce inefficiencies, embrace digital innovation, leverage the power of data and adopt a focus on to the future.

We surveyed over 50 organisations that operate in the UK, across various industry sectors, size, audit maturity, seeking to get a better understanding of the maturity of capability, the vision and approaches to building (or acquiring) such capability and some of the key lessons they have learned along the way. Many of these organisations are going through digital transformation, including in their Internal Audit function. They candidly shared views on the current state of their "maturity", the significant challenges they are facing with the pace of change, cultural adoption, the scarcity of skilled resources and openly shared their aspirations.

We considered the output of this survey in the context of previous Deloitte analytics or internal audit surveys, and drew findings, many of which reinforced earlier messages while others offered interesting new viewpoints.

Prominent among these are the findings that functions with strong impact and influence are embracing digital innovation and new approaches to running Internal Audit and that most functions are seeking to improve their data analytics capabilities and have plans in place to do so. We thought it would be intriguing to validate these hypotheses.

At this point we would also like to thank our clients who took part in this survey, either via virtual interviews, or by utilising our online survey tool. Their openness and candour, particularly when highlighting weaknesses, barriers or their ambitions to transform their functions, was greatly appreciated.

We hope you find the content stimulating and helpful in your own journey and we look forward to hearing your views on the key points underlined by the survey.

Report structure

Current use of analytics

Exploring themes such as what is the current state of play, and how the use of digital and analytics compares across sectors and size of organisations?

What is the more typical use of tools and techniques, across which lifecycle stages, and how pervasive are advanced and cognitive automation technologies in Internal Audit?

How do "smaller functions" embed/ apply analytics effectively to drive optimum value?

The operating model, talent and resourcing

Key questions that will be explored in this section relate to talent, reporting lines and organisational structure for digital and analytics teams.

What skillsets are organisations looking for in order to respond to the challenges? Which types of operating models do we find evolving?

How do functions incentivise the adoption of analytics and digital?

Challenges and barriers

This section explores the key challenges or barriers that may prevent organisations from using analytics further.

It also provides perspectives and comparatives from organisations across sectors and sizes, while also discussing insights across the industry.

How do you "embed" analytics effectively, and how important is a data and analytics culture.

Future direction and strategy

This chapter explores the answers to the "why now?" questions.
It focuses on strategic direction, key priorities for Internal Audit functions over the next 3-5 years.

It discusses the investment for future maturity enhancement and development, and how we see this translating into digital transformation initiatives and technology enablement projects.

The Internal Audit function of the future

We provide our perspectives on the effective use of digital assets, analytics and solutions as part of the organisations' journey to build the next generation of Internal Audit as a function well attuned to the challenges of emerging risks, technologies and 'disruption'.

We debate what effective digital and analytics means, what drives value, and how this value can be measured.

We have aligned our point of view to the Deloitte Internal Audit 3.0 blueprint which is designed to provide a structure to organisations' transformation pathways, seeking to bring a culture of innovation, helping functions keep pace with technological change, and enhance their impact and influence across the organisation.

"We provide our perspectives on the effective use of digital assets, analytics and solutions as part of the organisations' journey to build the next generation of Internal Audit as a function well attuned to the challenges of emerging risks, technologies and 'disruption'."

Executive summary

With COVID-19 impacting every aspect of the work environment, many functions are considering deploying digital technologies to become more resilient, cost-effective and smarter about providing services that make an impact. We thought it is a great time to explore the above across the industry and provide some refreshed perspectives and insights.

We ran a well received survey across Internal Audit Data Analytics functions in 2015, focusing on the relative maturity of the functions. We asked questions such as how to embed analytics effectively in an Internal Audit function, what is the most appropriate operating model and what is the strategy for the future.

Through our work with Internal Audit functions across a number of sectors we have recently seen a notable growth in the use of tech-enabled and analytics practices, particularly – but not exclusively – for larger and more digitally mature functions. As one would expect, there are still a number of areas that organisations struggle with, particularly in terms of setting a clear vision or embedding such practices effectively in a way that truly unlocks value.

For clarity, when we talk about "digital" or "digitisation" in the context of our report, we refer to the integration and embedding of digital assets or enablers to transform and automate existing operational processes, and increase the value offered to stakeholders.

"Through our work with Internal Audit functions across a number of sectors we have recently seen a notable growth in the use of tech-enabled and analytics practices"

"Data analytics" could form a part of such broader digitisation agendas but relate to the analysis and interrogation of data sets to identify anomalies, trends or potential issues for further investigation. The objective is to enhance the level of assurance provided by Internal Audit, through higher quality of evidence, increased depth of testing and better indicators for controls issues – current and predicted.

A summary of our findings and key insights from the survey is presented below.

Current state

- In terms of analytics use across audit lifecycle stages, fieldwork continues to be the most common; however, an area that has seen an uptake compared to previous surveys is continuous risk assessment with 30% of respondents leveraging data analytics to better anticipate risk.
- With respect to the types of tools and digital technologies applied, all respondents are performing descriptive analytics (describing what occurred) closely followed by diagnostic analytics (describing why something occurred). Cognitive analytics (predicting what will occur) with the use of advanced analytics technologies, including Artificial Intelligence (AI), appears to be the least used type among respondents at 17%.
- Visualisation tools are some of the most popular in Audit functions, with 87% of respondents reporting the use of tools such as Power BI and Tableau, due to the high impact visualisation adds to reporting as well as the relative ease of use and accessibility of visualisation tools.

Barriers and future direction

- It is interesting to find that all of the Internal Audit functions with no analytics capability or teams, have said they are planning to establish such capability in the next 3-5 years. The key barriers to overcome include lack of access to data, and inadequate skills and knowledge within the function.
- The vast majority of respondents stated that they have a clear vision for the future and a strategy for the further development of the capabilities in line with the overall Audit function's strategy and priorities.
- Some of the key strategic outcomes that functions are seeking to achieve in this area are to enhance the effectiveness of the function by providing a higher level of assurance, as well as to improve auditee engagement through richer insights and greater use of visualisation.
- Larger functions and analytics teams place their future strategic development focus on the audit areas around risk assessment, planning, audit committee reporting, while for the majority of small or medium sized functions the focus is on fieldwork.

People and talent

- Internal Audit is a people-based service function, and its ability to get the best out of its human capital will always be a key driver in determining its success. The trend we are seeing is business auditors being trained on basic analytics to develop further the "purple" person, combining sophisticated data analysis with communication skills, business acumen, and political sense. There is also a trend towards decentralised or hybrid models, driven by what is referred to the "democratisation" of analytics and technology.
- The investment in upskilling and training of auditors is relatively low cost, offering the opportunity for people to develop, helping them with career progression, but also allowing them to experiment and innovate within the remit of their audit work, which is proven to lead to increased satisfaction and retention of talent.

Internal audit function of the future

- Compared to 5 years ago, we noticed that analytics leads are reporting increasingly more to the CAE or Head of Internal Audit, or even to the Chief Operating Officer roles, which indicates that this capability has been elevated in the internal audit agendas as a topic of strategic importance for functions.
- Innovation is key to an effective, evolving and resilient Internal Audit function. Digital innovation should be encouraged across all lifecycle stages or operational processes of the function, and not just as part of fieldwork.
- While many of our lessons and suggestions from this survey would not apply similarly to all functions, we believe that the key principles and success criteria for an effective digital and analytics function include the adoption of a coherent transformation strategy and prioritising innovation and a data mindset.
- The real power in Internal Audit digital and analytics involves a change in mindset; a mindset that is value-driven, forward-looking, more focused on delivering business insights to stakeholders than the traditional compliance-driven Internal Audit mindset of "what we have done before".

"The key barriers to overcome include lack of access to data, and inadequate skills and knowledge within the function."

Current use of analytics

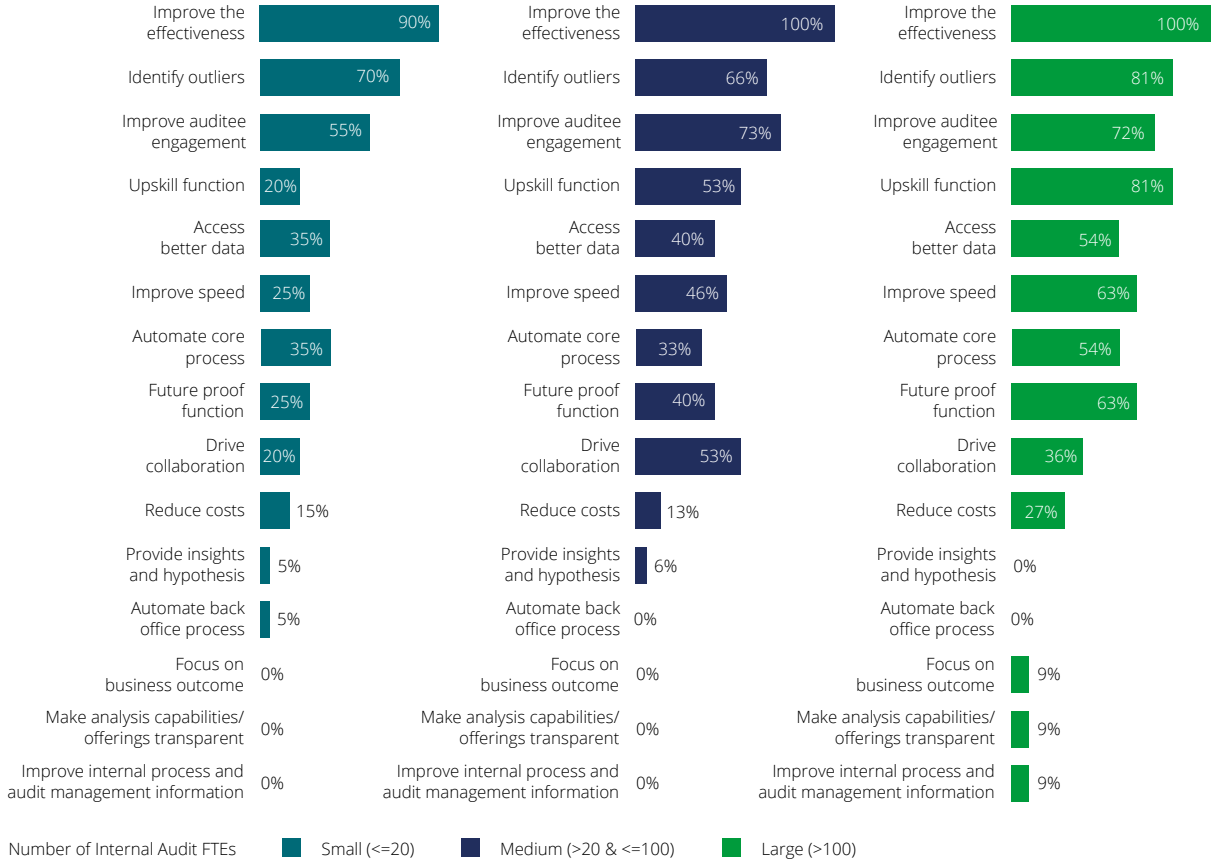
There are two perspectives covered in this section, the first being the use of digital technologies and analytics across the internal audit lifecyle, and the second the type of technologies, practices or sophistication of analysis adopted.

It is worth underlining that, while 18% of our participants reported that they were not using analytics at all, they did have active plans to do so in the future; this contrasts to the 2018 CAE survey[1] where 25% reported having no analytics capabilities at all.

We asked our survey participants what the key driving factors were behind the use of analytics and digital and what they hoped to achieve, "Improving the effectiveness of the function through greater assurance coverage" was top of the list with "identifying outliers and unusual items for focus" a close second. "Improving auditee engagement through richer insights and greater visualisations" was also high on the list (Figure 1).

Figure 1. Driving factors for the use of digital and analytics

What are the key driving factors / outcomes that the function has been aiming to achieve through the use of digital and analytics to date?



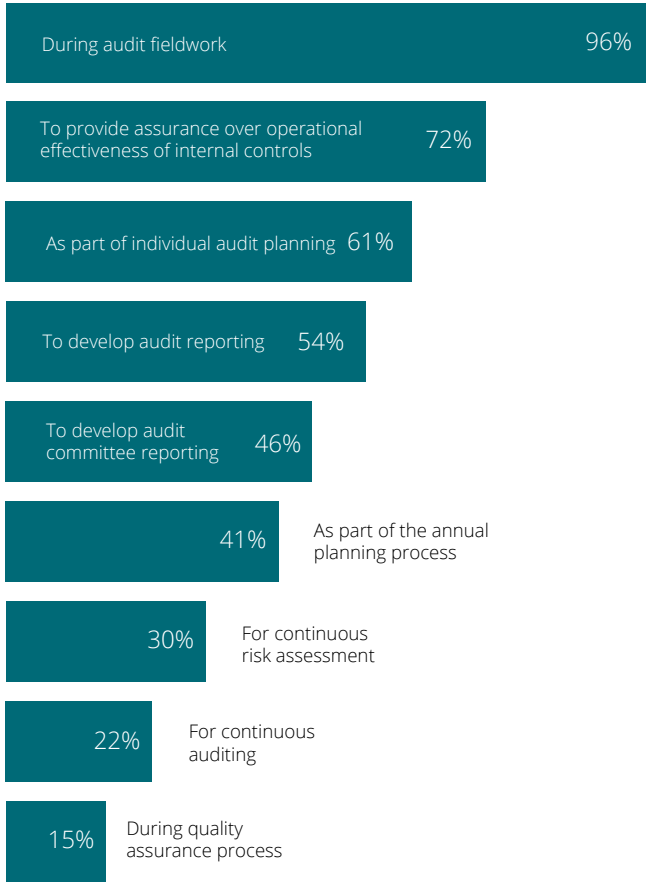
Internal audit lifecycle

In terms of analytics use across audit lifecycle stages, fieldwork continues to be the most common, with 96% of respondents with analytics capability using analytics to deliver fieldwork activities, such as validating or applying tests across populations rather than sample testing; this too is an increase from previous survey results of 69% (Figure 2).
The responses related to the use of analytics to provide assurance over the operational effectiveness of internal controls was 72%. An area that has seen a small uptake is continuous risk assessment. In 2018, less than one in ten were using data as part of their risk assessment activities. Fast forward to 2021 and 30% of respondents are leveraging data analytics to better anticipate risk.

It is revealing to see that 22% of functions are using analytics as part of their continuous auditing activities. Continuous auditing or continuous controls monitoring is widely recognised as a mechanism to achieve more efficient and cost-effective audits. However, should these processes be owned and operated by Internal Audit? During our interviews, we heard how departments are acting as an advisor to the rest of the business, developing capability that around continuous testing that is then transitioned into the First or Second Line of Defence with Internal Audit functions, tapping into the output as part of their broader monitoring activities.

Figure 2. Audit lifecycle

Activities which functions use analytics to support



Applications and tools

With respect to the types of tools and digital technologies applied, all respondents are performing descriptive analytics (describing what occurred) closely followed by diagnostic analytics (describing why something occurred) at 67%. Cognitive analytics (predicting what will occur) appears to be the least used application with only 17% of functions exploring the use of more advanced techniques.

Our 2015 survey showed that only a third of respondents were using visualisation tools; we were now interested to see a significant change with visualisation tools at the top of the list with 87% of respondents reporting the use of tools such as Power BI and Tableau. This is likely due to the high impact visualisation adds to reporting as well as the relative ease of use and accessibility of visualisation tools and is consistent with some of the key drivers for using analytics and digital noted, specifically improving auditee engagement through richer insights and greater visualisation.

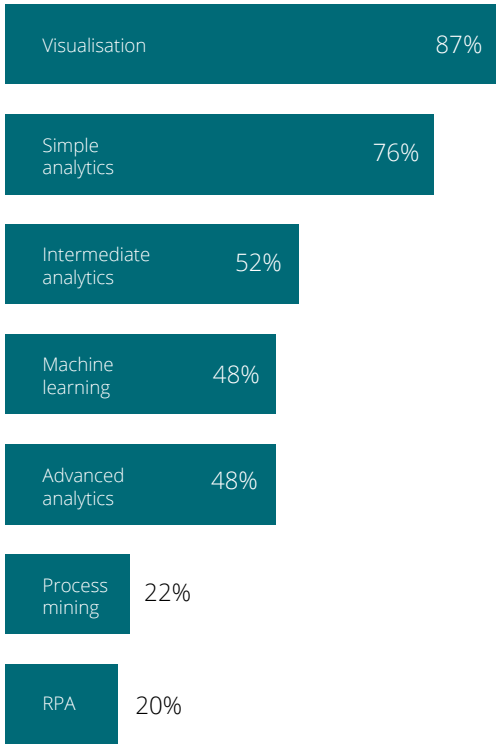
Unsurprisingly, the use of "simple" analytics, mostly through the use of tools such as Microsoft's Excel spreadsheet tool is still prevalent (76% of respondents). Other notable references of common tools included SQL, Python, Tableau and R. Robotics Process Automation (RPA) and process mining tools showed lower levels of adoption and use with only 18% and 16% of respondents respectively applying tools and techniques in these areas. See also Figure 3.

This supports our point of view that organisations still have plenty of unexplored opportunities to innovate via the use of smart tooling and digitise their functions. By keeping an eye out for the "art of the possible", they should consider bringing more automation and digitally enabled practices into everything they do.

"Our 2015 survey showed that only a third of respondents were using visualisation tools; we were now interested to see a significant change with visualisation tools at the top of the list with 87% of respondents reporting the use of tools such as Power BI and Tableau."

Figure 3. Digital tools and technologies

What type of digital and analytics tools are used within the function?



In terms of analytics applications across audit or risk areas, the top three areas are financial risk (with 85% of participants stating they had used analytics to support the assessment of financial risks), operational (80%), information/data and technology risk (63%). This is somewhat expected as these are data rich, high yield areas and common focus areas for Internal Audit. We observed lower levels of use in areas such as regulatory and compliance (41%), cyber security (35%), where arguably these can be seen as second line responsibilities but given the expectations on Internal Audit to play more of an advisory role and for better integration across the first and second lines, there are opportunities to broaden risk coverage (Figure 4).

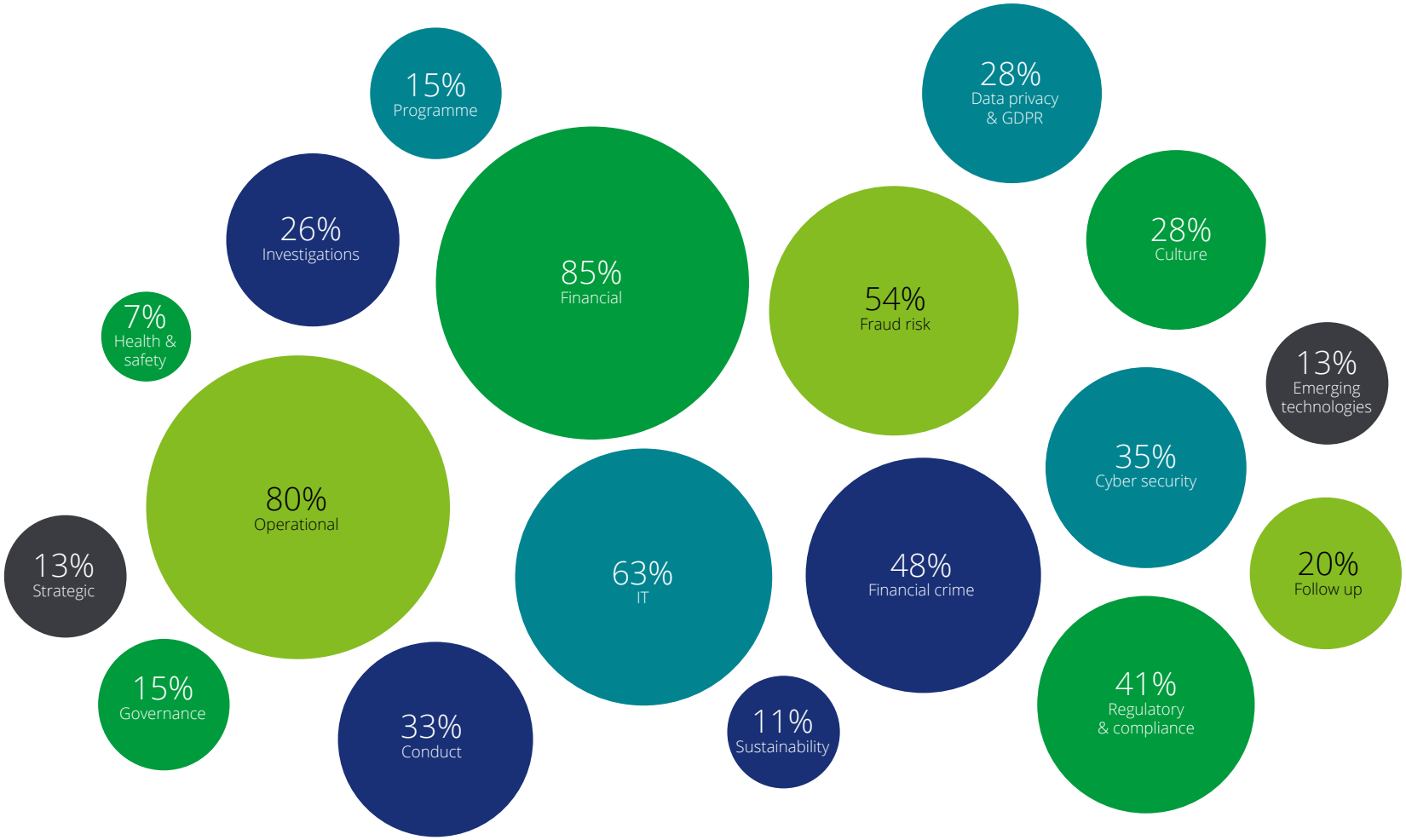
Functions we spoke to did not see budget as a barrier to innovate through digital and analytics. Open source technologies, software already used in the rest of the business and even Microsoft Excel can be leveraged in order to test hypotheses without having to spend allocated budget on something that may not return a favourable result. Especially in cases where there is a dedicated team aligned to analytics, any downtime between audits is spent prototyping and exploring new areas of analysis limiting the cost to the function.

We were also interested to hear about instances where Internal Audit was leading the digital innovation within the business. New technologies implemented in the function (such as Process Mining, continuous auditing or visualisation) are adopted by the first and second lines of defence. Internal Audit functions are demonstrating to their organisations that a lot can be achieved using simple, easily accessible inexpensive tools.

"By keeping an eye out for the 'art of the possible', they should consider bringing more automation and digitally enabled practices into everything they do."

Figure 4. Analytics for key risks

What types of risks does the function use analytics techniques to assess?



What we have learned

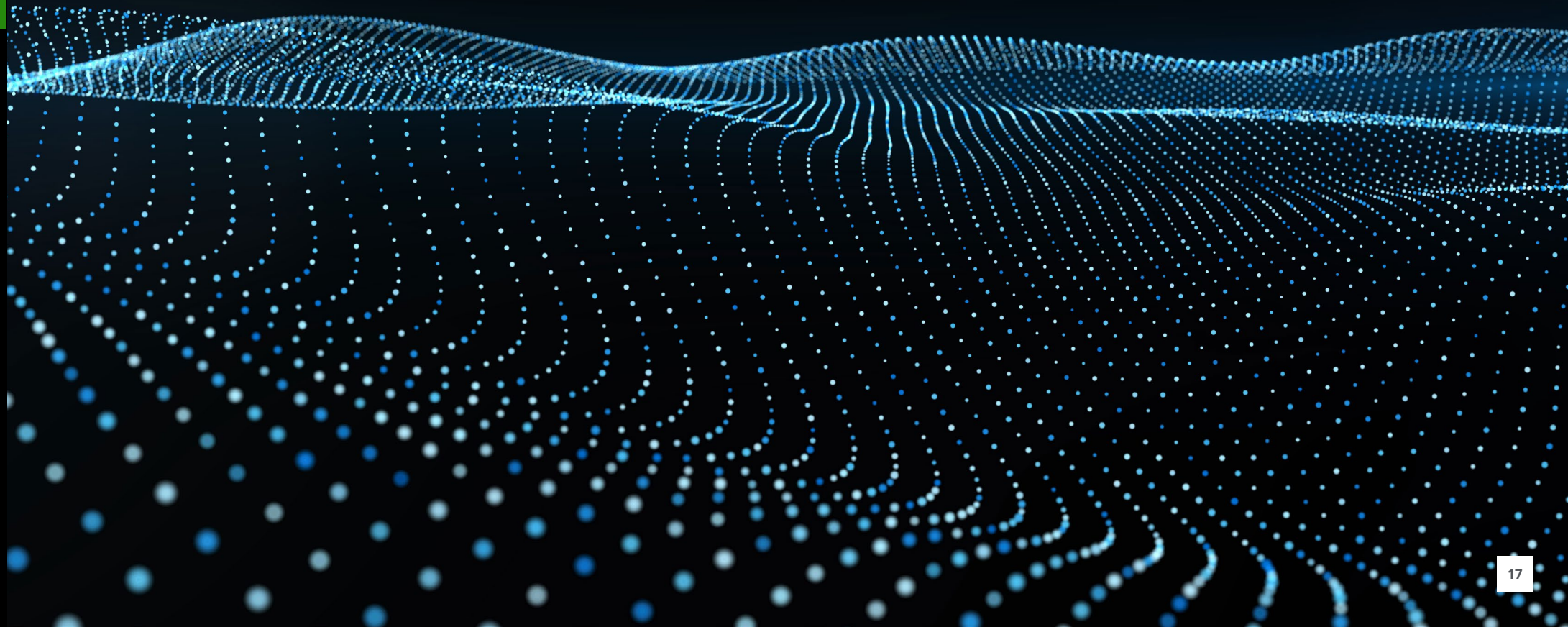
The adoption of analytics by Internal Audit is increasing in the areas that matter and are set to have the biggest impact. However, there is still room for improvement when it comes to adopting digital technologies and continuous auditing approaches. Digital innovation should be applied across all lifecycle stages or operational processes of the function, and not just in "doing the testing". It should cover approaches to Internal Audit planning, execution, and reporting, in stakeholder relationships, and even in the mission and remit of the function, which is not only to provide assurance, but also to advise management and anticipate risks.

Most of the tools used are common, easily accessible and budget friendly that are not necessarily designed with Internal Audit in mind but can be applied to a variety of problems or data scenarios. Functions that innovate can achieve a great deal by using what is available to them without spending large amounts of budget on the latest and most expensive tools. There is still a great opportunity for functions that are not yet doing much by way of analytics to start small, use the tools available, innovate and add value incrementally.

While effective analytics are not driven by the technology itself, a minimum investment to grab the opportunity of advanced technologies or analytics should be encouraged. Our survey shows that the opportunity hasn't been fully tapped regarding advanced analytics. It has huge potential to revolutionise organisational processes more broadly, power predictive analysis, risk identification and insight generation. Many of our respondents have proven that there are inexpensive ways and technologies to experiment with and significant benefits to be gained, regardless of the amount of the investment, size or maturity of the function itself.

"There are inexpensive ways and technologies to experiment with and significant benefits to be gained, regardless of the amount of the investment, size or maturity of the function itself."

The operating model, talent and resourcing

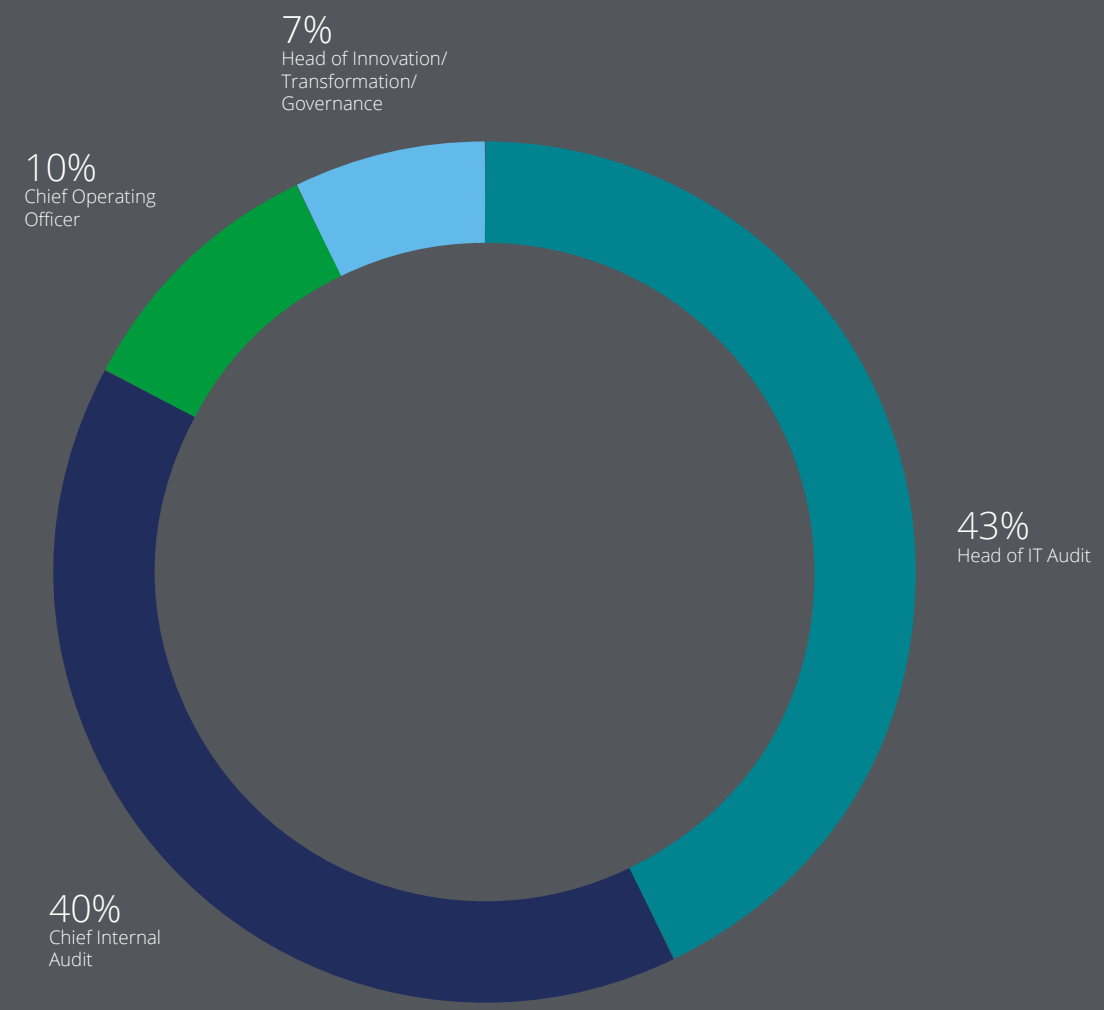


Reporting lines

Our previous survey of internal audit analytics[2] showed that for the vast majority of our respondents, the audit analytics capability or team was led by the Head of Data Analytics, or equivalent, which in turn reported to the Head of Technology Audit. This survey identifies that there has been a notable shift in where responsibility sits. While for 43% of respondents, analytics still sit under the broader remit of the Head of IT Audit, we are now are seeing 40% of organisations' analytics leads reporting directly to the CAE or Head of Internal Audit, and a further 10% to the Chief Operating Officer (Figure 5 and 6).

Figure 5. Internal Audit Analytics Reporting Lines

Where does the Head of Audit Analytics (or equivalent) report to?



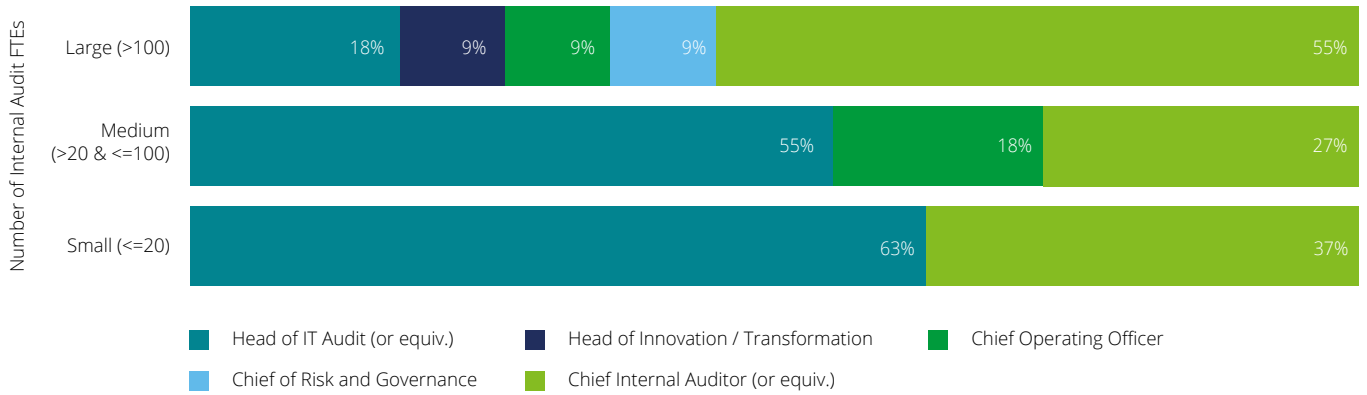
We believe that the reporting lines to CAE or Innovation roles reflect a significant trend that aligns to the broader messages from our recent Chief Audit Executive survey. Firstly, the increased number of organisations with Analytics teams directly under the CIA indicates how this capability has been elevated in the internal audit agendas as a topic of strategic importance for functions.

Secondly, the results showed a shift towards innovation, operations and transformation capabilities. This is interesting and mirrors the structure of organisations more broadly which has been evolving to introduce senior roles around data, innovation or digital transformation, or elevate existing ones in more prominent and senior levels across the organisation.

It is no surprise that we are seeing a similar trend across Internal Audit functions, particularly for larger functions that are driven by an innovation mandate at CEO level. We see digital innovation or strategic transformation roles encompassing data analytics, data auditing, as well as broader innovation and transformational objectives, including in the technology and digital enablement space. Larger functions are establishing "research and development" capability, channelling investment towards automation and new tech-enabled solutions for the function.

Figure 6. Innovation / transformation roles and size of function

Where does the head of audit analytics (or equivalent) report to?



Of course, not every Internal Audit group can, or should be, at the leading edge of innovation, or even at the leading edge in every area. We did note a trend, however, towards thinking creatively, investing in continuous improvement, and considering analytics and data as part of holistic approach in applying technology and smart solutions in every aspect of the function, including ways of working, collaboration and communication between team members.

"Of course, not every Internal Audit group can, or should be, at the leading edge of innovation, or even at the leading edge in every area."

Operating model

A centralised approach remains the most popular operating model across Internal Audit functions, with over half of respondents organising themselves with a central specialist analytics team that perform the majority, if not all, of analytics activities (Figure 7). This model is followed, in popularity, by a hybrid model (43%) whereby business auditors run most of analytics (largely basic tasks) with support from centralised Centre of Excellence teams, as required, and primarily on advanced and more technical areas.

Talent

The majority of the survey respondents (55%) have a dedicated analytics team within the Internal Audit function with specialised skills. This increases to 69% across Financial Services (FS) organisations. Those that do not have dedicated team members generally use resources from within the broader Internal Audit team or external resources. All Internal Audit functions that have no analytics capability, have said they are planning to establish such capability in the next 3-5 years. More than half of these, also consider using external service providers or providing analytics training to current team members to strengthen their analytics capabilities.

Most of our survey respondents do not use resources or skills outside their Internal Audit team (54%). However, from the organisations that do supplement their capability with external resources or skills, 62% (or 33% of total respondents) procure co-source internal audit services, while 21% (11% of total) are supported by professionals from other lines of defence in their organisation (Figure 8).

Figure 7. Operating model

What is the current operating model for digital and analytics?

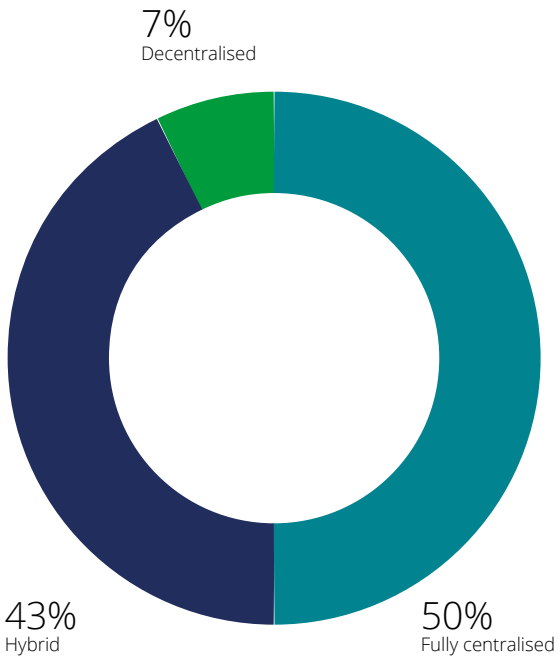
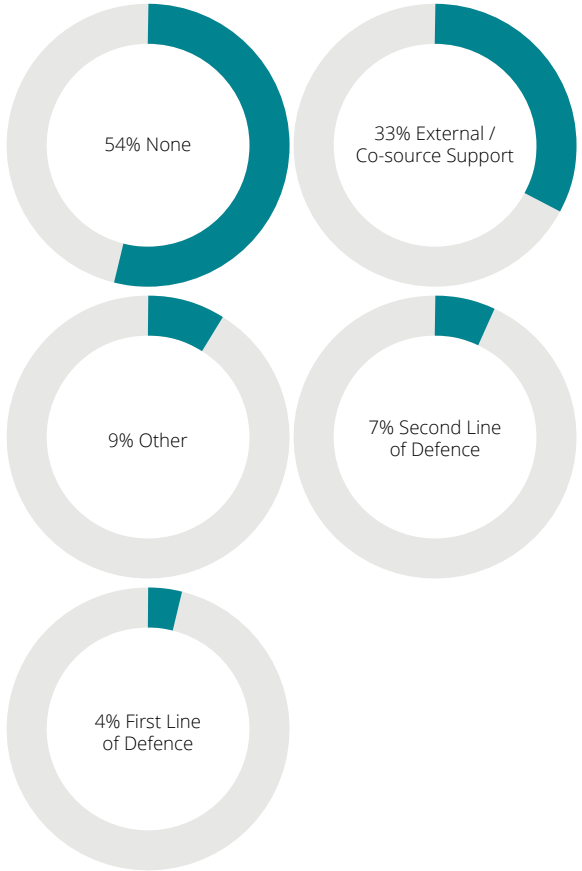


Figure 8. Functions that supplement their digital and analytics capabilities with external support



In terms of skills, the percentage of auditors with basic analytics skills is relatively low with three quarters of organisations reporting this figure as below 40%. However, in functions that operate a hybrid or decentralised model this figure rises to 80%.

We believe this is explained primarily through three key reasons:

- one, the increased exposure to analytics work through their day to day audit work
- two, the more frequent and structured training that such functions provide to their business auditors (refer to Figure 9)
- the third reason is increased use of analytics self-serve techniques and tools used by functions with hybrid models, including pre-configured testing scripts, templates, libraries of tests and scoping approaches per risk domain, as well as more mature knowledge management practices.

Training and skills development

With respect to training and development, specifically for data analytics, 30% of the respondents confirm that they have provided training for the majority of auditors in their function. In fact, 23% of FS respondents have trained over 80% of the function.

As highlighted above, in hybrid or decentralised teams, the majority of business auditors have basic analytics skills and indeed have been trained accordingly.

Over half of the decentralised or hybrid functions have trained more than 40% of their business auditors, while only 20% of the centralised have reached that level. See also Figure 9.

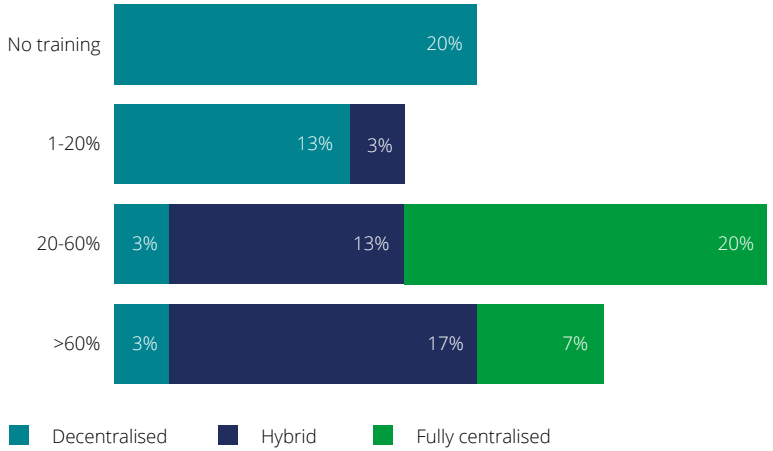
What has also been particularly intriguing, especially if we compare the results to our 2015 survey, is the increased use of incentives encouraging the uptake of analytics. Indeed, 58% of respondents have embedded targets within the performance objectives or the evaluation approach for their audit leads or Heads of Audit – 37% of which are formally established. For 7% of organisations, there are plans to implement such measures in the near future. It needs to be highlighted that this also applies to many smaller Internal Audit functions (<10 FTE) and is not always the privilege of the larger ones.

We see the use of such incentives driving the use of tools and the volume analytics and, not surprisingly, being a distinctive characteristic for the vast majority of functions that demonstrate markers of maturity regardless of their size (advanced analytics, innovation and future focus, skills, audit plan coverage etc).

While assuming direct causality between the use of targets and maturity can be misleading - maturity is influenced by a number of other factors - the data demonstrates a strong correlation and relationship between the two.

Figure 9. Training and operating model for analytics

Percentage of the Internal Audit function that has received training, and the analytics operating model of the respondent organisations.



What we have learned

For all the debate around digital enablement, advanced technologies and the impact of these on the internal audit function, Internal Audit is a people based service function, and its ability to get the best out of its human capital will always be a key driver in determining its success. Individuals are at the heart of internal audit analytics functions and whilst having the right tools and maturity of approaches will be important, having the right people and skills in the right role will be crucial. But what are the skills and traits that define a successful digital and analytics strategy? The continued technological advancement and the ever increasing pace of change, would mean that the need for a core specialist team of digital and analytics experts will remain. For larger or more advanced functions, this translates into a recruitment challenge given the scarcity of these skills in the market.

The approach to overcome this challenge includes the following three strands:

First, procuring skills outside of the internal audit profession, bringing in data scientists, digital transformation experts, developers, to establish a core 'development' factory and technical skillset and then upskilling them in audit practices. This is encountered mainly in functions with Innovation capability and larger R&D budgets. Most commonly however, we see upskilling programmes and training initiatives for core data analytics staff covering areas such as advanced analytics, programming languages (Python, R etc), new approaches etc.

Second, the trend we are seeing is business auditors being trained on basic analytics to develop further the "purple" people / auditors, combining sophisticated data analysis skills or "red skills," with communication skills, business acumen, and political sense or "blue skills". There is also a trend towards decentralised or hybrid models, driven by what is referred to the "democratisation" of analytics and technology. Analytics shouldn't be the privilege of the few anymore. An approach that focuses on the combination of training and clear targets or incentives that drive additional use of analytics is proven to help to that end.

Third, by encouraging teams to experiment, identify and explore the "art" of technology enablement; as people become more comfortable with automation and artificial intelligence, as they collaborate closely and on a day-to-day basis with "purple" people, they get more opportunities to experiment and fail, learn, develop themselves and help deliver tools or approaches that improve productivity and audit quality[3].

The investment in upskilling and training of people is relatively low cost and easier options for functions (particularly smaller or cost-conscious ones), offering the opportunity for people to develop, helping them with career progression, but also allowing them to experiment and innovate within the remit of their audit work, which is proven to lead to increased satisfaction and retention of talent.

What will be important is to ensure technical teams develop their audit and business understanding as well as soft skills, around influencing, coordinating, collaborating and communicating with others in the organisation, often outside the function itself. The strength and the value in the function will come from the power of collaboration, the intersection between diverse skills, experiences and thinking that fosters innovation and leads to new insights and value.

Any internal audit recruitment seeking to support innovation capability and culture should also cast a wide recruitment net by actively targeting experience that could disrupt and innovate within the function (refer also to our recent paper "Optimising internal audit; Developing top flight teams"). For example, product designers may help the function revitalise the stakeholder experience or rethink how it communicates through audit reports. The "purple" person, as we mentioned earlier, would be key in innovation roles given their intellectual curiosity in both enabling technologies and internal audit and we expect they will be critical to moving the dial on the function's ability to anticipate risk. For example, "purple" people will help functions embrace practices such as real-time risk assessment, continuous controls testing, and tools such as automation and artificial intelligence[3].

Barriers and challenges

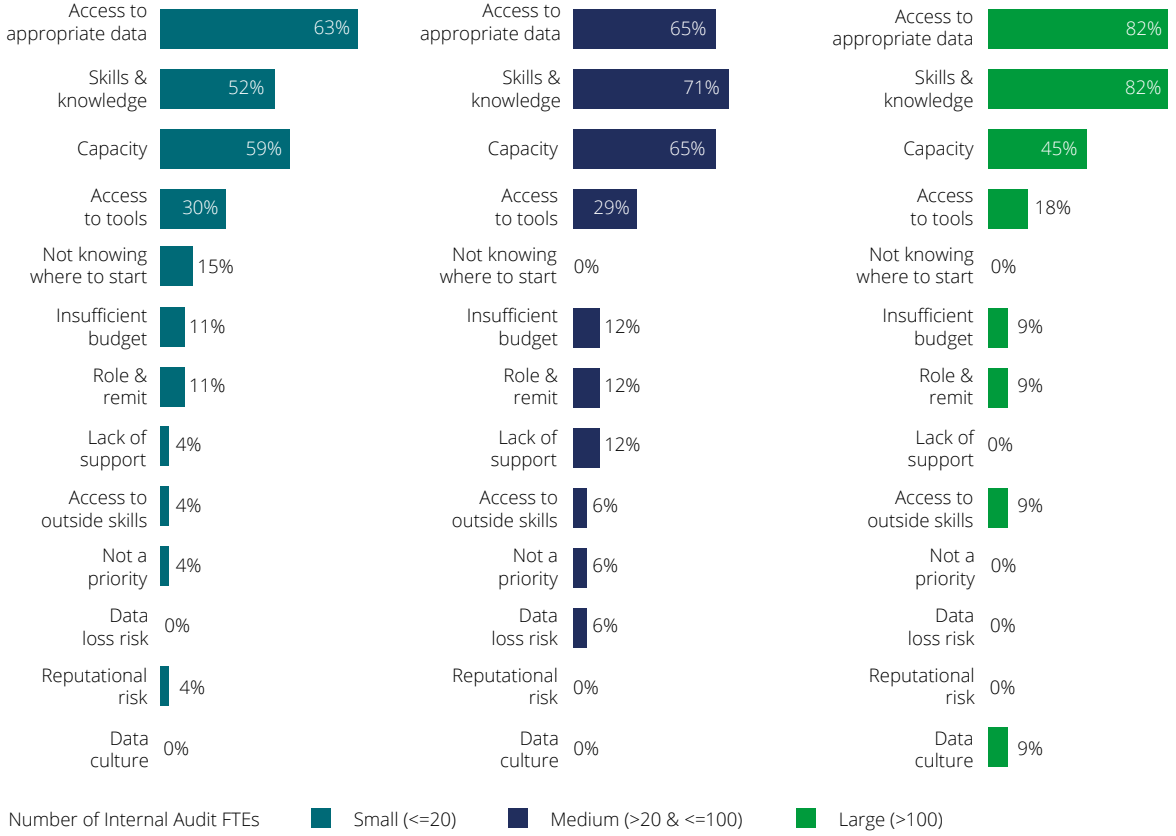
Whilst the increase in the use and application of analytics is notable in our survey, there are still a number of areas that organisations struggle with as part of the journey in developing their digital and analytics strategy or delivering on their priorities in a way that truly unlocks value.

The top three barriers described as preventing the use of analytics and digital across all respondents are (Figure 10):

01. Access to appropriate data
02. Skills and knowledge within the function
03. Capacity within the function

Figure 10. Key barriers

What are the key reasons / barriers currently preventing the function using digital and analytics?



To add more perspective, smaller functions or the ones that have not started integrating analytics into their audits, cite capacity and lack of resource/skills as their key barrier. The larger or more mature functions list access to appropriate data as their biggest barrier.

The challenges around the **skills, capacity and resourcing** have been discussed also in the previous chapter alongside with some perspectives on the future direction, as well as key actions on skills development, training and recruitment.

Interestingly, only one function reported "**data culture**" or the lack thereof, as a barrier. This is yet another revealing result as it could point to a shift in mindset within functions to confidently apply the use of data and analytics. The key obstacles seem to be operational in nature, and therefore possibly easier to overcome. We didn't notice any significant volume of responses or notable references to culture, leadership and top-down approach that may inhibit further development of analytics capabilities.

Figure 11. Data Sources and Data Access Model
What sort of data sources do functions perform analytics over?

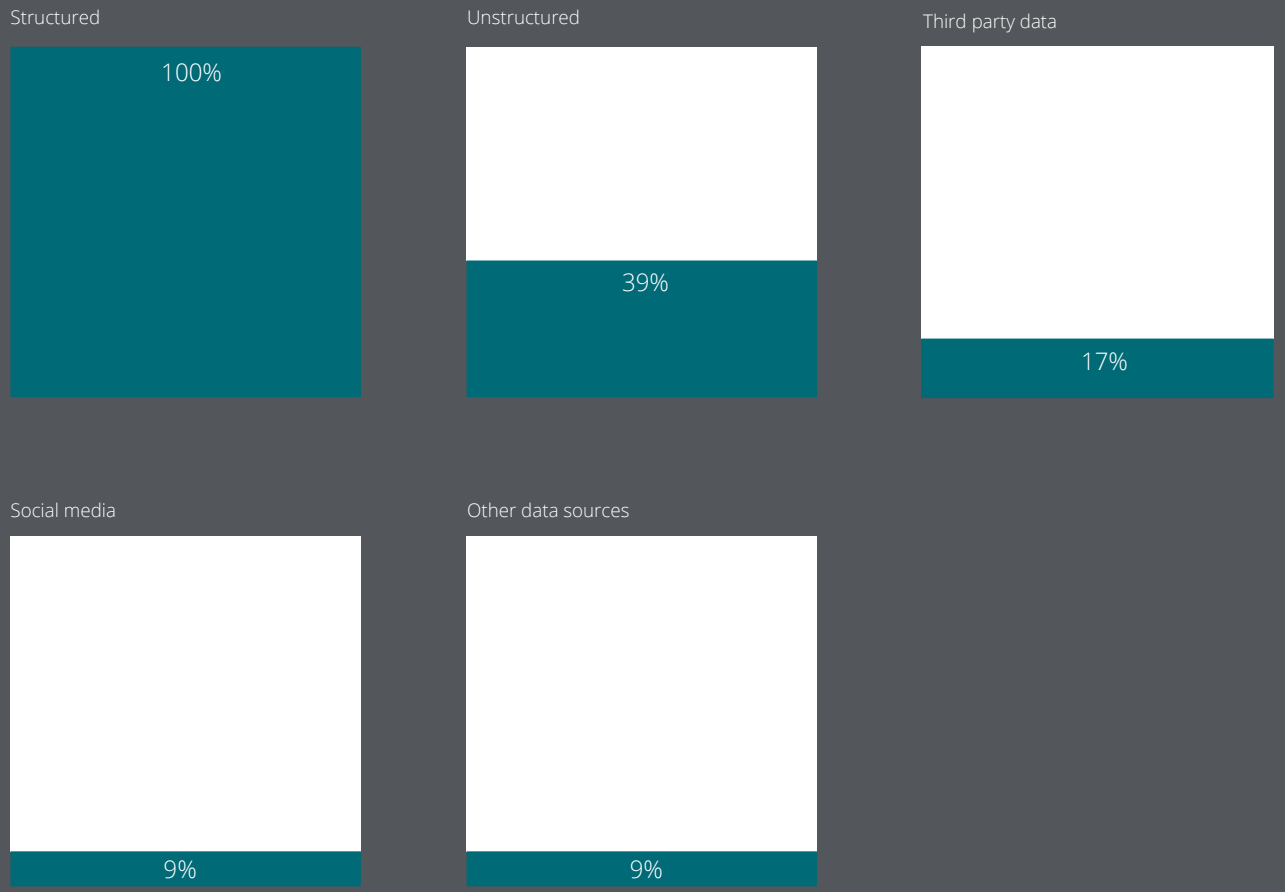


Figure 12.
What is the data access model in use?

Access to data is the most prevalent barrier with many respondents appearing to be heavily reliant on business or IT to provide the data they need. Indeed, 70% of respondents list this as their main source of data. Direct access and feeds from business systems were still prevalent, with 52% and 61% respectively, but very few functions reported having their own dedicated data servers or data warehouse for internal audit (17%). Having a dedicated data warehouse may not be necessary for most functions but access to the right data and within the right timeframe is paramount to the effective and sustainable embedding of analytics. We did also note that identifying the right data owners, especially in larger organisations, was a key challenge.

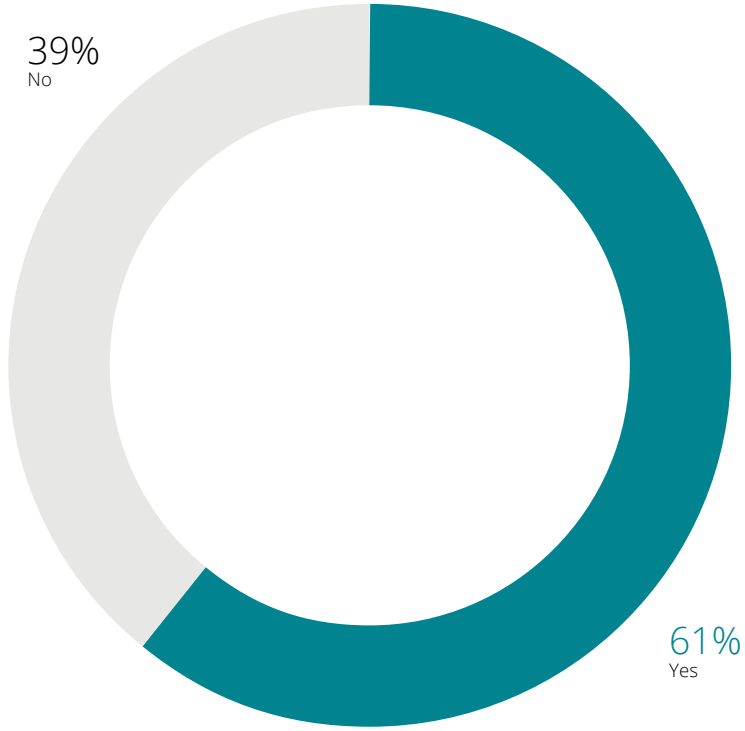
"61% acknowledge the need to evaluate the quality of data before use which compares to 50% noted in 2015."

61% acknowledge the need to evaluate the quality of data before use, which compares to 50% noted in 2015. Given the importance in data quality, this is something that most functions still need to assess before the audit, and depending on the need for cleansing this is still reported as a challenge for functions.

We would encourage functions to explore more opportunities to use data external to the organisation, for example, scraping data from news sites, social media that can be used to identify emerging reputational risks.

There are numerous use cases that support the innovative use of non-traditional data sources to provide insight and perspective that would not have been achieved in the past. We have seen some analytics teams making effective use of such external data, seeking to utilise all available data sets – third party sold or publicly available - to evaluate the external or market environment, make predictions or assess inherent risk without restricting themselves simply to the use of organisation-derived data.

Figure 13.
Do you independently evaluate the quality of the data before running analytics?



What we have learned

Without a doubt, access to data is a sensitive and tricky process, requiring internal auditors to know what exactly they need to access, for which periods and where data is hosted, while making sure security and confidentiality is maintained and that data is only used for its intended process. This can be a challenging task. So, what can functions do to make this easier?

- It is important that Internal Audit is aligned with the data governance practices that exist within the organisation, establishing the relationships with the data owners and making sure the needs of Internal Audit functions are considered when defining and cataloguing data for use. Data quality is a key consideration here as this is where quality requirements are likely to be defined at an organisation level.
- For larger or more data-mature organisations, once data is identified, it is worth considering automating collection of data through data feeds, obtaining access to organisations data lakes or establishing servers dedicated to Internal Audit, where this is feasible. We acknowledge that this is no simple task but, if done right, has proven to save hours of time and effort later, safeguard quality and ultimately speed up the time to deliver quality output.
- For smaller organisations or functions, we believe they should start small and scale slowly, especially if this is new area to the function, starting with one data source at a time. They need to ensure that access to data is repeatable and automated, where possible, and keep building over time to make the process more manageable and less overwhelming.

"Data quality is a key consideration here as this is where quality requirements are likely to be defined at an organisation level."

Future direction and strategy

It was encouraging to see that, from the surveyed organisations with dedicated teams, the vast majority have a clear vision for the future (79%) and a strategy for the further development of the capabilities which was in line with the overall Audit function's strategy and priorities (74%). See also Figures 14 and 15.

Figure 14. Vision and Strategy for the future and size of the Internal Audit function

Do you have a clear vision for the future use of digital and analytics within the function?

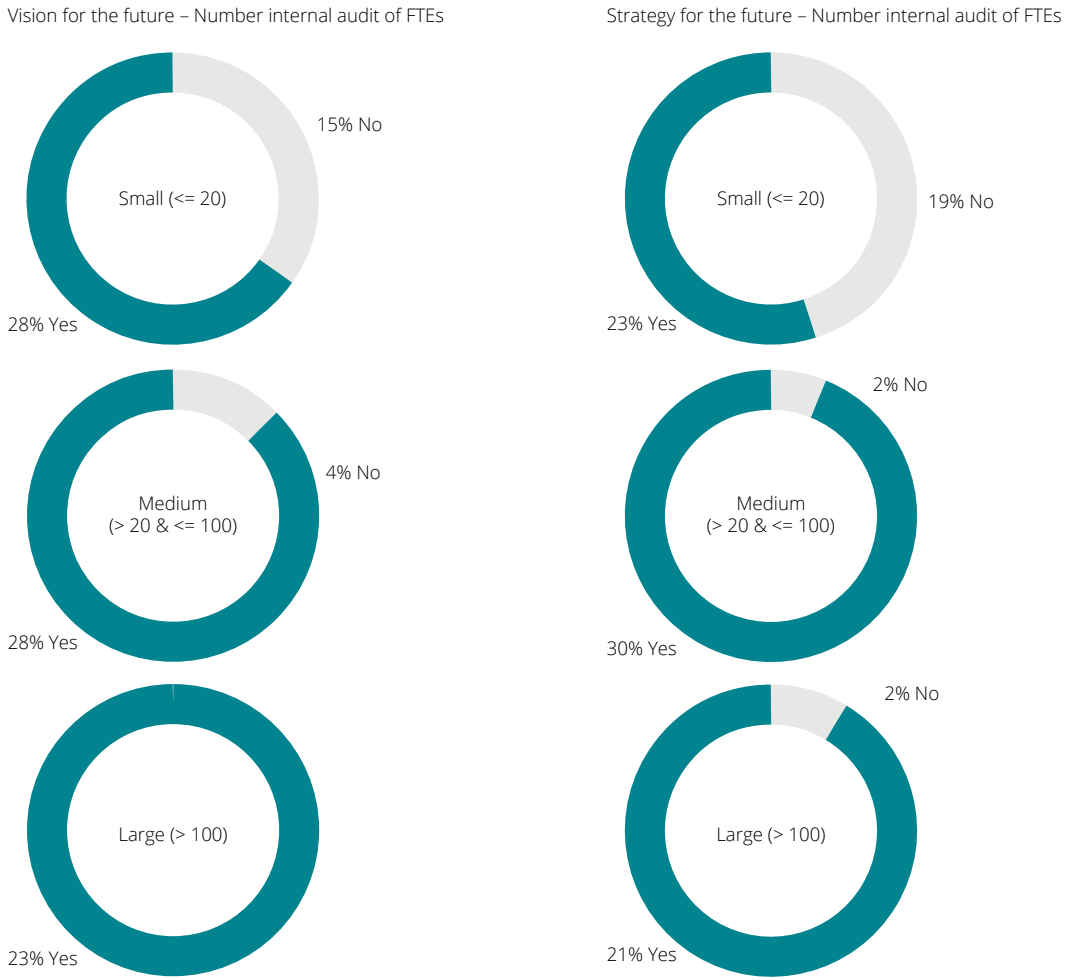
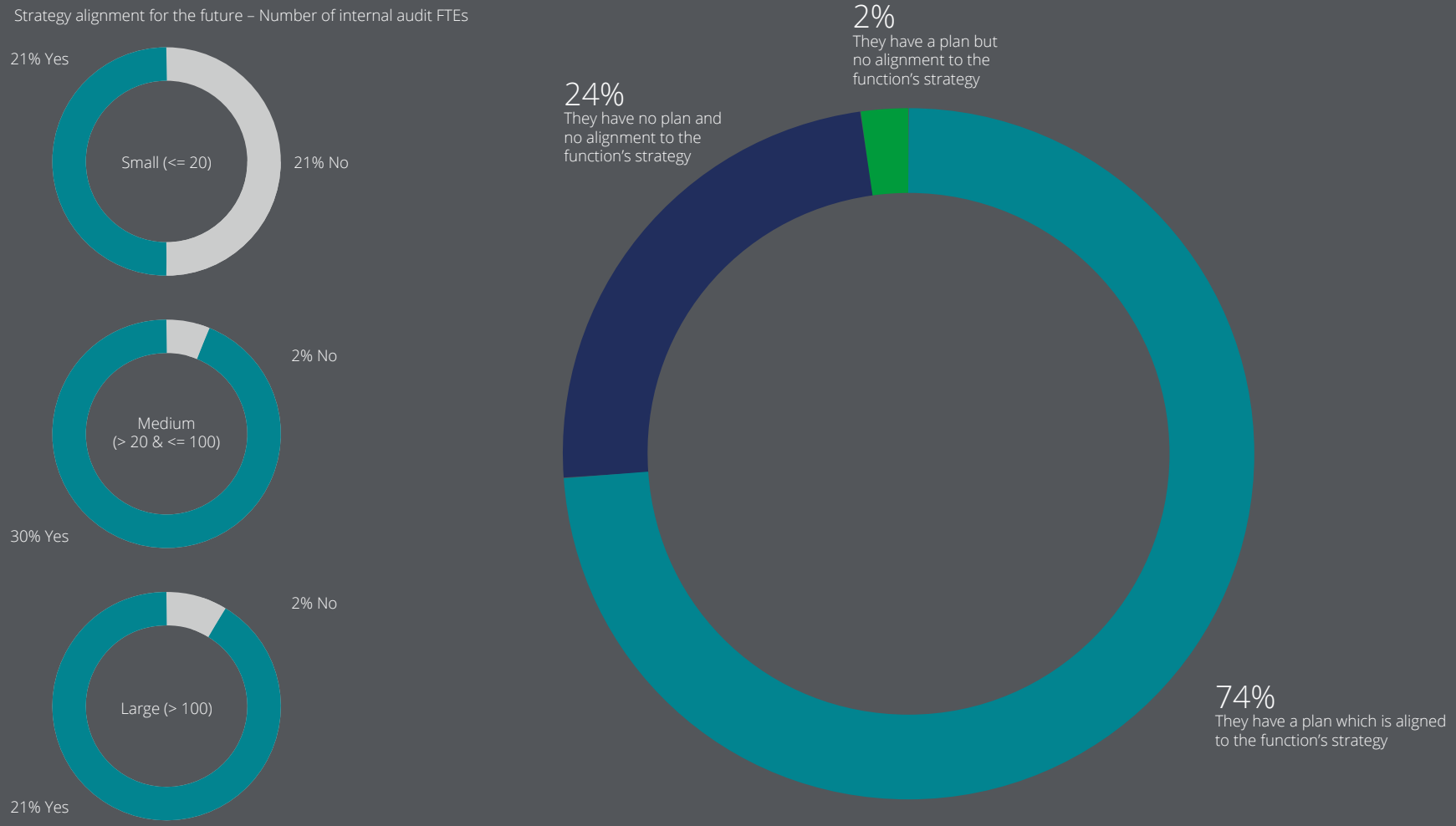


Figure 15.
Is the strategy aligned to the broader function priorities?



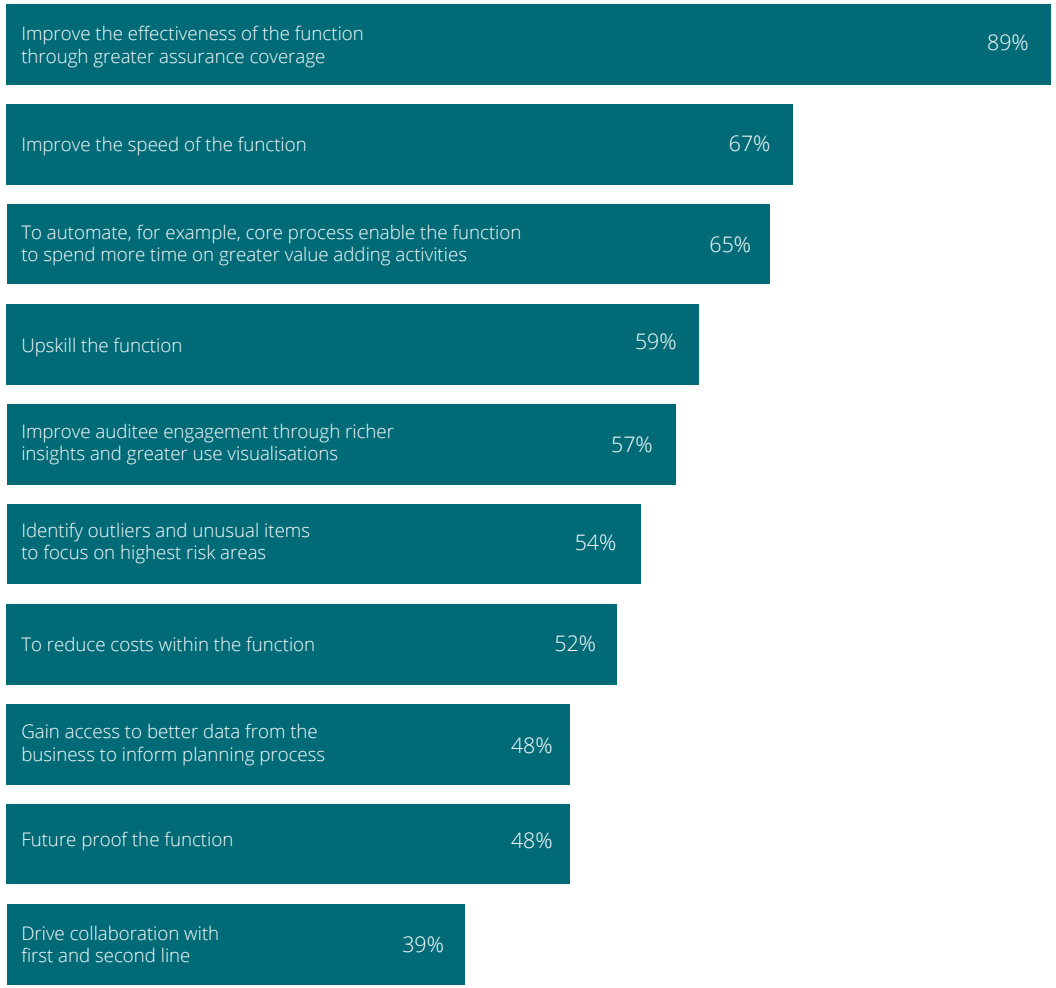
In terms of outcomes that the functions are aiming to achieve through delivering on their strategic priorities in this area and the future drive on digital and analytics, these were (Figure 16):

01. Firstly, (Figure 16) the **overall effectiveness of the function through enhanced level of assurance and better identification of true issues and outliers** (84% of FS organisations quoted this objective, and 89% overall)
02. The second factor **was to improve the speed of the function** (67% quoted this objective)
03. Third, the need to increase **automate core processes** (65%)
04. Upskill the function (59%)

Improve access to data as well as **to improve auditee engagement through richer insights and greater use of visualisation** were additional focus areas. FS organisations quoted in particular the **need to "future proof" the function** (48%). In fact, Internal Audit functions that had invested in analytics prior to the recent crisis seem to have been able to better withstand the effects of the pandemic and continued to provide assurance services effectively.

Interestingly, **reduction in costs** did not feature significantly in the responses, with functions appreciating that some investment would be necessary and that the key objective is enhancing impact and influence and not necessarily squeezing costs – at least in the short term.

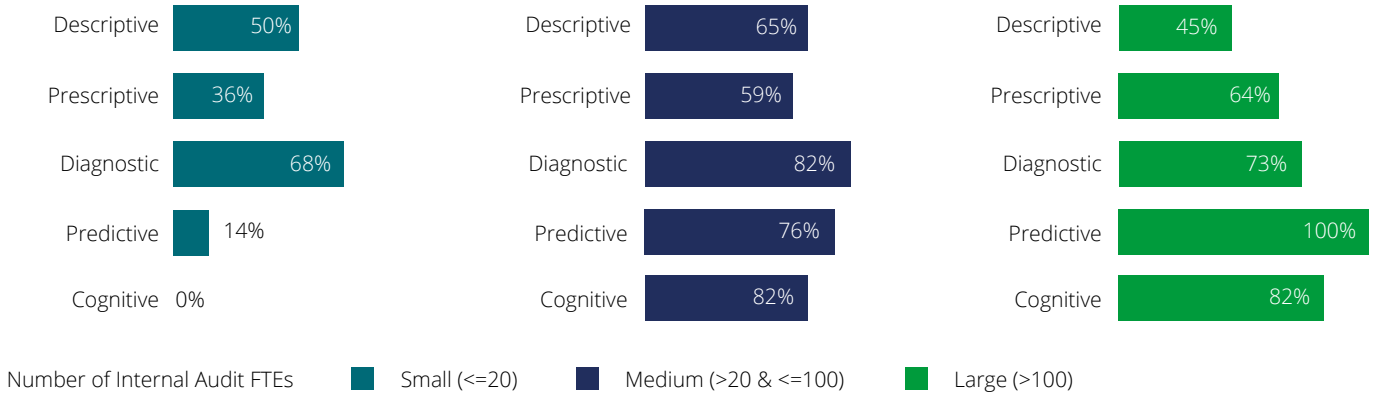
Figure 16. Outcomes that the function is aiming to achieve through future use of digital and analytics (next 3-5 years)



On the question around the activities and focus areas for the next 3-5 years, the majority of respondents highlighted "descriptive" (e.g. reporting/standard queries) and "diagnostic" data analytics (e.g. data discovery, drill down, root cause analysis etc.), indicating that for many organisations the focus is still on getting the basics right and developing core capability (Figure 17).

Conversely, for the larger functions, the future focus is on predictive data analytics (e.g. advanced data correlation, causation, statistical analysis) and cognitive analytics (e.g. AI). This resonates with the maturity curve analysis, where we see predictive analytics and AI correlating with features of more mature functions.

Figure 17. Focus areas in the next 3-5 years (analytics techniques)



The areas of focus against audit lifecycle stages again show a divergence across functions, with larger functions and analytics teams, placing their strategic development focus on the stages of Risk Assessment, Quality Assurance and Audit Committee reporting. The majority of small or medium sized functions focus on expanding the use of analytics as part of fieldwork, aiming to enhance level of assurance they provide through full population testing. Automation of quality assurance processes was the least popular response across the full respondent population, which indicates that it is not a priority yet, with the exception of some larger and more mature FS Internal Audit functions (Figure 18).

Figure 18. Focus areas and activities in the next 3-5 years (audit process area)

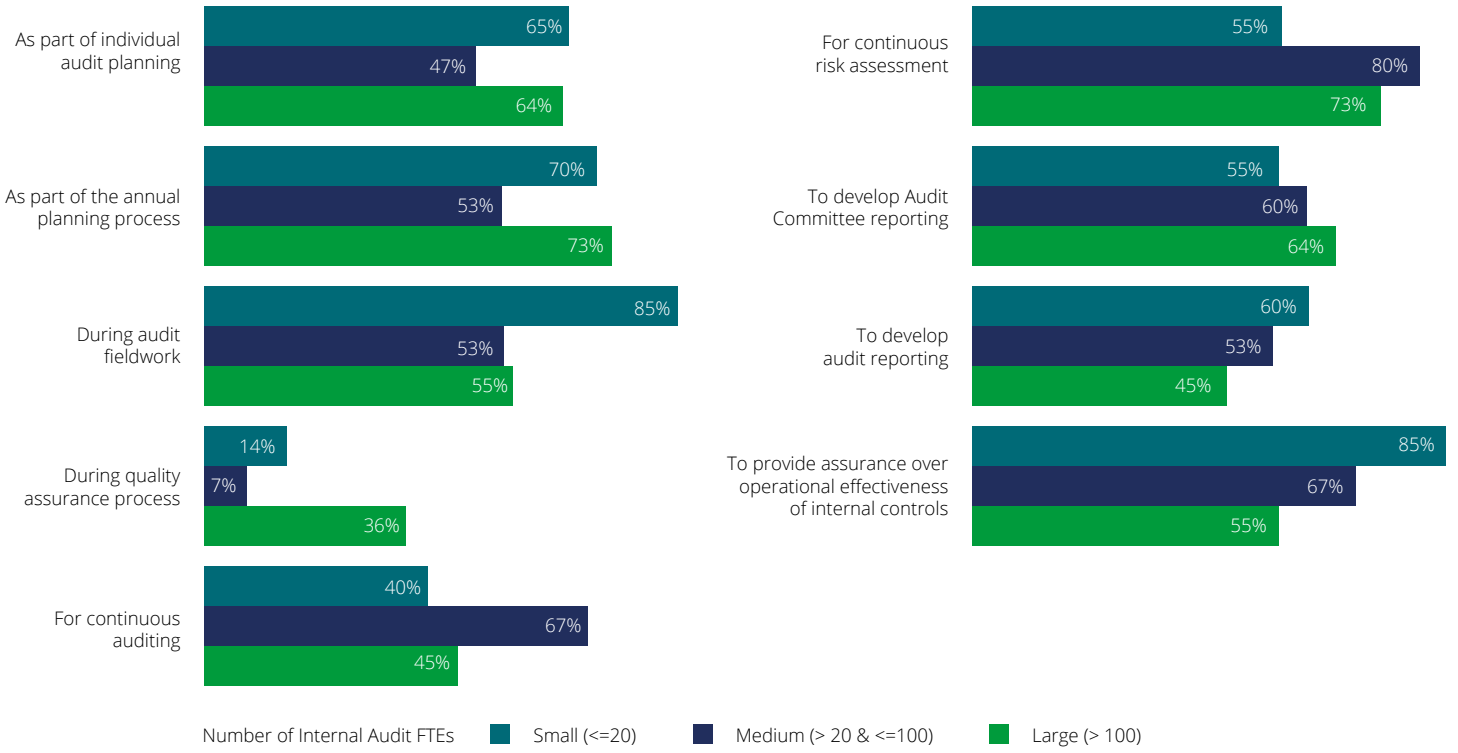
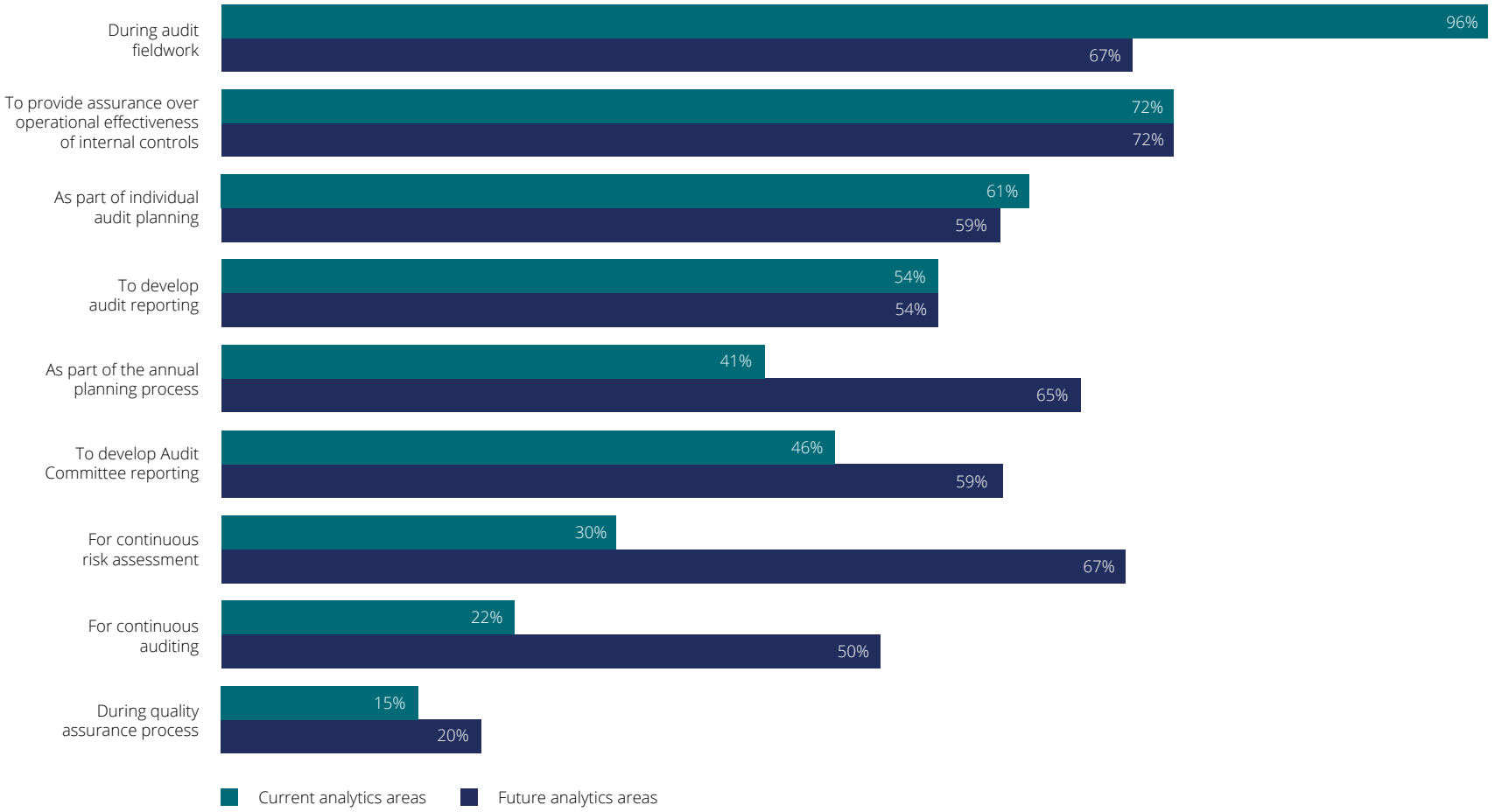


Figure 19. Current usage vs areas to increase over the next 3-5 years



The Internal Audit function of the future

Innovation and Internal Audit

As organisations seek new ways of strengthening their impact and influence, they embrace innovation and immerse themselves in new ways of working and new approaches to deliver such value. They actively leverage digital, disruptive technologies and operating models.

Similarly, we are seeing the more mature Internal Audit functions in the industry adopting a spirit of innovation and starting to develop new tools and innovative capabilities (in many cases through dedicated Innovation or Research and Development teams as we've seen previously in our paper) in order to effectively respond or align themselves to such organisational developments and challenges.

Considering the recent period of disruption, which significantly impacted how functions operate and team members collaborate, it is no surprise that our survey shows a strategic drive to accelerate digital and analytics transformation; functions engage in digital innovation with the added objective of becoming more resilient, cost-conscious, and smarter about providing services that make an impact. Some of the reasons for this also include[4]:

- The increase of remote working arrangements themselves have highlighted the need for data-based auditing, particularly where web-based conversations are not as easy or productive as sitting next to the auditee. Deployment of analytics is a key assurance mechanism when direct face to face auditing proves challenging and Internal Audit needs to shift to low-to-no contact auditing.
- Increased digitisation of business processes across the business, as we have covered previously in this survey, is also driving analytics adoption and enablement during audit delivery.
- Similarly, the evolving technology environment, with increased cloud adoption and digitalisation, means that accessing enterprise data warehouses and other key data sources is easier than ever and the quality of data itself has generally improved.
- The frequent changes to the external environment, associated threats and, in consequence, the risk profile in the current environment, increase the need for Internal Audit functions to have data driven metrics at their fingertips and to run continuous assessment.

Our Internal Audit 3.0[5] framework presents an approach and framework for the next generation of Internal Audit, as a function well attuned to the challenges of emerging risks, technologies and disruption. There is a need for a dedicated Digital or Analytics team to actively contribute to setting and delivering their own vision, aligned to the strategy and direction of the Internal Audit function overall. It should seek to keep pace with technological change, create value and enhance the impact and influence of the function. What this vision means will differ from organisation to organisation, the same way that the function's objectives, or maturity "target state" would differ, but would be governed by the broader organisational direction and desire for business change.

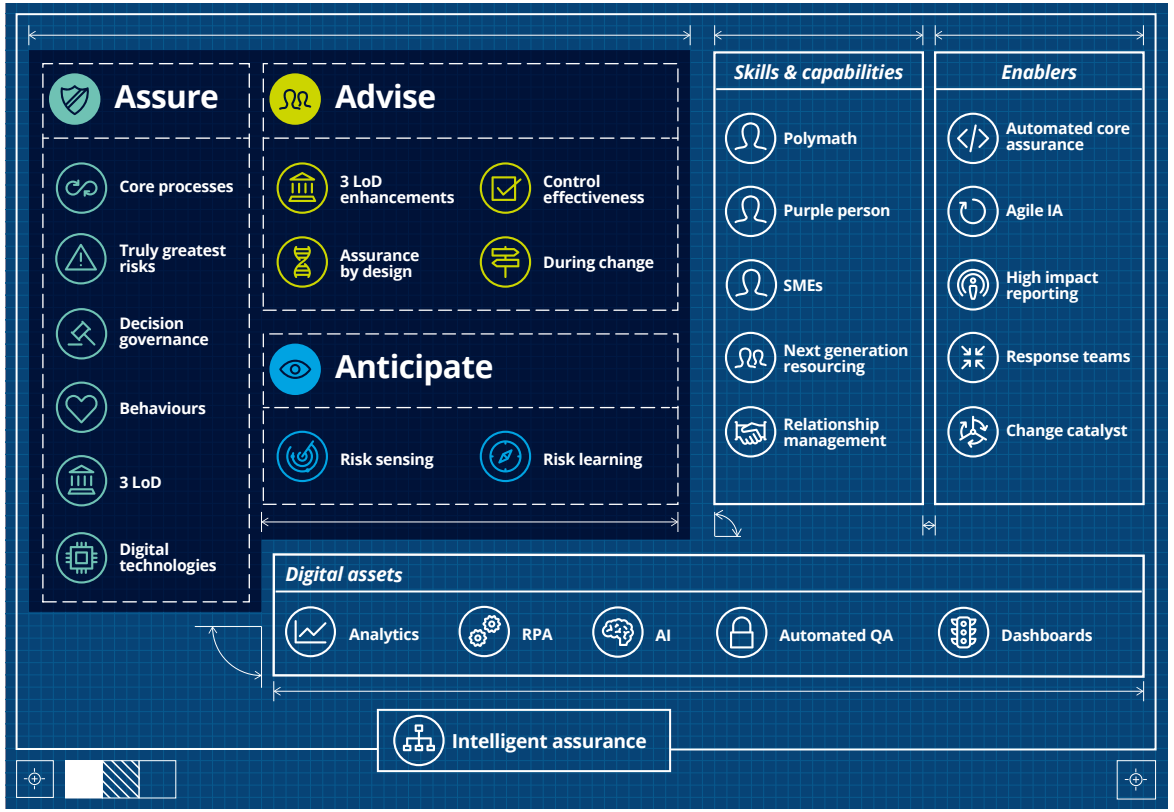
Digital transformation and digital assets

The core dimensions of value that stakeholders would want and need from Internal Audit can be classified using the dimensions of: **Assure, Advise, Anticipate**. This is in line with our Internal Audit 3.0 framework in Figure 20.

The delivery of these components is facilitated through an optimal mix of skills and capabilities (People), digital assets (Technology) and enablers (Processes or key activities).

We mentioned some of the Technology tools and solutions in use by functions (delivered either by IT Internal Audit or Innovation teams), making the audit delivery more impactful, or enhancing the operational efficiency and effectiveness of the function itself. Although such tools are developed by technical data scientists, once they are deployed, they usually require minimal specialist skills and can be used by all auditors, for example, as a means of identifying anomalous behaviour in data across business functions which generate a data footprint.

Figure 20. Deloitte Internal Audit 3.0 Blueprint



Assure

- The provision of timely, core assurance is a fundamental aspect of the internal audit mission statement. An effective, equipped for the future audit function needs to be able to balance an audit plan that delivers **assurance over core processes and controls, while ensuring appropriate coverage over high profile or emerging risks.**
- Whilst not new, many functions have already implemented a number of tools and approaches to enable **continuous auditing;** use of technologies such as machine learning, robotics and advanced analytics can, on the one hand, facilitate ongoing, fully-automated controls monitoring and exception reporting in real-time, while on the other hand enable automated reporting.
- Technologies such as Robotics Process Automation, visualisation, as well as real-time reporting mechanisms such as dashboards, can enable a function to provide **continuous assurance over core processes, ideally coupled with automated root-cause analysis.**
- Once such automated core assurance capabilities are enabled, the function is benefited by allocating skilled resources to less routine, or 'commoditised' areas or topics of higher risk, **freeing assurance time** for increased coverage, root-cause analysis, or advisory-type interactions with management.

Advise

- Internal audit has a key role to play in **advising first and second lines on their assurance capabilities** and help with **automated mechanisms, digital and data analytics assets** that can facilitate this.
- Whilst **continuous auditing or control monitoring approaches** are often designed and developed by the third line, these often fit better within the remit of first or second lines of defence; we regularly see Internal Audit functions sharing knowledge and analytical tools they have developed.
- Of course, this should be done within their sphere of independence and objectivity, i.e. cautious not to design controls or take management decisions.

Anticipate

- The truly innovative, and future-looking Internal Audit functions focus on generating and offering management **preventative insights on emerging risks or issues/events before they materialise.**
- This, in a way, is the reverse of the traditional 'backward-looking' audit approach of focusing on what went wrong or where controls did not operate. The **focus is on the future**, by applying **advanced analytics**, AI and machine learning powered algorithms to bring out often unknown risks or things management may not have even hypothesised over.
- Examples in industry, include analysis of datasets such as customer complaints, risk event registers, regulatory issues, that can help generate causal relationships, get to the root cause or produce predictive insights that drive preventative action.
- Although still the minority, as our survey uncovered, we increasingly see functions thinking in this direction and investing in developing advanced analytics solutions that can offer predictive analytics capabilities and use cases that can demonstrate such value.

Key lessons for the function of the future

01. **One of the principal lessons we have seen arising from the crisis, is that the more analytics-savvy and digitally mature functions performed better**. They continued to provide assurance in a non-intrusive manner, analysing available data (e.g. business performance, incidents, customer complaints, cyber-attacks) in a manner that provided a level of visibility over the nature of risks faced by the organisation as well as the effectiveness status of key controls that was imperative at the time. In an environment where some functions had to pause all auditing activity or were told to defer meetings with key staff during the initial phase of the crisis, the use of analytics and digital tools helped separate the truly 'resilient' functions. A deeper digital transformation and the use of data-driven auditing should not be seen by Audit Committees as a 'nice-to-have', but in our view should be core for the development of a resilient and a high functioning function of the future.

02. **Innovation is key to an effective, evolving and resilient function**. Functions should innovate in ways that meet the evolving needs of the organisation. Innovation is not always a 'big-bang' approach. It can begin in small ways and by everyone in the function; for example, by identifying small inefficiencies in their processes and activities, and ways to eradicate them in a cost-effective manner, which could be by mirroring or adapting an innovative approach another function or organisation has implemented. For more advanced functions, innovation could turn into hackathon-type competitions, rewards, innovation incentives, pilot or proof-of-concept type projects to develop or embed technologies. What is imperative however, is a top-down encouragement by the leadership team and the willingness to experiment. Also, a mutual understanding that staff should not be penalised for failure in that context, and a recognition that an initial failure could be a by-product of true innovation and healthy way to advance and develop.

03. **Digital innovation must occur across all lifecycle stages or operational processes** of the function, and not just in "doing the testing". It should cover approaches to Internal Audit planning, execution, and reporting, in stakeholder relationships, and even in the mission and remit of the function, which is not only to provide assurance, but also to advise management and anticipate risks.

"Digital innovation must occur across all lifecycle stages or operational processes."

04. **The real power in Internal Audit digital and analytics involves a change in mindset**; a mindset that is more value-driven, forward-looking, more focused on delivering business insights to stakeholders than the traditional compliance-driven Internal Audit mindset of "what we have done before" or the binary view of "what the methodology says". This data and innovation-mindset drives people to try something new, reduces fear, encourages them to apply their curiosity and professional judgement, challenge and investigate.

05. **As advanced technologies including machine learning proliferates, it becomes more accessible and the relevant skills more prevalent[1].** While effective analytics are not, and should not be, driven by the technology itself, a minimum investment to grab the opportunity of advanced technologies or analytics should be encouraged. Advanced analytics has the potential to revolutionise organisational processes more broadly, power predictive analysis and risk identification and insight generation. There are inexpensive ways and technologies to experiment with and significant benefits to be gained, regardless of the amount of the investment, size or maturity of the function itself.

"The real power in Internal Audit digital and analytics involves a change in mindset."

06. **Expanding the function's "advisory" role is key to maximising the value that Internal Audit delivers, particularly in times of disruptive change and emerging risks.** Advisory services around technology enablement for assurance, integrated assurance, and change initiatives are examples of areas where Internal Audit advisory can provide the most value. Finally, **this isn't a one-size-fits-all approach, and many of our lessons and suggestions would not apply similarly to all functions**. In our view, however, the **key principles and success criteria** for an effective digital function include:
    - firstly, the adoption of a coherent Internal Audit transformation strategy well-tuned to the organisational direction
    - secondly, prioritising innovation and change mindset and smartly leveraging the power of the key enablers (People, Process, and Technology)
    - thirdly, responding to challenges of the organisation as a whole, which means understanding management's strategy and the board's governance priorities, and the risks to the strategy and the organisation, and then providing the support needed to safeguard the organisation for now and the future.

Appendix A – About this survey

This survey aims to capture the current state of the digital and analytics capability of Internal Audit functions across organisations in the UK and gauge their sentiment around the future direction of travel and maturity ambition.

We surveyed professionals from 56 organisations, in sectors including financial services, consumer products and retail, telecommunications, technology, health and life sciences, oil and gas and public sector. Figure A illustrate the range of sectors participated in our survey.

The roles of the professionals that we interviewed ranged from Heads of Audit Analytics (or equivalent) to Heads of Audit Innovation, Chief Operating Officers for Audit and in some cases, Chief Audit Executives.

This survey was commissioned by Deloitte LLP and data was collated between January and March 2021. It was conducted by our senior practitioners either via direct interviews or through our online survey tool. Aside from the quantitative data, we have also leveraged a wealth of qualitative or other information shared or discussed over the past year with Internal Audit functions. Our research team then analysed the data to identify common themes, correlation across demographics, key lessons learned.

The output includes a range of facts and figures, but also our perspectives on the state of the industry, what good looks like, key takeaways and insights for functions – regardless of size or maturity – to consider, as well as our take on the digital and data-driven internal audit of the future.

"Our research team then analysed the data to identify common themes, correlation across demographics, key lessons learned."

Figure A. Demographic split of survey respondents

Industry sectors

Number of internal audit FTEs

Number of internal audit analytics FTEs

Appendix B – Digital and analytics maturity

The paper includes references to the "maturity" of the functions with regard to digital and analytics, and while the way maturity is defined and measured can be subjective and may differ based on the availability of datapoints and assessment approach followed, we used a proprietary methodology to ensure consistency and allow us to benchmark against our previous survey.

As part of our analysis of the survey responses, we were able to classify the maturity of the Internal Audit functions based on four key factors:

01. People and skills
02. Process
03. Applications of analytics
04. Technology

A six-point scale was used to measure the maturity; from 'None' – data analytics is not being utilised – all the way up to 'Innovating' – using leading practices across all elements of data analytics.

The results are presented in Figure B below.
The following points are worth being highlighted:

- When comparing against the results of both the 2018 Global Chief Audit Executive survey[2], and the 2015 Survey of Internal Audit Analytics Maturity[1] we can see a strong improvement in the UK market. Internal Audit departments that have advanced across the maturity scale the most, have promoted a strong data culture within the team, have focused on delivering "value" and insights for the function, and have worked closely with the rest of the business, acting as an advisor. This is helped break down key barriers that prevent the usage of data analytics, such as capability within the team and access to data.
- As our paper argues, over the next three to five years we expect to see a maturity drive, driven in part by the true "democratisation" of data and analytics within Internal Audit. From planning and risk assessing to testing and reporting, all parts of the audit lifecycle can be enhanced using analytics and intelligent automation. The barrier to entry is lower than ever before. Whether it is building dashboards with Key Risk Indicators (KRIs) using a visualisation tool (such as Tableau) or creating predictive models, recent advancements made to tools and analytical software packages have put strong technical capabilities at everyone's fingertips.
- The graph clearly shows what we have pointed out separately in the paper, that is, innovation and maturity is not solely the privilege of the larger functions; we have encountered some great examples of true value-driven auditing, strong data culture and digital innovation in functions across a wide range of sizes or budgets.

"As our paper argues, over the next three to five years we expect to see a maturity drive, driven in part by the true "democratisation" of data and analytics within Internal Audit."

Figure B. Analytics maturity and organisations surveyed

Appendix C – Definitions and glossary

Digital: The integration and embedment of digital assets or enablers (disruptive technologies, channels) to transform and automate existing operational processes, and increase the value offered to stakeholders.

Data analytics: Analysis and interrogation of data sets to identify anomalies, trends or potential issues for further investigation. The objective is to enhance the level of assurance provided by Audit, through higher quality of evidence, increased depth of testing and better indicators for controls issues – current and predicted.

Data science: An umbrella term for a group of techniques and methods, including machine learning, forecasting, text analysis, predictive analytics, network and cluster analysis and multivariate statistics.

Data visualisation: The representation of data in a graphical format, usually in the form of a chart or diagram.

Process mining: The analysis of a process in a visual manner, based on an event log, in order to derive insights and recommendations.

Robotic process automation: "RPA" or "Robotics" are the terms used to describe human interactions which have been automated to complete a task based on a defined set of instructions.

Simple analytics: Ad-hoc and non-repeatable analysis, predominately using spreadsheet applications such as Microsoft® Excel®.

Intermediate analytics: Analysis performed using software packages designed for Internal Audit Analytics. These tools usually have a graphical interface similar to a spreadsheet and can perform complicated analysis via user-friendly dialogs. Basic automation can be achieved in order to perform analysis on a repeatable basis.

Advanced analytics: The use of database environments and/or data science packages allowing for more complex and in-depth analysis. These tools enable users to run analysis on a server, removing the need to store data locally. Analysis can be performed on a continuous basis and in some cases real time. Descriptive analytics: Summarising historic data to better understand what has happened.

Diagnostic analytics: Analysis of past results to understand not only what happened but also the reasons behind the results.

Predictive analytics: The use of statistical models based on historic data to predict possible outcomes of a scenario.

Prescriptive analytics: A combination of diagnostic and predictive analytics which create recommendations of future activities based on predicted outcomes.

Cognitive analytics: The blend of artificial intelligence and traditional data analytics to mimic human interactions with specific tasks. These techniques learn from past inputs to become more efficient.

Structured data: Data stored in a standard and expectable format, such as rows and columns. Unstructured data: The exact opposite of structured data, a collection of data which does not follow a predictable pattern. This could be an email, an audio file or a business document.

Appendix D – External sources/references

1. **Deloitte | 2018 Global Chief Audit Executive research survey,** Deloitte, 2018
2. **A Survey of Internal Audit Analytics Maturity in Financial Services;** Deloitte LLP; 2015
3. **Optimising internal audit: Developing topflight teams;** Deloitte LLP; 2021
4. As we have presented in: **Confronting Uncertainty - 2021 Hot Topics for IT Internal Audit in Financial Services;** Deloitte LLP; 2020
5. **Internal Audit 3.0; The future of Internal Audit is now;** Deloitte LLP; 2018

Contacts

Mike Sobers

Partner
Risk Advisory
Internal Audit

msobers@deloitte.co.uk

Yannis Petras

Director
Risk Advisory
Internal Audit

ypetras@deloitte.co.uk

Nanette Scott

Associate Director
Risk Advisory
Internal Audit Analytics

nanettescott@deloitte.co.uk

Alex Psarras

Senior Manager
Risk Advisory
Internal Audit Analytics

apsarras@deloite.co.uk

Deloitte.