

Agile, resilient & transformative

Global IT Internal Audit Outlook

KPMG International

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As organizations transform, at ever increasing speeds, new risks continue to emerge. Technological advances in artificial intelligence, cloud security, data privacy and cyber security; increasing use of automation tools like process mining and robotic process automation, and growing compliance, regulatory and fraud risks have increased the boundaries of Internal Audit and expanded the roles of technology auditors.

Fresh, hybrid working models have progressed at pace during the pandemic and are here to stay. These new ways of working, however, introduce more complex IT risks, especially for cyber security and operational resilience, which can severely impact operations, revenue and brands.

The IT Internal Audit function must keep abreast of these changes and continue to work with the board and senior management as a trusted partner, to assure them that they are effectively controlling all known and emerging risks.

This global report highlights the findings from a survey of 300 participants comprising of Chief Audit Executives, Audit Directors, Vice Presidents and Senior Managers representing audit teams from a wide range of industry sectors across 35 countries and territories. Questions covered the pressing issues facing technology audit teams today, such as auditor skillsets, scope and frequency of audits, emerging technology risks, adoption of new technology to enhance audits, and the evolving role of the Internal Audit function as a strategic advisor at board level.

The responses suggest that, with technology risks increasingly featuring in boardroom conversations, Internal Audit has a great opportunity to step up and play a bigger part in addressing and mitigating these risks. Auditors should continually upskill to audit these newer challenges, while expanding the use of diverse delivery models to address resourcing needs. Budgets are rising, but so are expectations, and audit leaders are looking to transform their teams through increased automation and data analytics tools for greater efficiency and coverage. Additionally, agile and shorter audit cycles are bringing greater flexibility in scoping and executing audits.

I would like to thank all those who gave their valuable time to participate in this global survey and I am confident that the results and insights can contribute to the ongoing global dialogue to make IT Internal Audit even more impactful.

Anil KV

Global Leader for IT Internal Audit, KPMG International, and Partner, KPMG in India

Key insights from our survey



Aligning capabilities to transformation

Skills gap and need for specialist experience was cited as one of the biggest challenges by the respondents.

Technology Internal Audit is growing in stature and is investing in a range of capabilities including cyber, cloud security, data privacy and advanced analytics.

47%

of respondents state that co-sourcing remains the dominant delivery model to access specialist skills

Only O/

of respondents rate their preparedness for auditing technology associated risks as 'good' or 'excellent'

Adapting to an evolving risk landscape

Cyber risk and operational resilience are the key focus areas of technology internal audit teams today.

With the enhanced risk landscape, the priority is to build resiliency through the use of technologies and agile auditing techniques, in responding swiftly to address new and emerging threats.





Increasing influence at board level

With the exponential rise in technology risks and the shift to tech-centric business models, the Boards and Audit committees have high expectations from Technology Internal Audit.

Auditors are increasingly prioritizing audit quality, adopting multiple approaches to monitor their effectiveness to enable enhanced reporting to the boards.

say their team exceeds or signficantly exceeds expectations of the board and senior management

60%

of survey respondents cited they have a high degree of maturity in their technology capabilities

Embracing digital technologies

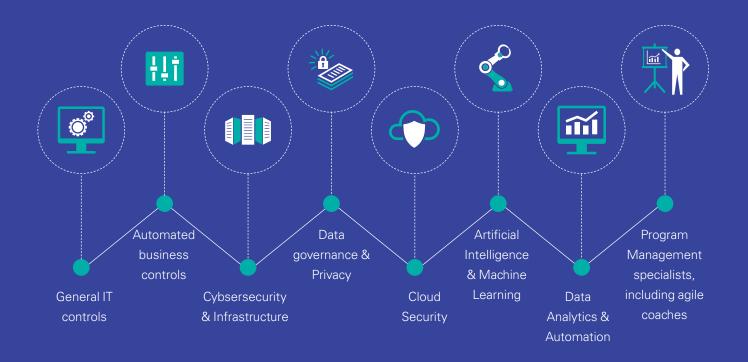
Data and Technology are improving the performance of the Internal Audit teams, with increased funding made available for new technology investments.

Technologies such as RPA, AI & ML continue to be aspirational for Internal Audit teams and are yet to see extensive usage.





Capabilities of today's Technology Internal Audit



Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021

In the previous KPMG IT Internal Audit survey, most of these capabilities didn't even feature in the rankings of desired skills, which shows how quickly things have moved in a very short span of time, as Technology Internal Audit grows in stature and extends its scope to cover not just general IT controls, but additional domains like cloud security, cyber security risks, data privacy and governance, all of which are now a core competency of most Internal Audit functions, with a reasonable degree of maturity. Today, the more pressing needs are in the areas of artificial intelligence (AI), machine learning (ML) and other emerging technologies.

Additionally, more than six out of ten Internal Audit functions say they are investing in agile coaches and auditors with program management skills. Again, many organizations are moving towards agile processes in product development and other areas, delivering multiple phases concurrently; audit must find ways to apply similar agile techniques to manage the associated risks.



Now more than ever,
Technology Internal Audit
has the opportunity
to build trust with its
stakeholder and within
its organization. The
challenge for Technology
Internal Audit is accessing
the desired technical skills,
practices, and scalability.

Phillip Lageschulte, Global IT Advisory Leader, KPMG International, and Partner, KPMG in the US

Co-sourcing remains popular

When it comes to audit delivery, only a quarter of the executives taking part in the survey expect to carry out all their technology internal audits with an in-house team. This figure has risen since the previous survey, which is probably due to the rise in remote working that enables auditors to hire candidates from a wider resource pool around the world — as well as the need for auditors with specialist subject matter expertise in audit priority areas. The most common model is co-sourcing, as technology internal audit teams build trusted relationships with advisors to access leading practices and technical skills, with the flexibility to bring in resources and scale up or down swiftly. Remote Audit delivery is gaining popularity with Internal Audit leaders, as they are increasingly opting to execute their audits out of more strategic or cost efficient locations.



of respondents stated that the need for an audit specialist with a subject matter expertise is the main driver for using third parties in executing Technology Internal Audits

Investing in skills of the future



85%

of the respondents stated they will be investing in Artificial Intelligence (AI) & Machine learning (ML) specialists in the near future



55%

of the respondents stated they will be investing in Cloud Security skills this year



73%

of the respondents said they had and will continue to hire cyber security professionals



74%

of the respondents said they will continue to invest in data privacy specialists



A pragmatic view on talent

Internal Audit should strive to remain at the leading edge of technology, to be on top of emerging risk and providing assurance. The respondents to our survey are aware of this and are investing in new skills and people to audit these technologies. However, they also acknowledge the intense competition for technical specialists from within and from outside of their organizations. There's the added challenge of offering compelling career opportunities with Internal Audit.

As technology becomes more deeply embedded into organizations, it shouldn't be long before all audits are technology-led or at least technology-enabled. While investing in new talent is inevitable, upskilling existing manpower is also proving to be a viable solution.

Internal Audit leaders are devising innovative ways of imparting such training virtually through focused Internal Audit universities coupled with self-paced, interactive and digitized learning modules where participants can sign up for such programs sitting at home.

Another popular trend is to leverage in-house talents working in divisions outside of Internal Audit, who are either subject matter experts on specific areas or are part of teams in other lines of defense that are already building advanced controls systems.

By rotating technology auditors out on temporary assignments to other business functions, the reverse can also apply: they can receive a first-hand perspective of the unique challenges faced by their peers.



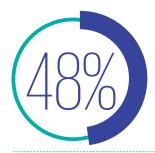


Adapting to an evolving risk landscape

The changing technology landscape and fast-paced digitization involving cloud adoption, big data analytics and intelligent automation has led to newer and greater technology risks. Technology auditors are now tasked with auditing these fast moving areas of technology and responding in real-time. Faced with ransomware attacks, data theft and financial crime and fraud, from both individual and state actors, companies should strive to limit cyber threats that could paralyze their business and damage customer trust. Cyber security is ranked the number one risk in the KPMG 2021 CEO Outlook Pulse Survey. It's a similar story for Technology Internal Audit leaders, who cite cyber risk and operational resilience as their top challenge.

The shift to remote working during the pandemic, along with the rise in third party outsourcing and partnering, has tested organizations' cyber defenses against identity and access threats. Where once security was about firewalls and perimeters, it's now about making access safe from anywhere, using sophisticated tooling and data analytics to identify and respond to evolving threats, and focusing on human factors to promote and monitor cyber-safe behavior and culture. Auditors must also keep pace with the massive increase in cloud deployment, which means a shift from physical computers to remote systems managed by multiple

Additionally, due to heightened regulatory requirements, areas such as privacy, asset management, vendor risk management and business continuity are gaining prominence under the scope of Technology Internal Audit.



of survey respondents stated that their Boards/ **Audit Committees** are highly involved in monitoring and addressing cyber risk.

It's about trequency and depth. New risks It's about frequency are emerging and evolving much faster and technology internal audit teams must adapt in real time, with more frequent or continuous assessments. and more contextual monitoring of certain risks.

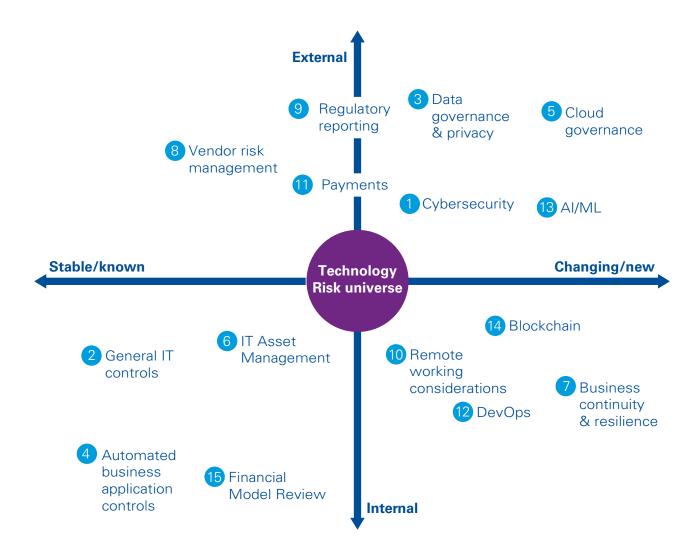
> Akhilesh Tuteja, Global Cyber Leader, KPMG International, and Partner, **KPMG** in India



Key Areas of Focus — Technology Internal Audit

The questionnaire asked organizations to pick from 15 risk areas that their Technology Internal Audit team are likely to review in the upcoming audit cycles. The areas chosen most frequently are: Cybersecurity, General IT Controls & Data governance.

Based on the responses to the survey and our experience in advising clients on managing technology risks, key focus areas for Technology Internal Audit have been placed in a risk universe, portrayed in this chart. The horizontal axis depicts the pace of change, from static at the left to fast moving on the right. The vertical axis indicates whether the risk tends to be external (above the horizontal axis) or internal (below it).



Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021

Playing catch-up with technology risk

Emerging technologies figure highly on the list of key technology audit areas to be reviewed, with cyber, data privacy, cloud security and blockchain all on the agenda. But how prepared are audit teams to perform this task? Our survey suggests there is some way to go, as only 2% rate their preparedness levels as 'excellent' and 31 percent as 'good'. Traditional auditing techniques may not be appropriate for the demands of these innovations, hence the continued reliance on external support.

Further, according to KPMG's Going digital, faster paper, 67 percent of companies accelerated their digital transformation strategy as a result of COVID-19. But how involved is Internal Audit in this journey?



of respondents said they were 'Not Prepared' to audit risks associated with emerging technologies.

There's a strong argument for greater and earlier involvement of Internal Audit to provide assurance over the entire transformation journey. This is not just about assessing controls over new technologies, but about adding value to the Board, providing timely insights on whether programs are achieving the desired return on investment, whether risks are being managed effectively, and whether the strategic objectives of such programs are being met.

Additionally, while some risks remain stable, others move faster and require more frequent or even continuous risk assessments. Forty-three percent of respondents report that their teams carry out risk assessments annually, while only 18% perform them continuously. Such an approach must evolve as digital transformation and disruption bring new risks.



of the internal audit professionals taking part in our survey report stated that they're involved in the design stage of digital transformation.

Building a culture of innovation and collaboration

Internal Audit needs a vision and roadmap for auditing emerging technologies. This entails continually prioritizing risks and mobilizing existing resources quickly to carry out one-off assessments to address any perceived weaknesses. Traditional audit techniques are unlikely to be sufficient for these emerging challenges where the approach should be led by new software tools, enhanced by automation.

Auditing these newer areas requires partnership, collaboration and alignment with all three lines of defense, which is one of the main challenges facing technology auditors today. When these various lines of defense work together, the organization gains greater holistic assurance in tackling the risks that accompany large-scale technology adoption.

Furthermore, while a small percentage of risks may be uncertain or unknown, for most part, there are not too many blind spots in the risk universe today. Its the speed or ability of Internal Audit to address these risks that matter the most. Hence, technology auditors recognize the need to reduce their audit and reporting cycle times, which are not best suited to a dynamic risk environment. Treating audit as a continuous process, with dynamic risk assessments when appropriate, enables technology auditors to act swiftly to address high-risk threats.

Agile audits help the team rapidly explore the areas to be audited. This allows them to concentrate on those that are considered strategically and operationally critical. Many Internal Audit leaders are now looking to invest in agile efficient and timely audits.

KPMG's recent paper, Adapting Agile to internal audit outlines the key tenets of an agile audit approach such as: empowered teams; greater and faster collaboration; timely insights (as opposed to box ticking); succinct, impactful reporting; and a desire to drive change rather than simply communicating observations.

Keeping up with the pace of disruption is challenging for every part of the organization, and Internal Audit is no different. Leaders should attempt to reinvent themselves, moving beyond general IT and security operations and regulatory assurance to more of an advisory role. Due to the speed of innovation, auditing technoloy is no longer a point-in-time exercise. There should be a shift towards ongoing assessments, continuously monitoring risks and moving away from traditional sampling approaches.





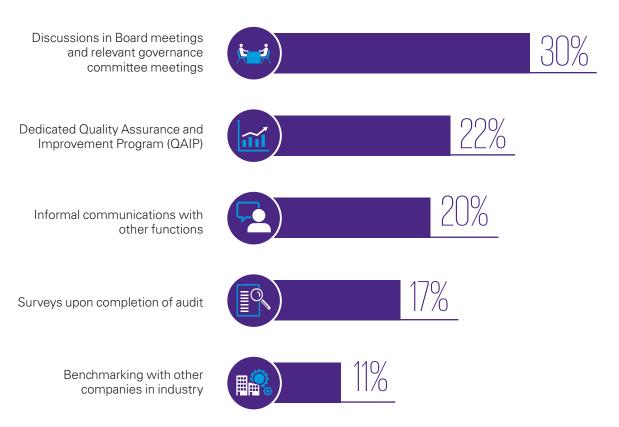
Determining audit quality and effectiveness

One direct outcome of the enhanced conversations with the Board and Audit Committees is the need for Internal Audit leaders to measure and demonstrate quality and effectiveness of their audit procedures. Such an approach can give the Board greater confidence in Internal Audit's insights, raising its stature and highlighting its strategic, rather than merely tactical, contribution to digital strategy. It also helps

ensure that governance committees in particular can follow up on recommended actions.

Other measures of effectiveness include dedicated quality assurance and improvement programs, communications with other functions, post-audit surveys and benchmarking - all of which increase Technology Internal Audit's accountability.

Mode of measuring quality and effectiveness of technology audits

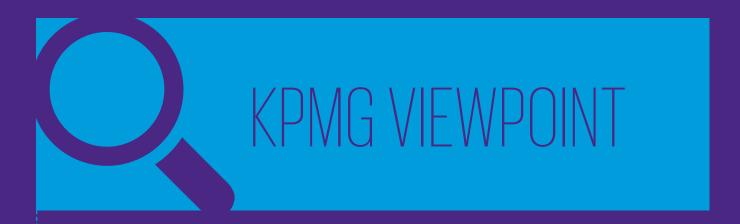


Source: Agile, Resilient & Transformative -- Global IT Internal Audit Outlook, KPMG International, 2021



If you can demonstrate you have added strategic value, by reporting issues that the Board was not aware of, you can gain a seat at the table when strategic decisions are made. It takes courage to be critical.

Nicole Lauer, Leader for IT Internal Audit, Americas, and Principal, KPMG in the US

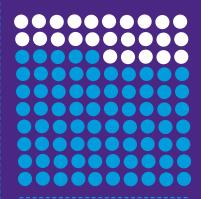


Stepping up to the C-suite

It's the role of Technology Internal Audit to periodically evaluate and communicate key risks to the Board and senior management, alerting them to emerging issues and new regulations that could impact the organization. To do this, Internal Audit leaders should work more closely with the Board, educating non-executives on all risks faced by the organization and aligning audit with strategy, helping to ensure that measures of audit effectiveness are in tune with the organization's wider goals. For some, this may be quite a steep change, to move out of their comfort zones and become a partner in digital transformation, acting as strategic advisors and taking on extra responsibility of providing independent audit assurance for large technology projects.

However, technology featuring widely in boardroom conversations, it is perhaps inevitable for Internal Audit to become more tech-centric in its approach. Three quarters of the companies surveyed said they have less than 10 technology auditors in their Internal Audit teams. This number will have to rise for Internal Audit to have more meaningful conversations with Boards wherein audit reports cover not only gaps or deficiencies, but also potential impact to the wider organization tech strategies, goals and objectives.

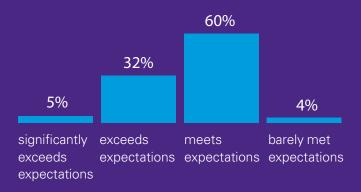
Many large Internal Audit functions are also investing in a better user experience for readers of their audit reports through the use of visualization tools or dashboarding to help facilitate a more stimulating conversation among various stakeholders. Ultimately, providing value is about having the courage to challenge and report issues that the Board was previously unaware of, which can help organizations reduce risk, increase operational resilience and take advantage of new market opportunities. In this respect the team must walk a fine line between strategic advisors and independent, and objective observers.



More than

of respondents stated that they have less than 10 technology auditors in their teams currently.

Internal Audit and Board expectations



Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021



Embracing digital technologies

Although technology is a major transformation vehicle, for organizations at an overall level the Internal Audit team should, arguably, first focus on innovating from within. In KPMG firms experience, the more forward-looking audit teams link their work to company strategy, using dashboard-type reporting to convey clear messages in business language to maximize the value they add and demonstrate how they are enabling the business to grow in a safe and secure manner.

Data analytics and visualization are rated as the single most popular tools used in Internal Audit. These help technology auditors swiftly assess controls and present insights in a clear and effective way. However, these technologies have now become table stakes and auditors should now be looking to incorporate more advanced technologies into their audits. The survey responses suggest there's some way to go. Although workflow and collaboration and continuous audit assistance tools figure highly, robotic process automation (RPA), artificial intelligence (AI) and machine learning (ML) are lower on the list of priorities — for now at least. The responses broadly mirror the technological investment that companies are making and it does appear that Internal Audit is behind the curve, which could hinder its ability to audit in an increasingly sophisticated technological environment.

Top ranked tools and technologies



Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021

The survey also indicates that technologies are being employed across the audit lifecycle, right from planning and risk assessment to documentation and reporting, which is an improvement over their traditional use for audit execution and fieldwork. By employing new tools for workpaper management, quality checks, continuous monitoring and other tasks, Internal Audit can increasingly introduce data driven audit techniques across the audit life cycle.

Process Mining — the new buzz word in **Internal Audit**

Process mining is a technique that can enable auditors to discover processes, inherent variations and gain insights into how a specific business process is operating by extracting digital event logs readily available in most information systems. Based on our survey responses, process mining has clearly emerged as a preferred approach to obtain datadriven insights, while also ensuring coverage of the entire audit population. Armed with a well-designed process mining solution, auditors can successfully eliminate traditional audit procedures such as re-performance of transaction flows, sampling procedures or long walkthroughs with client personnel, thereby leading to significant audit efficiencies.



Becoming a credible leader is all about advising organizations about things they weren't aware of, potential pain points, emerging risks and process inefficiencies. **Technologies such as data** analytics and process mining are a critical tool to add these kinds of insights, uncovering new ways of looking at the business.

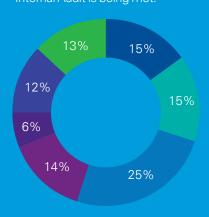
Brad Peake, Leader for IT Internal Audit, Asia Pacific and Director, **KPMG** Australia

Demonstrating audit value

Internal Audit functions that can demonstrate their value are more likely to gain a seat at the table when strategic decisions are being made, enabling them to be more effective and insightful. An innovation culture makes a huge difference, allowing the team to try out new audit techniques without fear of failure. The right technology tools can enhance efficiency and accuracy, and audit leaders should press for investment in an audit innovation group dedicated to transformation. The journey from initial feasibility studies on investment in new tooling to final deployment needs to be strategically managed so as to prioritize activities with the highest benefits to the function.

Having a focused group with specific goals on efficiency and automation to handle these technology initiatives is beneficial to ensure that the transformation agenda of Internal Audit is being met.

Moving away from traditional testing approaches, and embracing automation and other technologies, calls for quite a mindset change. Technology Internal Audit leaders can hasten this shift by encouraging and rewarding their teams to open their eyes to the potential of technology. Many large audit functions are now using technology across the breadth of the audit lifecycle, as against its usage only in the fieldwork and execution phase. Large organizations today have also started monitoring and tracking the scale of technology usage in their audits to help improve adoption. Further, crowdsourcing ideas from in-house auditors could also be a great source of automation use-cases, along with contributing to an enhanced sense of purpose and accountability within the team, for the greater cause.



- Planning (including resource allocation)
- Risk Assessment
- Audit Execution and Fieldwork
- Documentation and workpaper management
- Quality Checks
- Reporting
- Continuous Monitoring

Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021



Embracing digitization is a key enabler for high quality audits, more efficient ways of working and to provide a greater level of assurance. While technology can revolutionize the audit, it's not the solution to resolving all challenges facing the audit function today. The real value of technology can only be unlocked when it is coupled with the human element, consisting of critical thinking, judgement, knowledge and multidisciplinary skills



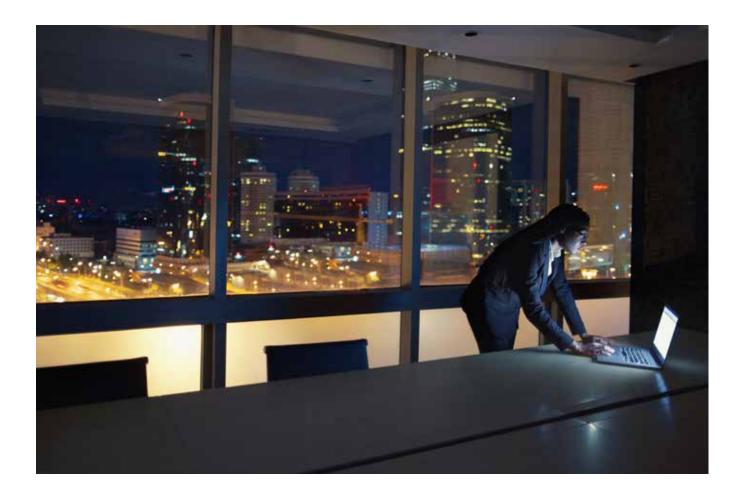
The more innovative Technology Internal Audit teams link everything they do to corporate strategy — it's a framework to build their function around. In this way they become true strategic advisors.

Kevin Smout, Global Governance, Risk and Compliance Services Leader, KPMG International, and Partner, KPMG Australia

In today's times, the priorities of Internal Audit leaders are rapidly changing with the change in external circumstances. For instance, there is a wider appreciation of risks in the Internal Audit function today, and that is no longer uncertain terrain for most of them. However, availability of the right talent with the desired technical skillsets is now a big area of focus for Internal Audit leaders. Audit teams are experimenting with varied delivery models and trying to keep pace with the demands of their multi-disciplinary workforce. Until a few years ago, auditors were expected to deliver quality audit reports and provide assurance over traditional technology domains, but today they are required to play an enhanced role to provide independent and strategic insights and advice to boost revenues, margins and protect the overall reputation and brand of the organizations they are part of.

Considering the massive rise in digitization, pace of globalization, changing customer requirements and the shift to tech-centric business models, Technology Internal Audit is now in the spotlight as they are expected to guide their Boards and Audit Committees on how to balance risk and rewards in a highly competitive environment. Further, digitization within Internal Audit in itself, has the potential to transform the way audits are performed with a renewed focus on efficiency, quality and greater assurance over key risks.

Being more agile and nimble, being more resilient in the face of change and having a transformational mindset — that's what Technology Internal Auditors across the globe are embracing as they take huge strides into the digital world.





About the Survey



Survey demographics

Region of operation



Europe, Middle East and Africa



Americas



Asia

Primary industry



Banking, Financial Services and Insurance



Manufacturing



Energy and Natural Resources



Retail



Technology (IT/ITes)



Construction & Infrastructure



Telecommunication



Automotive



Government and National Services



Healthcare



Transport



Agriculture



Education

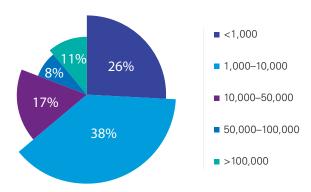


Media

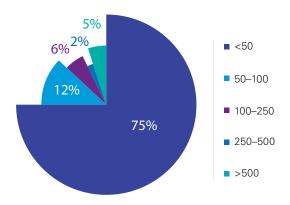


Travel

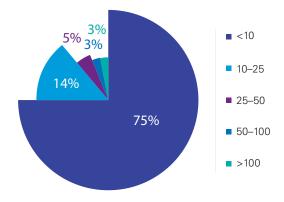
Total Global headcount of organization



Total headcount of Internal Audit team (including third parties)



Total headcount of IT Internal Audit Team



Source: Agile, Resilient & Transformative — Global IT Internal Audit Outlook, KPMG International, 2021



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