

RESEARCH REPORT – DECEMBER 2015

# How Technology is Shaping Internal Auditing

Insights from the UAE

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#### **About the UAE Internal Auditors Association**

The UAE Internal Auditors Association (UAE-IAA) was set up in July 1995 as a non-profit organization and is the official affiliate of Institute of Internal Auditors (IIA) in the United Arab Emirates. Our vision is to be a leading association that promotes innovation and excellence in internal auditing. Our mission is to provide dynamic leadership to advocate and promote the profession of internal auditing throughout the UAE. The UAE-IAA offers regular training programs, workshops, seminars and an annual conference with the objective of promoting the profession within the business community. In addition, we work with regulators to increase awareness of internal audit and internal audit standards. The UAE-IAA has the support of leading companies and professional services firms in the UAE who actively participate in the UAE-IAA's efforts to promote the profession of internal auditing.

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This research report would not have been possible without the huge support and contributions of many people. Firstly, I would like to express my thanks to the report's authors, Dr. Munir Majdalawieh and Dr. Yass Alkafaji who worked tirelessly over a period of six months to deliver this excellent report. Also, my appreciation extends to the project task force, who provided direction to the authors and oversaw the research process.

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Most importantly, I would like to thank each of the 361 internal auditors who took time from their busy schedules to anonymously participate in the survey and support the research initiative. Without their participation this research report would not have become a reality. I am also very grateful to the senior executives who participated in the post survey interviews, shared their experience and gave a real world perspective on the survey's topics. In this regard, I would like to thank the following individuals, as well as those who participated in the interviews anonymously:

- Adil Buhariwalla, Managing Partner – MACS International and member of the Institute of Internal Auditors's Committee of Research and Education Advisors
- Aldrin Sequeira, Chief Internal Audit Officer at Jumeirah Group
- Susheel Raje, Head of Internal Audit, Commercial Bank International
- Torben Hilbertz, Vice President Internal Audit, Abu Dhabi Airports

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I am really proud of how the members & supporters of the UAE-IAA encouraged us to develop original research. I hope that we can continue to work together to produce UAE specific insights on an annual basis.



**AbdulQader Obaid Ali**  
President  
UAE Internal Auditors Association



# Foreword

I am pleased to have the opportunity to work with the UAE-IAA and contribute to this important research study on How Technology is Shaping Internal Audit. Tackling such a dynamic and challenging topic as technology is further testament as to how the Institute of Internal Auditors is committed to advancing the internal audit profession in the UAE and globally. The lessons learned from this research will help internal auditors around the world understand the technology strategy and skills needed to have a world class internal audit function.

As we all know, technology is evolving at an ever-increasing pace and has many applications as well as implications for internal audit. When it comes to understanding technology risks, there has never been a more challenging time to be an auditor. While the IT environment is indeed bringing new challenges to internal audit, technology is also helping drive unprecedented benefits to those internal audit departments that have successfully deployed these advances into their audit process. Wolters Kluwer research, however, indicates that there is a significant gap between the importance that audit leaders place on technology and their success in effectively using it.

This UAE-IAA research report, which takes a closer look at three critical technology areas (audit capabilities as they relate to IT, IT risks, and internal audit technology tools) provides an excellent framework to help internal auditors better understand the expectations, challenges and opportunities related to technology.

I have been working in the field of internal audit technology for 25 years and have seen first-hand the direct linkage between the effective use and understanding of technology and world class audit departments. In my experience, internal audit departments that treat technology as a top-down strategic imperative are the most successful in enhancing and expanding not only their use of technology, but their effectiveness in auditing IT-related risks.

I am certain that you will find the information that the UAE-IAA has presented in this research study as valuable as I do. I would encourage you to take the lessons learned from this research to shape your internal audit technology strategy.



**Michael Gowell**

General Manager and Senior Vice President, TeamMate  
Wolters Kluwer





# Executive Summary

Technology is not only changing the business world, it is changing the internal auditing profession. It is changing the way internal audits are conducted as well as the risks and processes being audited. It is also changing the skills that are required to have an effective internal audit function. In today's world, internal audit and technology need to go hand in hand.

Over the past 2 decades, Internal audit functions have been regularly auditing established information technology (IT) areas such as IT general controls, service delivery, applications, infrastructure, IT projects and IT governance. Since then new technologies have also given rise to a new set of emerging risks associated with trends such as Big Data, Cybersecurity, Cloud Computing, Social Media and others. Internal audit is now expected to deliver value to the organisation in these areas and traditional audit methods may not be able to produce the quality work needed to assure stakeholders. As a result, internal auditors have had to deploy new tools, such as Data Analytics & Continuous Auditing, in order to provide assurance & insight on current and emerging IT risks.

Our world is constantly changing and internal auditors need to stay up to date and understand how new technological innovations are impacting internal audit and how we can continue to remain relevant.

*How Technology is Shaping Internal Auditing: Insights from the UAE*, aims to provide an in depth analysis of IT auditing in the UAE and how the UAE compares with rest of the world when it comes to IT auditing. The report will look at internal audit departments in the UAE and understand IT audit staffing & certifications, the top current & emerging IT risks, and the IT tools that internal auditors are using to improve the quality & speed of audits.

A summary of the main findings from our research is as follows:

## Section 1: IT Audit Staffing Levels and Specializations

- When it comes to staffing levels, the UAE is at par with internal auditors globally with around a tenth of internal auditors in the UAE coming from a technical IT background.
- Internal auditors specialized in IT audit in the UAE have double the percentage of IT audit and security qualifications (e.g. CISA, CISSP, etc..) as compared to internal auditors globally.
- CAEs in the UAE are looking to hire internal auditors with IT auditing skills such as cybersecurity & privacy, data mining & analytics, and IT in general. However, these skills are not among the top five skills which they are hiring for.

## Section 2: Understanding & Responding to Technology Risks

- Only a small percentage of internal audit plans in the UAE is dedicated to IT risks, and almost half of the CAEs surveyed believe that this will not change in 2015.
- Surprisingly, there are some internal audit departments in the UAE that do not conduct audits of IT or related areas.
- IT risk does not seem to be high on the agenda of executive management, while internal audit departments consider IT risks among the top 5 risks which they will focus their attention on.
- While most internal audit departments carry out reviews of IT Governance, there is still room for improvement in this area

- UAE internal auditors focus more on IT security than do internal auditors globally in the areas of physical security, cybersecurity and website security. The area of least focus with regard to IT security is social media.
- Firewall reliability, data breaches or online disruption that can damage organization's brand are the technologies with the most inherent risk exposure in the UAE.
- The vast majority of internal auditors in the UAE believe that internal audit focus on cybersecurity will increase over the next 2 – 3 years.

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**"Technology is now the way we do business and has to be an integral part of internal auditing."**

*Susheel Raje, Head of Internal Audit at Commercial Bank International*

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### Section 3: Using Technology to Enhance Internal Audit Processes

- The UAE is outperforming internal auditors globally as more than half of UAE internal auditors indicated that they extensively use technology across the entire audit process.
- Electronic working papers are the most extensively used information technology tool.
- Technology is most extensively used by internal auditors in the financial sector and public sector. Similarly, the larger the internal audit department the more likely it is that they heavily rely on information technology across the entire audit process.
- The majority of UAE internal auditors use data analytics and use continuous/real time monitoring extensively or moderately.

This report will help internal auditors compare their internal audit department to other internal audit departments in the UAE and globally. Internal auditors can use this report to educate stakeholders on the key IT risk areas that should be part of the internal audit department's scope, to promote the use of technology within the internal audit department, and to improve the IT audit capabilities of the internal audit team if required. In addition, the report provides CAEs with useful recommendations from experienced internal audit leaders on how to improve IT risk capabilities and manage stakeholder expectations.



# Introduction





Internal auditors need to provide assurance to the board of directors and to management that risks, including information technology (IT) risks, are being appropriately managed in line with the organization's risk appetite. In addition to its core assurance role, internal audit is being asked to "deliver deeper insights and value beyond assurance, particularly in the areas of strategic execution, emerging risk, and increasingly the use of analytics" (Hatherell, 2014). When it comes to delivering value and insights, IT is an area where internal auditors can easily break out of their comfort zone both in terms of audit areas and using technology to increase audit efficiency & effectiveness.

Also, as IT continues to integrate into business processes and daily activities, risks associated with the use of IT have attracted the attention of the media as well as regulators in the UAE. Laws at both the federal and emirate level have been passed to regulate technology usage and to boost information security. IT risks are now not only part of the corporate world but part of the world as a whole.

### Research Approach

This report analyses responses from internal audit practitioners in light of leading practices and the International Standards for the Professional Practice of Internal Auditing (Standards) issued by the Institute of Internal Auditors (IIA), in order to help internal auditors better understand the expectations and challenges related to using technology and auditing technology risks.

The results and analysis in this report are based on responses from the CBOK 2015 Global Internal Audit Practitioner Survey (Survey), the largest survey of internal auditors in the world, as well as interviews with internal audit leaders operating in the UAE. The Survey was completed by over 14,000 internal auditors around the world, including over 350 from the UAE. Details of survey demographics are presented in Appendix 1.

To perform the analysis, we analyzed the Survey based on the overall UAE results, and compared the outcome with the results we obtained from Global respondents in order to arrive at a comprehensive understanding on how technology is transforming internal auditing in the UAE. Furthermore, we conducted interviews with internal audit leaders in the UAE to comment on the findings and obtain their insights and recommendations.

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***"As a CAE you should always look for and assess whether a technology is available to make your work more efficient and more effective. If business has improved and your function has not over the years, are you an effective audit function?"***

*Torben Hilbertz, VP Internal Audit at Abu Dhabi Airports*

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### Research Objectives

While there are numerous studies across the globe on IT in the context of internal auditing, there is very limited research on this area in the UAE and, thus, this report comes to fill this gap. This report takes a closer look at IT related questions and responses from the Survey in order to answer 3 main questions:

1. What IT specializations do internal auditors have and what IT skills are being recruited? (Section 1)
2. What are the main IT risks internal auditors are focusing on and how will that change in the next 2 – 3 years? (Section 2)
3. What technology tools are internal auditors using to improve their efficiency and effectiveness? (Section 3)

The report will also aim to compare, where possible, the results of UAE internal auditors to those of internal auditors globally.

### Institute of Internal Auditors Standards Relating to Technology

Technology is an integral part of the Standards. The Standards list 3 implementation standards that mandate the responsibilities of internal auditors pertaining to technology:

- **1210 – Proficiency (1210.A3)** – Internal auditors must have **sufficient knowledge of key information technology risks and controls** and available technology-based audit techniques to perform their assigned work. However, not all internal auditors are expected to have the expertise of an internal auditor whose primary responsibility is information technology auditing.
- **1220 – Due Professional Care (1220.A2)** – In exercising due professional care internal auditors must **consider the use of technology-based audit and other data analysis techniques**.
- **2110 – Governance (2110.A2)** – The internal audit activity must assess whether the **information technology governance** of the organization supports the organization's strategies and objectives.

In addition, and as part of the Recommended Guidance of the Institute of Internal Auditors's International Professional Practices Framework, there are several Practice Guides on technology such as the Global Technology Audit Guides and the Guide to the Assessment of IT Risk. These Practice Guides dive deeper into specific IT issues and provide guidance on how to conduct internal audits in these areas.

### Overview of the Report

In Section 1, we focus on the capabilities of internal audit departments as they relate to IT. We will look at the IT related responses to the following questions:

- Do you have an IT audit or security certification?
- Do you have a technical specialization in IT or do you spend a majority of your time working on IT?
- What skills are the internal audit departments recruiting or building?

In Section 2, we explore IT risks and look at the types of risks and the amount of time spent by internal audit on IT risk. The applicable questions are:

- Is IT risk one of the top five risks on which executive management or internal audit is focusing the greatest level of attention in 2015?
- What percentage of your 2015 audit plan is dedicated to IT risk and is this an increase compared to your 2014 audit plan?
- What is the extent of internal audit activity related to IT security?
- What are your views on the risks from emerging IT areas?
- Where do you think IT audit activities will be directed in the next 2 – 3 years?

In Section 3, we examine the tools internal auditors are using to enhance internal audit processes and results:

- How would you describe the use of technology to support internal audit processes at your organization?
- What are the technology tools you use when conducting internal audit activities and how extensive do you use them?
- Does your internal audit department use data mining or data analytics in internal audit activities?

Technology has already become an integral part of internal audit activities and processes. Internal auditors who can't keep up with the pace of change risk falling behind and becoming irrelevant. This report gives UAE practitioners a fresh perspective on the nature of IT risks being addressed and the extent of the use of technology in the internal audit activities and will help them discover areas where they can grow professionally and increase their value to their organizations. It will also provide a benchmark that Chief Audit Executives (CAE) can use to identify best practices and opportunities for improvement within their internal audit departments.





# Section 1 IT Audit Staffing Levels and Specializations

According to the International Professional Practices Framework (IPPF), internal auditors are expected to apply and uphold four principles: integrity, objectivity, confidentiality, and competency. The principle of competency requires internal auditors to engage only in those services for which they have the necessary knowledge, skills, and experience. In addition, Institute of Internal Auditors Attribute Standard 1210: Proficiency states: "Internal auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities. The internal audit activity collectively must possess or obtain the knowledge, skills, and other competencies needed to perform its responsibilities."

The CAE must obtain competent advice and assistance if the internal auditors lack the knowledge, skills, or other competencies needed to perform all or part of the engagement. The CAE should know what kind and level of IT skills and competencies are required for auditing the effectiveness of the controls over the identified business risks.

There has been increased recognition of the importance of having an ongoing improvement and a balance of both formal education and experience supported with professional certifications and training to provide quality within the internal audit community. This section examines the internal information technology auditors' competencies in terms of: academic major, professional certificates, and area of technical specialization. In addition we examine the skills that the Internal Department needs and explore the sourcing alternatives.

### Academic Major

Survey data showed that internal audit departments in the UAE are equipped with staff from a technical background who specified computer science or information technology as their academic major. Those made up 14% of respondents in the UAE and 13% globally. With the ever increasing reliance on information technology and increased complexity of computer installations, internal audit departments can no more rely on generalist auditors to provide assurance in the areas related to information technology. A solid IT knowledge foundation (e.g. obtained from IT academic study or actual IT work experience) seems to be necessary to meet the internal audit mandate. "When you hire IT auditors you need people with core technology experience in addition to relevant certification in IT audit. A CISA credential makes a regular auditor IT aware, but technical audits need core hands-on experience in Information Technology and Information security areas" Susheel Raje, Head of Internal Audit at Commercial Bank International.

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### ***"While recruiting IT auditors, hire for IT line experience and train for IT audit experience"***

*Adil Buhariwalla, Managing Partner - MASC International and member of the Institute of Internal Auditors' Committee of Research and Education Advisors*

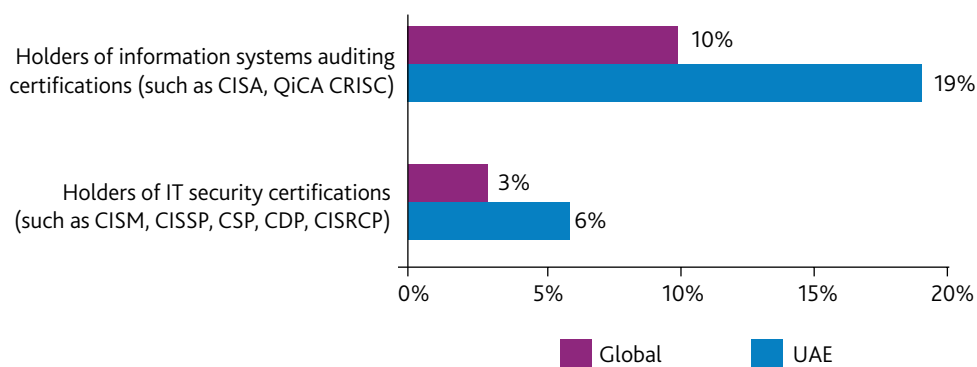
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### Professional Certificates

When survey participants were asked to identify the professional certifications that they are holding in areas other than internal auditing, 19% of the UAE participants indicated that they are holding Information Systems Auditing Certifications (such as CISA, QiCA, CRISC), almost doubling the global percentage of ten percent. Concerning information security six percent of the UAE participants hold related professional certifications (such as CISM, CISSP, CSP, CDP, CISRCP) compared with only three percent of the global participants. Exhibit 1.1 shows these results.

*Exhibit 1.1 IT Related Professional Certifications*



The results reflect the UAE's market demand for skilled individuals in the areas of information systems auditing and security and the positioning of the UAE as an attractive market for top notch talent globally. According to Susheel Raje "The UAE is a highly competitive market which has access to both global and regional talent. I have not had any particular difficulty when we looked at employing qualified IT auditors and the UAE market has ample supply".

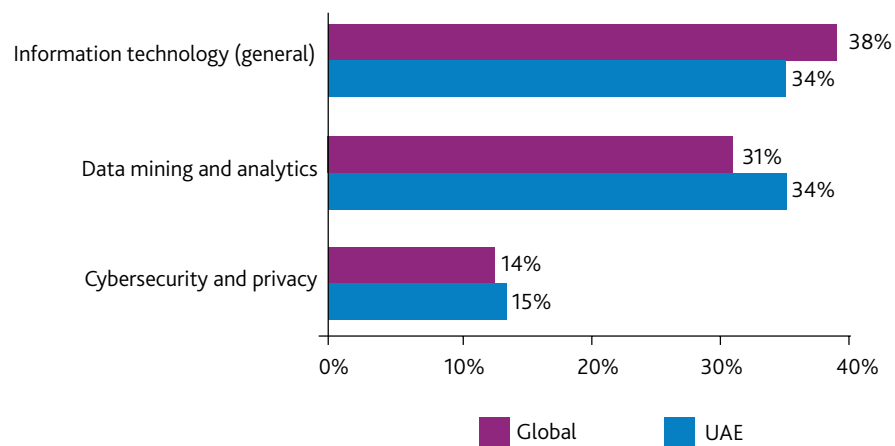
A further analysis of survey participants holding information system auditing certifications showed that 42% of those are in a senior manager position or above, much exceeding the similar global average of 26%. This shows internal audit leadership attention to information technology in the UAE and is potentially one of the reasons why the UAE performed better than the global average in most of the areas analyzed in this report.

While the above results are promising compared to the global average, there is still a room for improvement. The IPPF standards require all auditors to have sufficient knowledge of key information technology risks and controls and available technology-based audit techniques to perform their assigned work. In our opinion, obtaining CISA for all auditors including non IT specialized can help meet this requirement. "I want as many of my generalized non-IT auditors to be CISA certified as possible, as they all need to have IT awareness" says Susheel Raje.

### IT Skills that the Internal Audit Departments are Recruiting

Despite the positive results in the UAE regarding IT education and certification, survey data showed that internal audit departments are still recruiting or building IT audit skills in: IT in general (34%), data mining and analytics (34%), and cybersecurity and privacy (15%). When compared to global averages the UAE data was in line with the global results. Exhibit 1.2 compares the UAE to global results in the IT related skill set sought after. However, it should be noted that IT related skill set was not among the top 5 skills being recruited or built in the UAE.



*Exhibit 1.2 IT Skills Internal Audit Departments are Recruiting or Building*

While 80% of UAE survey respondents indicated that they expect audit activity related to cybersecurity will increase in the next 2-3 years, it was surprising to see that only 15% are building or hiring the related skill set. One possible explanation is that internal audit departments in the UAE are outsourcing this highly specialized technical area. "Cyber security is a very specialized technical area, getting external help in this area is highly effective. Reliance may also be placed on the 2nd line of defense but internal audit should verify that it is solid enough" says Torben Hilbertz, VP Internal Audit at Abu Dhabi Airports.

**"The risk of cybersecurity is very real and exists now!"**

Adil Buhariwalla,  
Managing Partner –MASC  
International and member  
of the Institute of Internal  
Auditors' Committee of  
Research and Education  
Advisors

According to Aldrin Sequeira, Chief Internal Audit Officer at Jumeirah Group: "I would like to think that the lower percentage recruiting for cybersecurity and privacy skill sets is owing to this work being outsourced so that the Board can be comfortable as it is specialized and requires continuous monitoring. Alternately, this area can be managed internally by increasing skill sets of Information Security and Internal Audit functions. Either way, it requires a significant investment in technology and resources".

On the other hand the lack of recruiting cybersecurity skill-set may potentially signal lack of recognition of the urgency of the issue. "People are not recruiting because some people think that cybersecurity is not a significant enough current risk to their business or they think a cybersecurity breach may happen elsewhere but not to their business. However, cybersecurity threat is already on the rise. Companies records are hacked, credit card details and other sensitive information is stolen and leaked. We even hear of social media accounts being hacked. The risk is very much real; thinking that a serious threat is 2 to 3 years away, gives a false sense of security" says Adil Buhariwalla.

We further explored the skill set being sought after when hiring IT audit resources with the IT audit practitioners in the UAE. The primary focus seems to be on technical skills when hiring IT auditors as opposed to general internal audit skills. UAE CAE's prefer to hire IT auditors with focused technical knowledge in the technologies relied on by their organizations. "When you recruit, look for multi-skilled internal auditors who have good IT as well as business skills. You don't necessarily need to look for candidates who have IT audit experience but look for people who have IT line function experience and who have the potential to think like an IT auditor. Also, before you look outside the company, look for experienced persons within your own IT department. You can always train them, and this keeps employees motivated" says Adil Buhariwalla.

### IT Audit Specialization and Sourcing

When the UAE participants were asked about their area of technical specialization, ten percent indicated that they are specialists in Information Technology, which is the same percentage we received from the global participants.

We further explored the sourcing arrangements of IT audit with the practitioners we interviewed as part of developing this report. IT audit seems to be one of the ideal candidates for outsourcing for companies not willing to build their own team given their organization level of dependence on IT and the nature of the organization's IT risk exposure. According to Torben Hilbertz "The need for having specialist IT resources in-house within audit departments depends on the nature of the industry and the levels of risks associated with information technology. If IT represents a smaller percentage of the audit plan, outsourcing is a cost effective approach to cover it".

Furthermore, even organizations having their own in-house teams, may still rely on outsourcing providers for IT areas of high technical specialization as it is not cost effective to build IT audit teams capable of covering all specialized IT areas. Companies facing such situation follow a hybrid model where they hire generalist IT auditors and rely on external providers for high risk technical areas. Aldrin Sequeira commented "Recruiting an IT auditor will not address all IT issues or challenges faced by an organization since each area within the IT remit is highly technical and specialized. Organizations cannot afford to have specialized skill sets for each area and therefore generally recruit a limited number of IT auditors (who generally provide assurance on IT Governance, general IT applications and processes) and rely third party assurance on specialized areas".





## Section 2

# Understanding & Responding to Technology Risks



***"Focus on IT emerging risks is increasing as it is not what you know, but what you don't know that can pose the biggest risk to the organization."***

*Aldrin Sequeira, Chief Internal Audit Officer at Jumeirah Group*

Technology risks are becoming exceedingly difficult to address. The very fast pace of technology disruption means that technology risks are constantly changing. Internal auditors need to be up-to-date and advise management and the audit committee on the best way to address current and emerging IT risks. "You need to be relevant to the business. You need to audit risks that matter and look at business initiatives and ongoing projects. For instance, IT projects gone wrong can put you back in terms of time, effort and resources. Also, focusing on topical issues such as cybersecurity is important. Internal audit should not restrict itself to relatively less complex areas but should provide assurance around risks that matter," says Susheel Raje.

This Section tries to understand the extent of internal audit effort being placed on technology risks and how internal auditors are responding to these risks by looking at four different aspects: IT Risk as a Top Five Organizational Risk, IT Risk as Part of Internal Audit Plans, IT Governance Activity, Audit Activities Relating to IT Security, Audit Activities Relating to Emerging IT Areas, and IT Audit Trends. Where applicable, the relative importance of IT risk is explored based on the IT related responses in the Survey's results.

#### **IT Risk as a Top Five Organizational Risk**

Survey respondents were asked to rank the top five risks that executive management and internal audit are focusing on. The UAE results showed that only 34% believed executive management focused on IT as a top five risk while 59% responded that internal audit focused on IT as a top five risk (exhibit 2.1).

*Exhibit 2.1 IT Risk Ranked Among Top Five Risks*

Ranked by:	UAE	Global Average
Executive management	34%	42%
Internal audit	59%	54%
Expectation difference	-25%	-12%

These results show that, both globally and in the UAE, there is more focus placed on IT risk by the internal audit department than executive management, which may indicate that internal auditors are not aligned to executive management expectations. Similarly, compared to the Global Average, the UAE has double the expectation gap. On the other hand in the UAE financial sector, 60% of CAEs believed that IT was a top five risk that executive management was focusing on. On these results, Torben Hilbertz commented "The mismatch about the perception of top risks between management and internal audit should not exist. Internal audit has a mandate to raise management awareness about the emerging technology risks if not already known by top management."

In addition, when internal auditors were asked to identify the top five risks that their internal audit department is focusing the greatest level of attention in 2015, operational risk is identified as the number one concern by UAE internal auditors and globally, followed by strategic business risk. Further, IT risk is among the top five risks on which internal auditors (both globally and in the UAE) are focusing the greatest level of attention in 2015, according to survey respondents (exhibit 2.2). However this is not the case for executive management which ranked IT risk in seventh place.

*Exhibit 2.2 Ranking of Risk in the UAE*

Risk	Ranking by IA	Ranking by Executive Management
Operational	1st	1st
Strategic business	2nd	2nd
Information Technology (IT)	3rd	7th

To some internal audit leaders these results are not unexpected. “For internal auditors, providing risk assurance is their bread and butter. They keep themselves abreast of the latest risk. They may not be able to convince top management about the vulnerability of certain specific IT risks as management may believe these to be managed effectively, or management may believe that their business is not vulnerable to these risks. Sometimes demonstrating a particular vulnerability by conducting an audit may be the best way to convince management. If you talk generic IT risks, you may not get the required traction.” says Adil Buhariwalla.

#### IT Risk as Part of Internal Audit Plans

When we look at internal audit plans, IT risk makes up only 9% of internal audit plans in the UAE and 8% of plans globally (exhibit 2.3). Internal auditors, both in the UAE and globally, allocate the largest percentage of their internal audit plans to operational risk which comprised 26% of internal audit plans in the UAE (25% globally).

*Exhibit 2.3 IT Risk as a % of Internal Audit Plans*

Risk	UAE	Global average
Information Technology (IT)	9%	8%

Interestingly, when we look at the UAE data from the Organization type point of view, we notice that the percentage of internal audit plans dedicated to IT risk increases to 13% in the financial sector (exhibit 2.4). This is not unexpected given that the level of business automation in the financial sector is usually higher than other industries.

*Exhibit 2.4 IT Risk as a % of Internal Audit Plans in the UAE (by Organization Type)*

Organization Type	% of IA Plan
Financial sector (privately held and publically traded)	13%
Public sector (including government-owned operations)	9%
Privately held (excluding financial sector)	8%
Publicly traded (excluding financial sector)	8%
UAE average	9%

Also, 42% of CAEs believe that focus on IT risk will increase in 2015 as compared to 2014 (exhibit 2.5). This is in line with expectations globally, however in the UAE 67% of companies in the financial sector believe that the focus on IT risk in internal audit plans will remain unchanged.

*Exhibit 2.5 Expected Change in Internal Audit Focus on IT Risk in the UAE*

Information Technology (IT)	Increase	No change	Decrease
UAE	42%	49%	9%
Global	42%	53%	5%

On a different note and based on anonymous feedback received from interviews, it was noted that there are some internal audit departments in the UAE that do not conduct audits of IT or related areas! The reason cited was not the lack of technology risks or processes but instead the mandate of the internal audit function did not extend to the internal audit department. In some cases, reliance was placed on the second line of defense (risk management, compliance, etc) and management reviews to provide assurance that IT risks were being adequately managed.

### IT Governance Activity

As mentioned in the Introduction, the internal audit activity must assess whether the IT governance of the organization supports the organization's strategies and objectives (Institute of Internal Auditors Standard 2110.A2). This means that CAEs need to be prepared to evaluate this key aspect of the overall IT landscape to determine whether there is overall IT alignment to the business, cost vs. benefit and adequate measurement of the IT function's performance among other things.

However when CAEs were asked about whether they carry out reviews of governance policies and procedures related to the organization's use of information technology (IT), a surprising 30% in the UAE stated that they carry out minimal or no reviews of IT Governance (exhibit 2.6).

*Exhibit 2.6 Extent of IT Governance Activity*

	None	Minimal	Moderate	Extensive
UAE	13%	17%	48%	22%
Global	9%	22%	45%	23%

The UAE results are very similar to those globally as most internal audit departments carry out moderate to extensive reviews of IT Governance. Also similar to global results, small internal audit departments appear to have difficulty allocating time to review IT governance. Both globally and in the UAE, around a fourth of internal audit departments with less than 4 auditors stated they minimally or do not conduct reviews of IT governance.



So why are around 1/3 of internal auditors in the UAE not placing adequate focus on IT governance? Adil Buhariwalla explains, "It's not IT governance that is the issue, the issue is whether auditors know enough about auditing corporate governance in general. Many auditors have the theoretical knowledge of corporate governance, but don't know how to go about auditing it." However, there is a difference as it relates to the financial sector in the UAE according to Susheel Raje who commented, "In my opinion, IT governance is an area extensively covered by IT auditors in the banking sector."

#### Audit Activities Relating to IT Security

When internal auditors in the UAE were asked about the extent of the internal audit activity that is directed toward IT security, the responses showed that the most extensive internal audit activity is directed towards the general IT risks (exhibit 2.7), followed by physical security and cybersecurity.

*Exhibit 2.7 Extent of IT Security Activity in the UAE*

	None to Minimal	Moderate to Extensive	NET
General information technology (IT) risks	16%	84%	100%
The physical security of your organization's major data centers	21%	79%	100%
The cybersecurity of your organization's electronically held information	30%	70%	100%
The security of your organization's internal intranet	31%	69%	100%
The management, use, and access of mobile devices owned by individuals of your organization	41%	59%	100%
The security of your organization's external websites	34%	66%	100%
The organization's procedures for how employees use social media	49%	51%	100%

The area least focused on by internal audit from the IT security perspective is the organization's procedures for how employees use social media (49% minimally or don't put any effort).

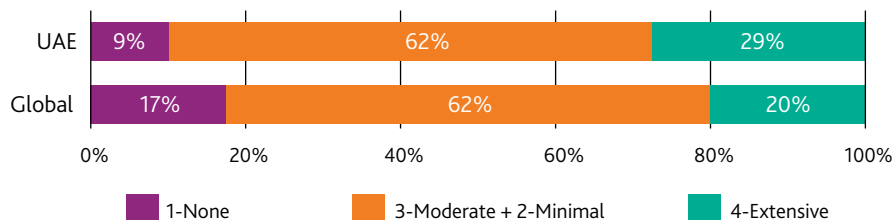
There are a number of types of IT technology topics that are taking the spotlight nowadays in many organizations. Such topics include, but not limited to cybersecurity, intranet, mobile devices and social media. When we look at the UAE results compared to Global results, we see that UAE audit departments focus on information security areas exceed the global average in all domains. Of particular note are the following:

## Cybersecurity

Accounts from the media show that all organizations, small or large, governmental or private, and profit or nonprofit are under threat and often attacks by intruders who intend harm to these organizations. "There are many predators (professionals or independents) that thrive on hacking or penetrating sensitive organization data. If successful, this can cause a further raft of issues including, reputation damage, business disruption and even possible litigation. Hence the cyber security risk needs to be carefully managed," says Aldrin Sequeira.

Internal auditors in all corners of the globe are concerned about cybersecurity attacks. Internal auditors in the UAE are even more concerned about such threats. For instance, 29% of UAE internal auditors indicated that they exert intensive level of their internal audit activities in mitigating the risk of cybersecurity compared with only 20% globally. On the other side of the scale, only 9% of UAE-IA stated that they do nothing about these risks compared to 17% globally (exhibit 2.8).

*Exhibit 2.8 The Extent Of "The Cybersecurity Of The Organization's Electronically Held Information" For Internal Audit*

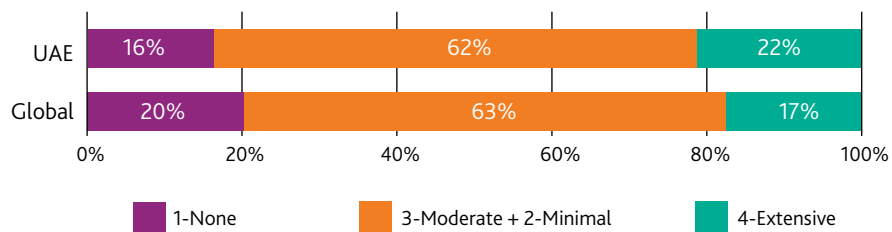


Susheel Raje, emphasized the importance of good cybersecurity in the financial sector "In the banking sector, one cannot take chances ... otherwise customers will lose faith in the institution. The security around online and mobile banking has to be robust. Cybersecurity breaches can cause major reputation damage, negatively impact business operations and result in loss of customers."

## Mobile Computing

Handheld devices are extremely popularized for the last ten years. More and more organizations are using such devices in conducting their business away from stationary devices. Mobile devices bring many benefits to organizations including higher profitability and improve access to information from any location. However, there is a heightened inherent IT and physical risks associated with these devices including loss or theft of sensitive information, unauthorized access to sensitive information or applications and loss of governance over data, applications, risks and audits (ITPC, Managing the Benefits and Risks of Mobile Computing, 2011). The UAE internal auditors have expressed concerns with the potential risks attached to mobile computing at par with the global internal auditors (exhibit 2.9).

Exhibit 2.9 the management, use, and access of mobile devices owned by individuals or your organization



**"If your company is using social media, then your internal auditors should be auditing it."**

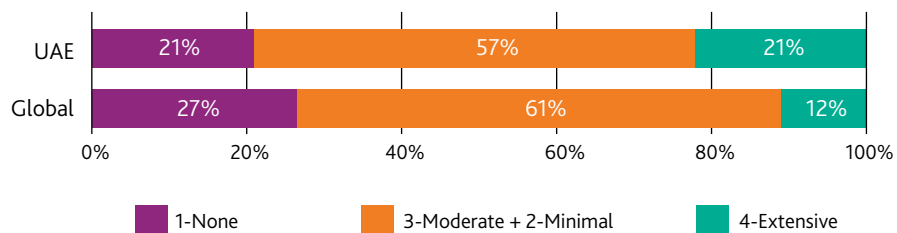
Susheel Raje, Head of Internal Audit at Commercial Bank International

#### Social Media

The use of social media by employees during and after business hours can strengthen relationships with customers, enhance brand awareness, and increase revenues. But these benefits come with risks, including brand and reputational damage, regulatory and compliance violations, data leakage, viruses and malware, and loss of employee productivity (Institute of Internal Auditors, Tone at the Top, October 2013). "Social media is certainly one of the emerging risks that require IA attention; however, it is not merely an IT issue. Increased awareness on social media etiquette by having a proper social media policy and adherence to such a policy by monitoring social media traffic will help in addressing the related risks," says Aldrin Sequeira.

Organizations need to establish policies related to the use and content of social media during or after business hours. Doing nothing is not an option. Such policies may include identifying which employees are using social media, train employees and executives, determine who will and won't speak for the company and monitor online chatter (ibid). Internal auditors have a critical role to play in monitoring such policies and it should be included in the audit plans. Most UAE internal auditors are aware of the risk and benefits of using social media but more effort is still needed. Of the 360 UAE internal auditors, 57% are spending moderate efforts in formulating and enforcing policies related to social media, 21% are spending extensive efforts while 21% are doing nothing (exhibit 2.10).

Exhibit 2.10 the organization's procedures for how employees use social media

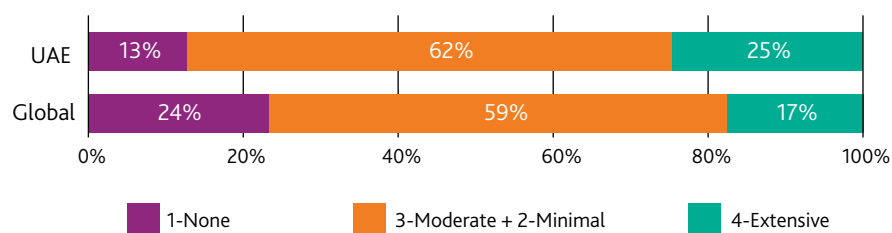


To help explain the results, Adil Buhariwalla commented "Many internal auditors don't know about the specific risks of social media. They know the link that social media can have to the company's reputation risk, but not know enough about specific risks associated with specific types of social media."

### External Websites

25% of the internal auditors in the UAE have expressed concerns with the potential risks associated with the security of the external websites compared to 17% globally (exhibit 2.11).

*Exhibit 2.11 The Extent Of "The Security of Organization's External Websites" For the Internal Audit*



### Audit Activities Relating to Emerging IT Areas

Internal auditors were asked to provide their opinions on the level of inherent risk relating to certain technology areas in their company, including certain emerging IT areas such as virtual servers and big data. The top 3 areas of inherent risk (based on a response of Moderate to Extensive) were Data breaches that can damage organization's brand, Firewall reliability, and Use of secure coding (exhibit 2.12).

*Exhibit 2.12 Perceived Level of Inherent Risk for IT Areas in the UAE*

	None to Minimal	Moderate to Extensive	NET
Data breaches that can damage organization's brand	19%	81%	100%
Firewall reliability	21%	79%	100%
Use of secure coding	22%	78%	100%
Service-oriented architecture reliability	22%	78%	100%
Detection if imbedded malware in hardware	22%	78%	100%
Virtual server reliability	22%	78%	100%
Online disruptions that can damage the organization's brand	23%	77%	100%
Big data reliability	24%	76%	100%



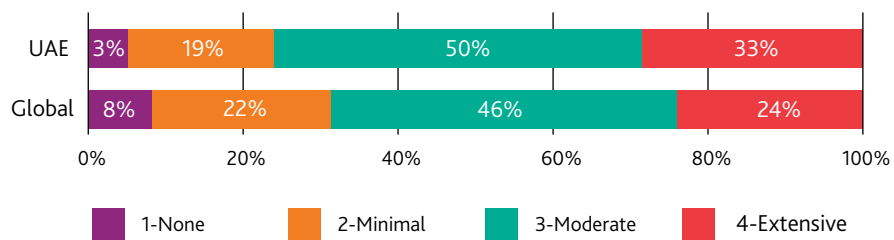
If we look at the data from a different angle, the top three areas of "Extensive" inherent risk in the UAE are 1) Firewall reliability, 2) data breaches or 3) online disruption that can damage organization's brand.

Given the importance of Emerging technologies, we will take an in-depth look at the UAE results compared to those globally:

#### ***Virtual server reliability***

From the graph below (exhibit 2.13), we can see that that internal auditors in the UAE felt that the level of inherent risk is more extensive than that globally (33% extensive risk in UAE compared to 24% globally).

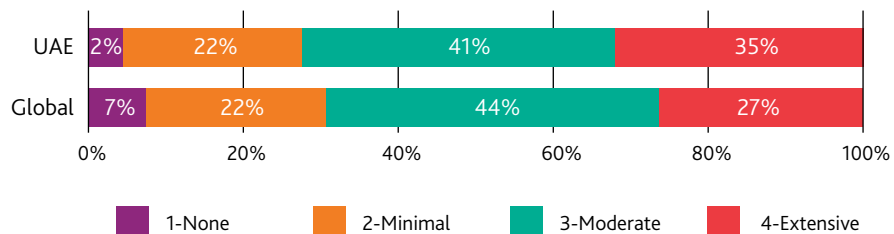
*Exhibit 2.13 The Level of Inherent Risk for Virtual Server Reliability*



#### ***Big data reliability***

Similar to the above, internal auditors in the UAE also felt that the level of inherent risk for big data is more extensive than that globally (35% extensive risk in UAE compared to 27% globally).

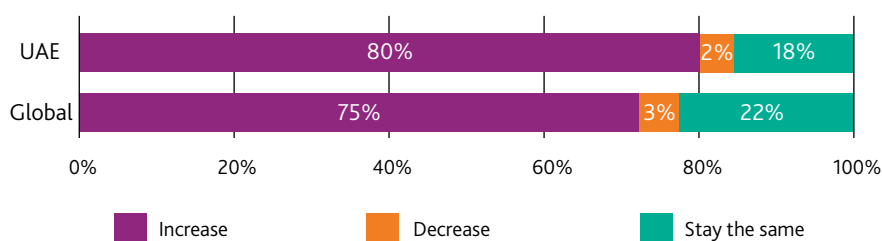
*Exhibit 2.14 The level of inherent risk for Big Data Reliability*



#### **IT Audit Trends Over the Next 2 – 3 Years**

Part of the Survey's approach was to look ahead and use the insights of internal audit practitioners to identify trends in IT audit activities relating to certain technology areas over the next two to three years. Not surprisingly, both in the UAE and Globally, cybersecurity was selected by a vast majority of internal auditors as the top area which is expected to have an increase (exhibit 2.15).

*Exhibit 2.15 Level of Inherent Risk Of "The Cybersecurity Of Organization's Electronically Held Information"*



This was followed in the UAE by disaster recovery/crisis management and control over data quality. None of the areas surveyed were expected to show a decrease in activity (exhibit 2.16).

*Exhibit 2.16 UAE IT Audit Trends*

	Increase	Decrease	Stay the Same	NET
Of the cybersecurity of your organization's electronically held information	80%	2%	18%	100%
Of disaster recovery, contingency planning, or crisis management	73%	3%	24%	100%
Of the control over the quality of the organization's data	72%	4%	24%	100%
Project management assurance of major projects	71%	3%	26%	100%
of IT procurement, including third parties or outsourced services	67%	6%	28%	100%
of the security of your organization's external websites	66%	4%	30%	100%
of the organization's procedures for how employees use social media related to the organization	64%	5%	30%	100%
of the physical security of your organization's major data centers	62%	9%	29%	100%

A large dam at night, illuminated with warm yellow lights. The dam features two prominent spillways in the foreground, which are brightly lit and reflected in the water below. In the background, a bridge with tall pillars is visible on the left, and a hillside with more lights and power lines is on the right. The sky is a deep blue with some light clouds.

## Section 3

# Using Technology to Enhance Internal Audit Processes

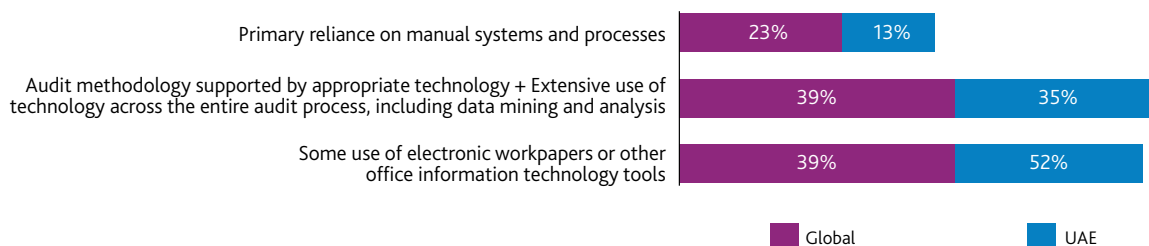


The Institute of Internal Auditors encourages its members to utilize technology in the performance of the internal audit activities. The IIA's IPPF states that "in exercising due professional care internal auditors must consider the use of technology-based audit and other data analysis techniques" (1220.A2). Thus, it is the expectation that modern internal auditors are to use as much technology as feasibly possible in order to increase the efficiency and effectiveness of the internal audit processes.

### Level of Reliance on Technology to Support Internal Audit Processes

Survey results showed that UAE internal auditors have used technology across the entire audit process much more extensively than their counterparts globally. For instance, as shown in Exhibit 3.1, 52% of the UAE respondents stated that they use technology extensively across the internal audit process including data mining and data analysis compared to only 39% globally. Also, only 13% of UAE auditors who responded to the survey indicated that they rely primarily on manual internal audit processes while globally the percentage is 23%. One can conclude that UAE auditors are more attune to adopting and using technology than their counterparts globally.

*Exhibit 3.1 Level of Reliance on Technology to Support Internal Audit*



According to Michael Gowell, General Manager and Senior Vice President at TeamMate, Wolters Kluwer This higher than average percentage can be attributed to the following factors:

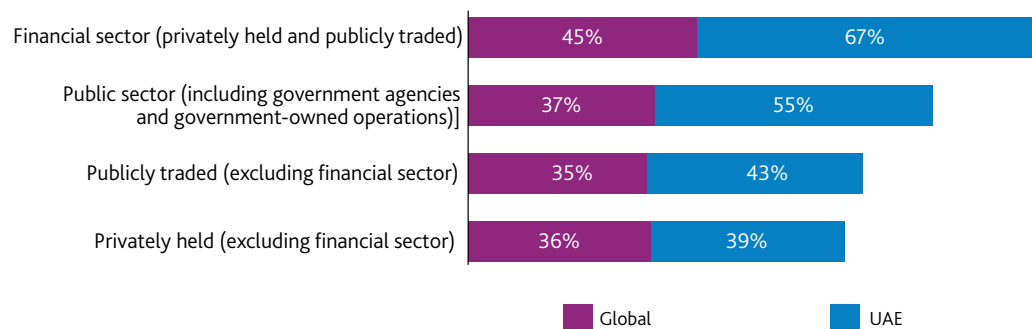
1. The strong technology infrastructure that exists in the region.
2. In countries such as the UAE, with higher employee costs the effective use of audit technology can be a powerful capacity multiplier – which enables audit departments to leverage their audit department resources.
3. The strong and active Institute of Internal Auditors presence in the UAE has a robust correlation with audit technology usage. One of the factors influencing this correlation is the fact that the effective use of audit technology can facilitate compliance with the IPPF Standards.

***"While audit tool usage is high in the UAE, there is still plenty of headway for improvement. The UAE audit community has the infrastructure, capability and expertise at all levels to be a global leader in audit technology tool usage."***

*Michael Gowell General Manager and Senior Vice President TeamMate, Wolters Kluwer*

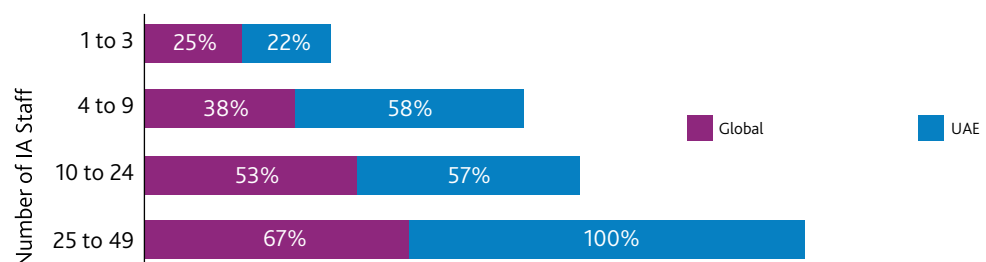
We further analyzed the results to explore whether there are differences in the reliance on technology depending on the organization type. Financial sector and public sector standout in the UAE when it comes to extensive use of technology across the entire audit process where the percentages are 67% and 55% as depicted in Exhibit 3.2 below:

*Exhibit 3.2 Extensive Use of Technology Across the Entire Audit Process Based on Organization Type*



When we analyzed the results taking into consideration the internal audit department size, the data show that the larger the number of full time staff in the department the more likely it is that they heavily rely on information technology across the entire audit process. The ratio reaches 100% in UAE and 67% globally for internal audit departments with 25 or more full time staff as depicted in Exhibit 3.3 below. As the internal audit departments grow in size it becomes imperative to rely on technology to manage the size of the information which needs to be handled:

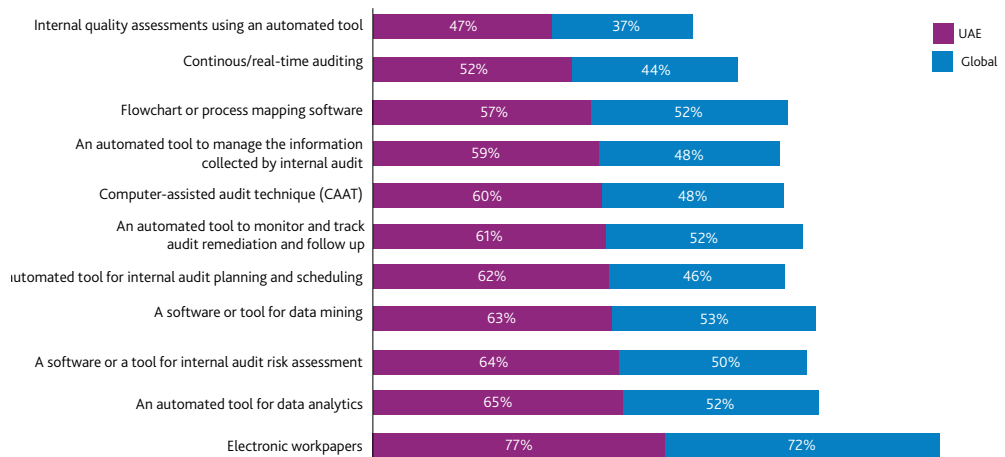
*Exhibit 3.3 Extensive Use of Technology Across the Entire Audit Process Based on Audit Department Number of Fulltime Staff*



### Technologies used by Internal Audit Processes

When the UAE internal auditors were asked about a list of certain technologies, electronic workpapers emerged as the most widely used technology by UAE auditors, followed by data analytics, internal audit risk assessment, and data mining. When comparing the results from the UAE to global, the data showed that the UAE usage is higher than the global average for all internal audit technologies assessed. Exhibit 3.4 presents the full results in UAE as compared to global.

Exhibit 3.4 Technologies Used Extensively or Moderately by Internal Auditors



The fact that electronic working papers systems top the list of technologies extensively used in the UAE and Global is not unusual. All other technologies analyzed are typically used discretely when and as needed whereas the electronic working papers systems are the tool continuously used during the execution of any audit assignment.

Michael Gowell commented "the value proposition for electronic working paper tools is first and foremost to drive efficiency into the overall audit process. Using a purpose-built electronic working paper solution can substantially reduce the documentation time and allow auditors to spend more time on the value added audit work. Additional benefits of work paper automation include: easier searching across audits, remote review, increased security, enhanced transparency, audit file consistency, enhanced reporting, effective knowledge management – just to name a few".

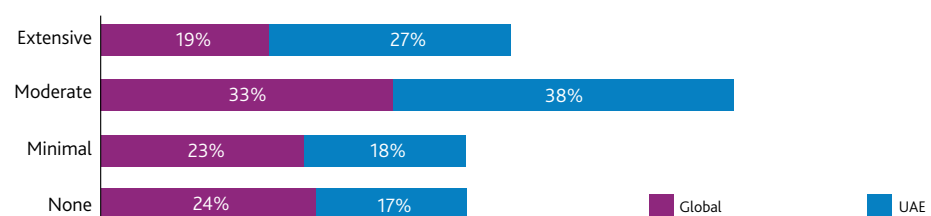
It is worth noting that electronic workpapers are usually a module within integrated audit management systems which provides many other addition features such as: planning and scheduling, risk assessment, action plans tracking and follow-up, documentation filing, etc... According to Susheel Raje "For organisations with local operations, you can run an audit department without an Audit Management System; however, it is pretty much an expectation to have an Audit Management System these days. In particular, such a system helps improve the efficiency of the audit process, especially the ease of documentation and the follow-up of audit observations"

#### Internal Audit Usage of Data Mining or Data Analytics

Data mining and analytics are essential activities which should be used by internal auditors. The purpose of data mining and data analytics is to search for patterns, plausible interrelationships and anomalies, which will help in improving operational efficiency and effectiveness, detection and prevention of fraud, reliable financial reporting and adequate compliance with laws and regulations.

Survey data showed that more than 65% of UAE survey responders use data analytics tools extensively or moderately compared to 52% globally as showed in Exhibit 3.5.

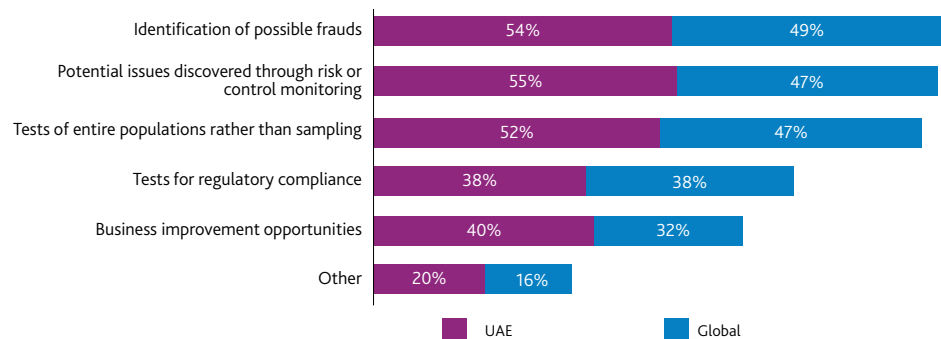
Exhibit 3.5 Usage of Data Analytics in Internal Audit



When conducting the survey, responders were asked about the level of utilization of data mining tools and data analytics tools in two separate questions. However, when analyzing the results we noted that the utilization levels are identical both in the UAE and globally. In data science there is a difference between data analytics and data mining, which in our opinion, survey respondents may not have been aware of. The primary difference is scope, purpose, and focus. Data analytics deals with applying algorithms to derive insights from various data sets by looking for meaningful correlations with the purpose of drawing conclusion about the information. On the other hand, data mining involves analyzing vast data sets typically stored in data warehouses, using sophisticated software tools with the aim to identify undiscovered patterns and establish hidden relationships (reference <http://searchdatamanagement.techtarget.com/definition/data-analytics>).

When UAE auditors were asked about the nature of the activities that they use data mining and data analytics for, they identified several activities including identification of fraud, monitoring various controls, testing of the whole population and testing for compliance with laws and regulations. Exhibit 3.6 presents the results. However, mining and analyzing data for management was not selected by neither UAE nor auditors globally as one of the top five internal audit activities that bring the most value to organizations.

*Exhibit 3.6 – Usage of Data Analytics and Data Mining*



Survey data also showed that not all data mining and data analytics assignments are performed by internal audit staff. On average, about 25% of data analysis is performed outside of the internal audit department in the UAE where as the global average is 28%.

While UAE data compared to global average with regarding the use of data analytics is encouraging, there is still room for improvement. The survey results show that 18% use data analytics minimally and 17% do not use any such techniques or tools.

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***"You should understand the data before starting the audit work. Data analytics is a key enabler for auditors to learn about the area being reviewed and it is often interesting for management when they see the outcome of the analytics done by the audit team"***

*Torben Hilbertz, Vice President Internal Audit, Abu Dhabi Airports*

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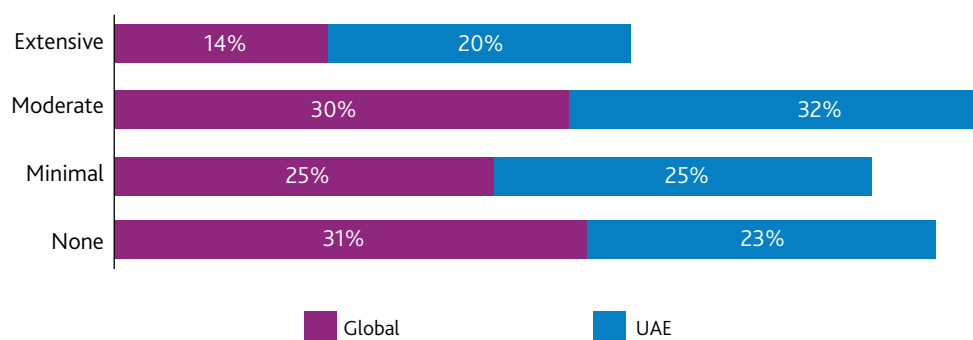
All UAE practitioners interviewed to comment on the results of the survey had strong opinions supporting the use of data analytics and there was a consensus that this utilization is expected to continue to grow in the future given the growth in the data being generated. "Any internal audit department which does not equip itself with data analytics capabilities, will not be an effective department for long, and will not be able to deliver value. In today's world, to provide assurance without data analytics means that you will have to either audit less areas, or you will need to recruit more - both of which are not effective" says Adil Buhariwalla. "Expectations are getting higher in terms of use of data analytics; you need an IT auditor who can speak the same language as the IT department, be able to understand the technology nuances such as database structures and help extract the right data. Only this would help CAEs provide effective assurance" commented Susheel Raje.

Michael Gowell stresses the importance of obtaining management buy-in for implementing data analytics technologies in internal audit "The data analytics survey results for UAE compared to the global results are encouraging, however the internal audit profession as a whole could benefit by stepping up its use of data analytics. Based on our work with over 2,500 internal audit departments we have found that virtually all world class audit departments leverage data analytics as a core strategic initiative. One of the keys to successfully integrating data analytics as a core component of the audit program is "management buy-in." Internal audit departments that can successfully demonstrate to executive management the value added benefits that data analytics provides are far more likely to obtain the budget to invest in the tools and training necessary to instantiate data analytics into their department".

### Internal Audit Usage of Continuous Auditing

GTAG 3 defines continuous auditing as "the combination of technology-enabled ongoing risk and control assessments. Continuous auditing is designed to enable the internal auditor to report on subject matter within a much shorter timeframe than under the traditional retrospective approach". Continuous auditing is widely perceived in audit circles as a disruptive emerging technology which, if adopted, will revolutionize internal auditing, but has this actually taken place? In 2010 CBOK survey, 52% of respondents believed that the utilization of continuous auditing will increase over the coming five years. When UAE survey responders were asked about the level of utilization of continuous auditing 20% indicated that they use it extensively and 32% indicated that they use it moderately. Exhibit 3.7 shows the utilization of continuous auditing within the UAE and globally:

*Exhibit 3.7 Usage of Continuous Auditing by Internal Auditors*



Within the UAE survey data showed that continuous auditing is among the least extensively utilized internal audit technology, compared to all other internal audit technologies, and the global results show even less extensive utilization of continuous auditing.

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***"It is encouraging that continuous auditing is a hot topic in the internal audit community, however, it is safe to say that the use continuous auditing has not materialized as fast as the vision"***

*Michael Gowell General Manager and Senior Vice President TeamMate, Wolters Kluwer*

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Overall it seems there is an increase in the utilization of continuous auditing over time and this trend seems to be continuing in the future but in a slower than anticipated rate. Some of the potential challenges slowing the adoption of continuous auditing are:

1. Inadequate management of the relationship with the IT department who are the custodians of the data. According to Michael Gowell "One of the critical success factors for accelerating continuous auditing adoption trend is for internal audit to develop an enhanced partnership with the IT department. One emerging best practice for establishing a solid relationship with IT is to hire an IT expert into the audit department. This IT skilled auditor will have the tools to develop the deep level of partnership with IT that is necessary to implement sustainable continuous auditing".
2. Challenges in obtaining unrestricted access to data. Adil Buhariwalla commented "A very important reason for the fact that continuous auditing is not as widespread as it should be, is that the internal audit function may not have unrestricted access to all data across the organisation. Internal audit needs unfettered access".
3. Potential lack of the required data analytics skill set. Hiring generalist IT audit specialists may not warrant availing the data scientist skill set needed to support an effective continuous auditing program.

Survey data show that UAE internal audit community is aware and actually working on overcoming this challenge where 34% of respondents indicated that they are recruiting or building data mining and analytics skill set. According to Aldrin Sequeira "Heads of Internal Audit departments often look for several qualities when recruiting team members. One of more important criteria is professionally certified individuals with the necessary industry or specialist experience and excellent interpersonal skills. I personally believe that data mining and analytical skill sets are gaining more importance in order to complement and enhance the quality of the financial and operational audits".

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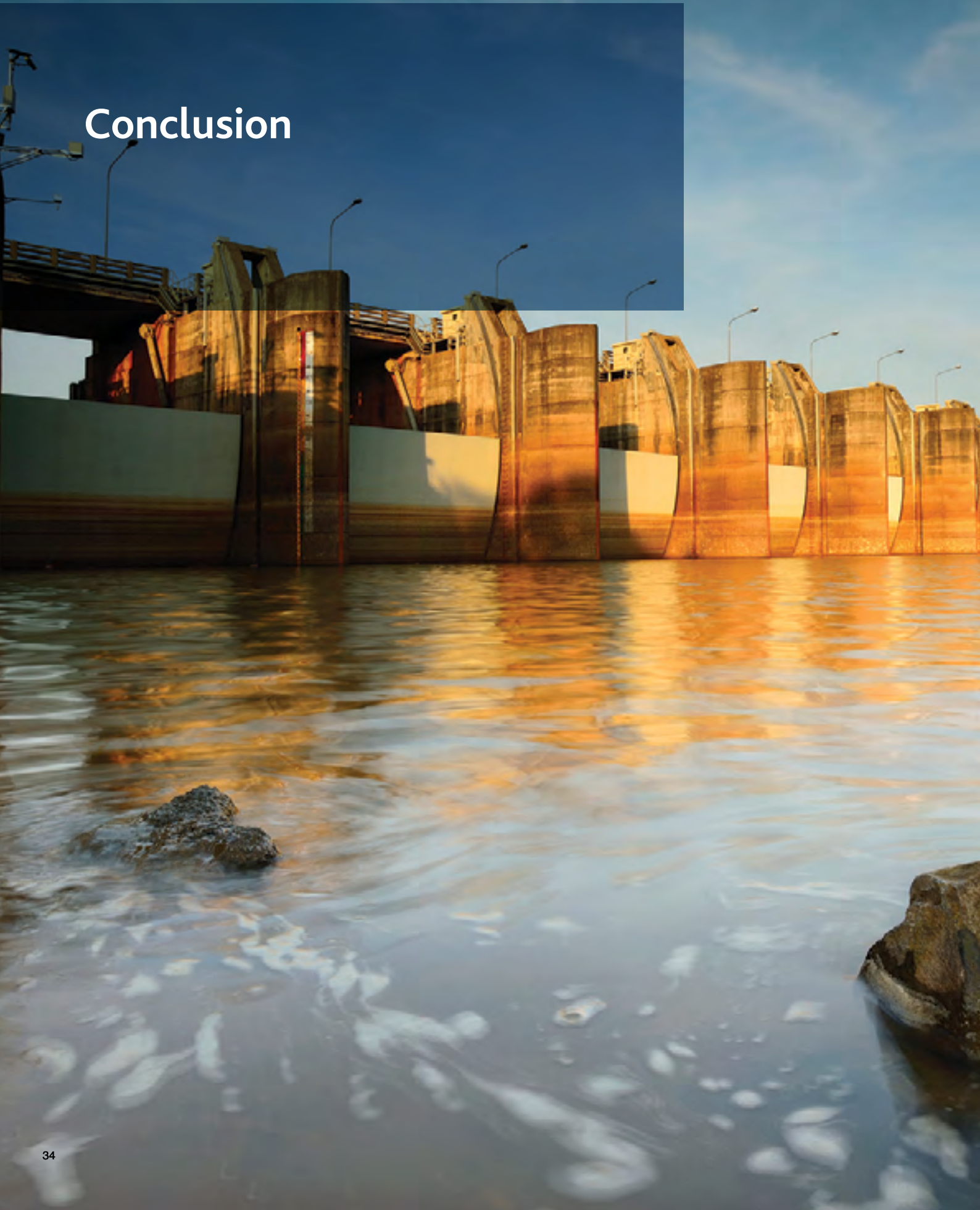
***"The best combination to make continuous auditing work is to have the right tone at top to support internal audit access, as well as technical expertise for data analytics and writing programming scripts"***

*Adil Buhariwalla, Managing Partner – MACS International and member of the Institute of Internal Auditors' Committee of Research and Education Advisors*

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A good source of guidance for internal audit departments in implementing an effective continuous audit/monitoring program is GTAG 3 titled "Continuous Auditing: Coordinating Continuous Auditing and Monitoring to Provide Continuous Assurance". The document was recently updated to include guidance on implementing continuous auditing in a comprehensive organizational context that spans across the three lines of defense.

# Conclusion



Considerations related to information technology are central to any organization's effort to ensure that issues are addressed quickly and thoroughly. The knowledge economy complicated by emerging technologies, such as cloud computing, social media and mobile devices — can challenge the ability of internal auditors to provide assurance to executives already overwhelmed with rapidly expanding opportunities and pressures caused by shrinking margins.

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***"Monitor new technologies and stay informed about emerging risks and periodically assess whether the resources and requirements are matching each other"***

*Torben Hilbertz, Vice President Internal Audit, Abu Dhabi Airports*

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Today, as technology becomes increasingly integrated in business processes, organizations can't survive without adopting the right Information Technology solutions. This means that technology topics make up an ever-increasing percentage of the internal auditor's professional knowledge and skills set. While technology background is important in understanding new developments and directions, it is of little use without continuous acquisition of new knowledge. Corporate auditors need to develop the essential technical knowledge and skills to audit IT-based controls and processes (Curtis et al., 2009).

When it comes to the UAE, the Survey results show that internal auditors are better qualified, more risk focused and use technology more than the global average. "Based on both the CBOK survey results and our work with audit departments in the UAE, it is clear to see that the UAE is emerging as a leader in the application of technology to support the audit process. We attribute this positive development to the strong "Technology Tone at the Top" in the UAE. The CAE is best positioned to establish technology as a key strategic imperative and articulate the benefits of technology to both internally and to the key stakeholders – and CAEs in the UAE are clearly embracing technology as a strategic imperative," according to Michael Gowell.

In short, technology is shaping both what is audited and the way audits are being carried out. Internal auditors must rise to meet the requirements of our changing world. "The expectations of internal audit have changed considerably recently and will continue to evolve. Internal auditors are 'asked to do more with less' and are now increasingly involved in areas such as risk management, fraud detection/monitoring, saving costs and maximizing revenue, identifying opportunities for operational improvements etc. Internal audit cannot successfully meet such demanding expectations and perform without enhancing its own IT skill sets, embracing IA technology and using technology based applications to audit smarter," recommends Aldrin Sequeira.

### **The Way Forward**

The messages from the Survey and this report need to result in tangible actions for CAEs and internal audit departments. A recommended list of actions to aid internal auditors in their IT risk efforts, is as follows:

1. **Focus on Cybersecurity Risks** – If we look at the survey results and recommendations of the experts, it is clear that cybersecurity risk is the number one technology risk that organizations are facing. Internal auditors need to be involved in assessing the organization's controls and responses to cyber risks and the potential for data breaches. CAEs must ensure that cybersecurity risk is properly covered in the internal audit plan. "I advise the CAE's to look at their audit plan and thoroughly assess the required IT coverage; the specialized IT audit resources to be made available should match the required coverage in the plan," recommends Torben Hilbertz.
2. **Use Data Analytics** – If your internal audit department has not started using data analytics then you've fallen behind. You also risk providing less effective assurance and risk becoming irrelevant in the future. "Sample based testing does not give the same degree of assurance as testing of the entire population would. Data analytics is preferred, as it gives much better audit coverage," states Susheel Raje. In addition, data analytics is the one of the main components in order to increase internal audit maturity and use continuous auditing techniques. Adil Buhariwalla supports this view "The core requirement for continuous auditing is data analytics. A very important reason for the fact that continuous auditing is not as widespread as it should be, is that the internal audit function may not have unrestricted access to all data across the organisation. Internal audit needs unfettered access. The best combination to



make continuous auditing work is to have the right tone at top to support internal audit access, as well as technical expertise for data analytics and writing programming scripts”.

3. **Hire Professionals with Technology Backgrounds** – When you have a need to hire IT audit skills (whether for in-house purpose or when you are outsourcing), hire someone with a technology background. The internal audit experts interview strongly recommend hiring IT auditors who have worked in IT departments or who have a technology background given that they can speak the same language of the business and don’t come from an accounting or core audit background. This gives them the ability to understand and analyze technical details that core auditors (or core auditors who have obtained IT certifications) cannot.

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***“CAEs should invest in training their internal auditors on current and emerging IT risks”.***

*Adil Buhariwalla, Managing Partner – MACS International and member of the Institute of Internal Auditors’ Committee of Research and Education Advisors*

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4. **Educate Management** – The survey showed that internal auditors are placing much more focus on IT risks than senior management. It is up to CAEs to educate management on current and emerging IT risks and the activities that the internal audit department is carrying out in these areas. Further, CAEs need to promote their IT audit capabilities. Whether it be core capabilities such as ITGC or Application Audits, Access control audits, etc or more sophisticated capabilities such as Cybersecurity audits, technology related compliance (ISO, PCI DSS, etc), IT project audits, etc., management should be aware of what services the internal audit department can provide and what value they can derive from these services.
5. **Audit or Review IT Governance** – This may be old news to most CAEs, however the survey results show that a significant portion of internal auditors in the UAE are not covering IT governance. This is not only important from a business perspective but is also a requirement of the Institute of Internal Auditors’s Standards. If you’re not sure how to approach this area, there is plenty of guidance from the Institute of Internal Auditors and ISACA on this. “It is always useful to refer to GTAGs, COBIT and other relevant guidance from Institute of Internal Auditors and ISACA for IT audits. Also, ISO is a good reference point for information security and business continuity audits,” says Susheel Raje.



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# Appendix 1 Survey Participants Demographics

The Global Internal Audit Common Body of Knowledge (CBOK) is the world's largest ongoing study of the internal audit profession, including studies of internal audit practitioners and their stakeholders. One of the key components of CBOK 2015 is the global practitioner survey, which provides a comprehensive look at the activities and characteristics of internal auditors worldwide. This research report was responded to by 14,518 participants in 166 countries across the globe (Note: Response rates vary per question). For the purpose of this study, 361 respondents participated in this study are from the UAE. The following questions will shed light on the survey participants.

#### What is your position as an internal auditor in the organization?

41% of UAE based respondents were Senior Managers or above:

Level	%
Chief audit executive or equivalent	23%
Director or senior manager	18%
Manager	27%
Staff	32%
Total	100%

#### What is the type of organization for which you currently work?

Respondents came from a variety of organization types, although higher percentage of respondents were from the public sector:

Level	%
Privately held (non-listed) organization	33%
Publicly traded (listed) organization	21%
Public sector (including government owned organization)	42%
Other	4%
Total	100%

#### What was the approximate total revenue of your organization in U.S. dollars for the previous fiscal year?

The vast majority of respondents came from companies with over USD 100 Million in revenues:

Revenues	%
\$1 million or less	4%
More than \$1 million up to \$100 million	13%
More than \$100 million up to \$1 billion	44%
More than \$1 billion up to \$10 billion	25%
More than \$10 billion	14%
Total	100%



**For the entire organization in which you work, what was the approximate total number of fulltime equivalent employees as of the end of the last fiscal year?**

The majority of respondents come from companies with above 1,500 employees:

Employees in Internal Audit	%
Less than 500	24%
500 to 1,500	20%
1,501 to 10,000	44%
Above 10,000	12%
Total	100%

**Approximately how many years has the internal audit department been in place at your organization?**

The vast majority of respondents came from companies that have had internal audit departments for over 5 years:

Years IA Has Been in Existence	%
Less than 5 years	20%
5 to 10 years	41%
11 to 15 years	16%
Above 15 Years	23%
Total	100%

**Approximately how many full-time equivalent employees make up your internal audit department?**

The distribution of the number of employees in internal audit shows that the majority of respondents come from companies with 4 – 24 internal auditors:

Employees in Internal Audit	%
1 to 3	15%
4 to 9	31%
10 to 24	30%
25 to 49	16%
50 or more	8%
Total	100%

A photograph of a large dam with water cascading over it. The view is from a bridge with a metal railing in the foreground. The water is white and turbulent as it falls. In the background, there's a river or canal, some trees, and power lines under a blue sky with clouds.

## About the authors

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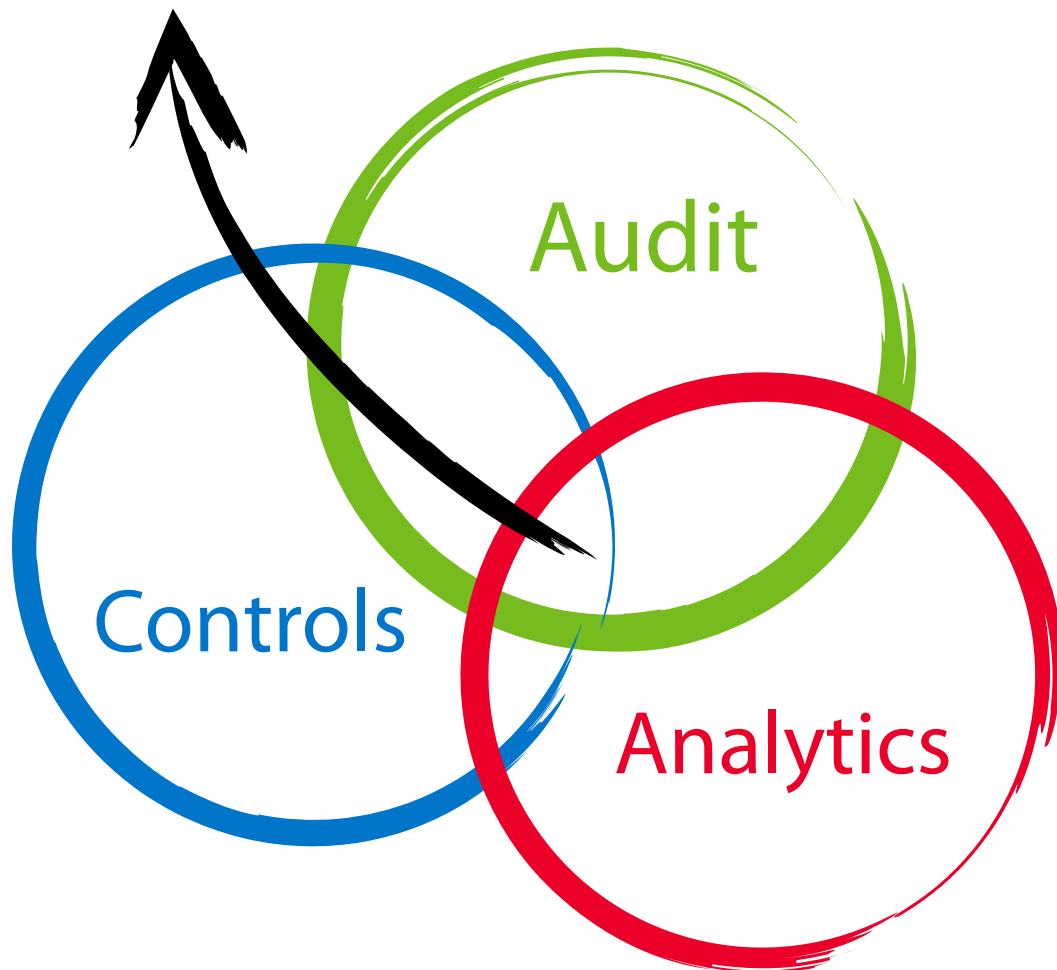
Munir Majdalawieh is an academic researcher and a practicing Enterprise Information Systems and business development professional. He is Associate Professor at Zayed University. Prior to joining ZU in 2012, he worked for the American University of Sharjah (AUS) in UAE for six years and worked for Booz Allen Hamilton, HP, Compaq, and DEC in the USA for more than 22 years. Dr. Majdalawieh has published several peer-reviewed papers in international journals and conference proceedings. He is the co-author of the "Characteristics of an Internal Audit Activity", a component of the 2010 CBOK study, published by The Institute of Internal Auditors Research Foundation (IIARF). Dr. Majdalawieh obtained his Ph.D. in IT and his EMBA from GMU in VA, USA and his M. Sc. in Computer Science from NU in MA, USA.

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