KPMG

Transforming the auditor and client interaction

Data & Analytics

Technology innovation webcast series Part II October 11, 2016

Today's presenters



Roger O'Donnell is currently the Head of Data & Analytics (D&A) for both KPMG International and KPMG LLP (US) and leads the global development and execution of the firm's strategy in using data and analytics in the audit practice. He works with KPMG's global data and analytic leaders from advisory and tax, as well as leaders from the firm's Global Solutions Center, to identify and help teams create new capabilities for the global audit practice using data and analytics to improve audit quality.

Jim Littley is a Principal in KPMG LLP's Risk Consulting practice. He is KPMG's Global and Americas leader for Continuous Auditing & Continuous Monitoring Services. Jim has 30 years of experience providing advisory services to clients in the areas of risk assessments, forensic investigations, regulatory compliance, contract compliance, data analytics, and continuous auditing and continuous monitoring across a variety of industries. Among other activities, he is currently responsible for the development and execution of KPMG's U.S. Internal Audit data analytics and continuous auditing strategy.





Mark Joelson is a senior manager with over 10 years of professional experience in audit and accounting in the public accounting industry across a diverse mix of clients in various industries. His audit experience includes significant involvement in the deployment of data & analytic (D&A) capabilities across a broad range of accounting/audit areas in different industries, including within Fortune 500 companies. Mark also continues to remain involved in the development of new audit technology innovations and finding ways to bring additional value and insight to the audit.



Innovation technology webcast series

Today's webcast is the second in a four-part series of presentations where KPMG professionals will discuss how powerful techniques, such as advanced data analytics and cognitive intelligence, are being adapted for use in auditing, tax and corporate finance.

Today:

 Part II–October: Data & Analytics: Transforming the auditor and client interaction

Upcoming:

- Part III–November: Advanced technologies: Enabling cognitive capabilities
- Part IV–December: Tax technology

Previous:

— Part I–September 8: How Data and Analytics is Transforming Corporate Finance and the CFO's Agenda

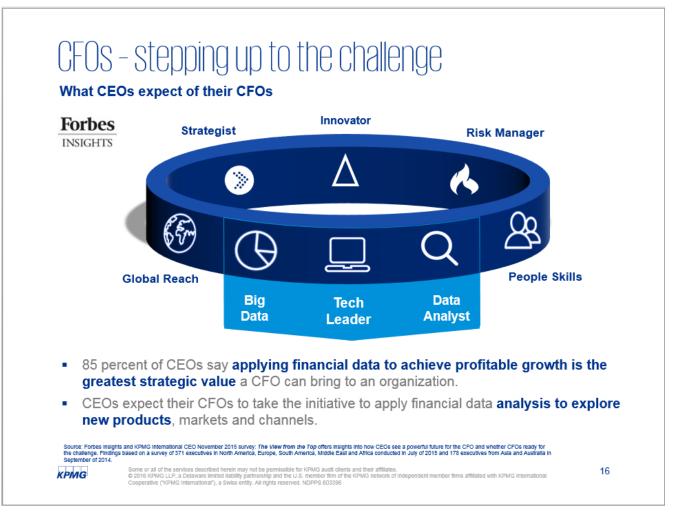


Administrative matters for today's call

- CPE regulations require that online participants take part in online questions
 - Must respond to a minimum of three questions per 50 minutes.
 - Polling questions will appear on your media player
 - Results will be reviewed in the aggregate; no responses will be tracked back to any individual or organization
- To ask a question, use the "Ask A Question" box in your media player
- Technical issues: use the ? button in the upper-right corner of your webcast player to access our online help portal
 - If this does not resolve your issue, please submit a question through the Ask a Question box, and you will receive a reply from our technical staff shortly in the Answered Questions box.



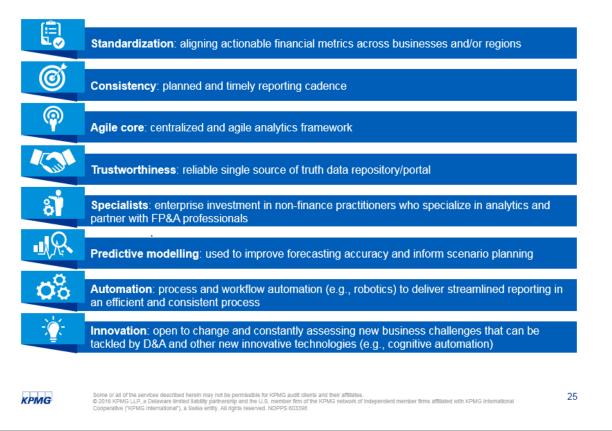
Takeaways from Part 1: How data and analytics is transforming corporate finance and the CFO's agenda





Takeaways from Part 1: How data and analytics is transforming corporate finance and the CFO's agenda

Characteristics of leading finance practices in analytics





How do you derive decision-relevant information from today's explosion of data?

We generate more data in 60 seconds than we used to create in a lifetime The Answer: More than More than More than More than 44,000,000 300 2.700.000 21.000,000 430,000 messages processed Hours of video Video views and messages sent on WhatsApp Tweets sent on Twitter are uploaded More than 486.000 139.000 More than **Digital tools** 195,000 26 New hours of video Photos on minutes of Audio Chatting songs added watched on YouTube New reviews WhatsApp hours of music on WeChat on Spotify posted on Yelp Listened More than More than More than 70,000 120 Automation More than 150,000,000 100 69,500 Video messages 280,000 >New accounts **New Domains** shared hours of Video E-mails are sent opened on LinkedIn Registered on WhatsApp watched on Netflix Snaps sent More than on Snapchat More than More than 9,800 More than 2.315.000 Robotics 95,000 48.000 Around 18,000 **Articles Pinned** 56.000 Searches Apps downloaded Apps downloaded on Pinterest Matches made on Google on Android on iPhone photos More than uploaded on 972.000 More than 3,000,000 Instagram **Data & Analytics** Daily swipes on Tinder Submissions **3,125,000** Items are shared on Facebook on Reddit **243,055** Cognitive computing In Seconds

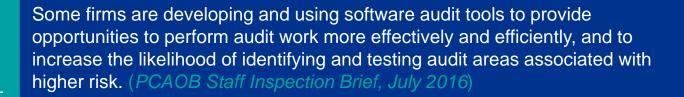


Webcast agenda





What audit quality influencers are saying about D&A and technology advancements:



Data analytics, natural language processing, and artificial intelligence are no longer science fiction for auditors — they are being incorporated into the audit process. (*Cindy Fornelli, executive director of the Center for Audit Quality**)

The ability to ...analyze structured and unstructured data can translate to a higher-quality audit and better insights into the business for the auditor and the client alike. (*Susan Coffey, senior vice president of public practice and global alliances at the American Institute of CPAs**)

*Source: Accounting Today News, August 29, 2016: The Audit of the Future: Our virtual roundtable scopes out the shape of things to come



Audit 2020: A focus on change

Research from *Forbes Insights* points to *game-changing* technology disruptions for auditing and financial reporting.



of survey respondents believe "Audit needs to better embrace technology"¹



Data & Analytics (D&A)

is transforming how audits are conducted, enhancing audit quality and effectiveness¹

DIGITAL ENABLEMENT IS INCREASINGLY PREVALENT

And is growing in its impact



of high performing organizations are using D&A to support internal operations²



say they are using digital tools for sophisticated analysis¹

Yet, challenges remain . . .



Executives who consider their enterprises to be "Highly Advanced" in digital enablement²



Forbes

INSIGHTS

1 Forbes Insights survey: Audit 2020 - a focus on change looked at the impact of technology and the need for new skill sets in auditing. The survey was based on a survey of 151 U.S.-based audit committee chairs and members, C-level financial executives, external auditors, accounting professors and accounting students.

2 Forbes Insights survey: Crossing the enterprise digital divide looked at the current and future technology challenges facing business. The survey was based on a survey of 509 US and Canada based executives from a wide range of industries and company sizes.



The challenges we face in the 21st century audit



Academic challenge

- A gap exists in academia affecting the future of our profession. Accounting and audit curriculum is not changing fast enough to incorporate data and analytics.
- Recent graduates therefore lack the practical knowledge to effectively apply data and analytics when hired.
- Academia is reaching out to KPMG and the profession to answer the challenge.

Challenge to attract top talent

 The profession must attract and retain a significant share of top talent.

Cost of higher education

Diversity of study among 5th year accounting studies



The next generation assurance professional





Polling question #1

Do you believe advanced technologies such as D&A can enhance the quality of audits (internal and external) and provide additional insights to management?





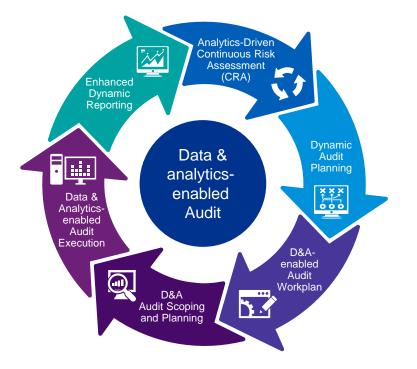


Webcast agenda





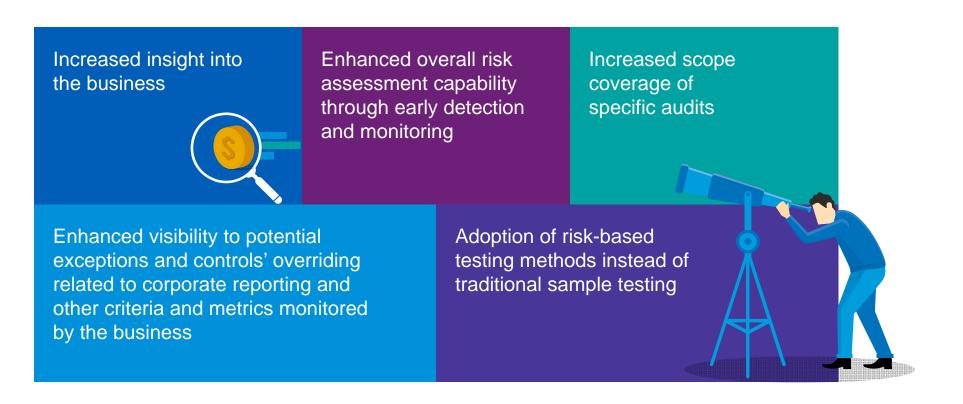
Data & analytics integration



Embedding data & analytics, as well as continuous auditing tools and techniques, into all phases of the audit process – risk assessment, planning, scoping, execution and reporting – to provide greater insights and value into processes and help mitigate risks.



Value of data & analytics-enabled auditing



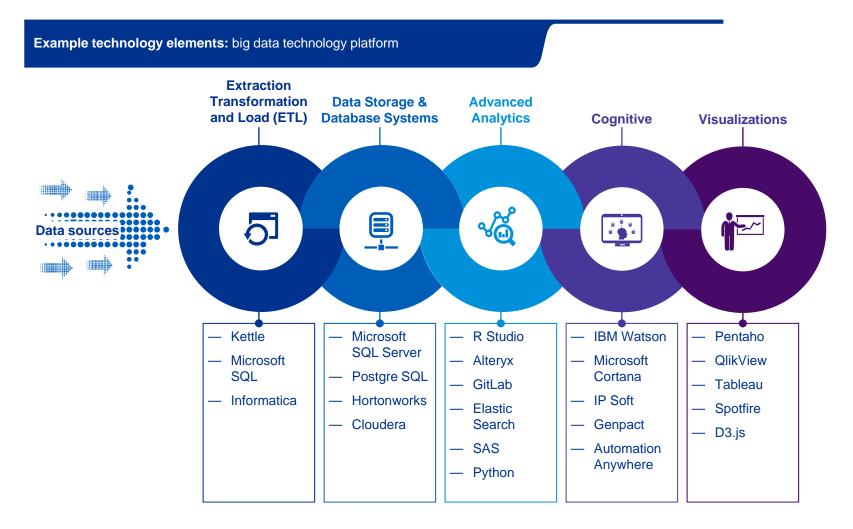


Developing trusted data & analytics: common challenges

General	Data availability and quality	Data analytics	Change management
 Consensus on objectives and success criteria Measuring success Limited resources (technology and human know how) 	 Lack of access to data Disparate information systems Incomplete data sets Inconsistent data quality Data privacy/ security issues 	 Inability to effectively achieve audit objectives Definition of "exception" Exception resolution; managing volumes of exceptions 	 Managing impact on auditors and business process owners



Examples of available technologies





Polling question #2

Do you believe the data shared during the course of your audit is being effectively used by your auditor (internal and external) to generate useful insights on your business?







Webcast agenda



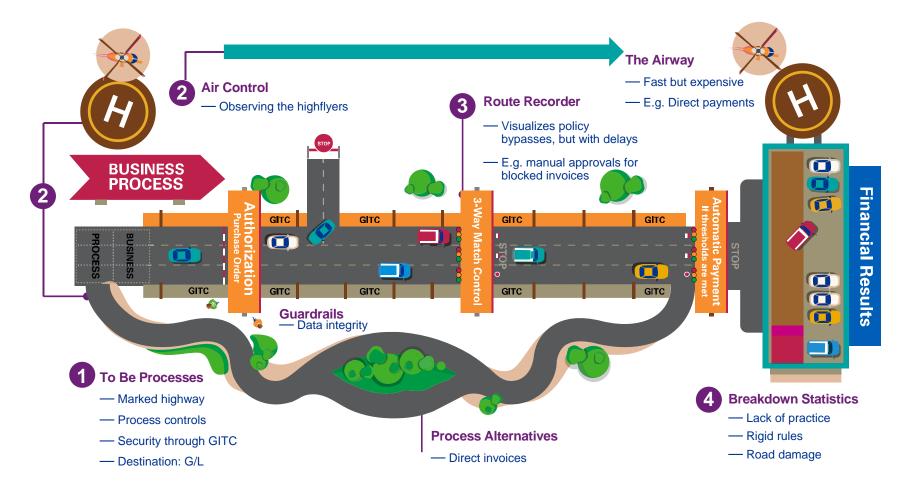


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Case study focus areas

- General ledger analyses
- Subledger analyses

Imagine transactions like the flow of traffic





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General ledger analysis

General ledger analyses

Leveraging journal entries

General ledger (GL) analyses focused on journal entries is a great entry point into using D&A within an audit

- Most personnel within an organization are familiar with the GL system
- Extracting data from the GL system is likely already a common occurrence
- Making the "jump" from GL data in the traditional sense and transforming into actionable insights via advanced D&A is more like a small step than a jump

Actionable insights

- Cross-entity comparisons
- Volume of automation vs. manual intervention
- Compliance with policies
- Maintenance of GL system process "paths" used to generate journal entries
- Assessment of non-typical or changes to existing journal entries (e.g. reversals)



Key items to consider

In this example

- Why focus on journal entries?
- What value can be generated by taking a closer look at journal entries?
- The ability to apply advanced D&A capabilities to even the most fundamental of accounting information, journal entries, can provide exceptional insights into the business (historical and prospective).

Remember, D&A is a journey. By starting in areas you are familiar with containing tangible issues, you can generate business value.



General ledger analyses (continued)

Example: account pairing analysis

- An analysis of account pairings/combinations may highlight how journal entries are paired in order to differentiate between expected and unexpected combinations
- Combining industry and entity specific factors/trends to this analysis may highlight pairings considered to be abnormal entries, question certain account pairings and isolate journal entries that have been recorded

h.		DEBIT	EBIT									
		Property, plant and equipment, net	Inventories, net	Trade accounts receivable, net	Other receivables	Revenue	Cash and cash equivalents	Trade accounts payable	Cost of sales			
	Property, plant and equipment, net	33,834	22,309			10,368,893						
റ	Inventories, net	87,152					81,573		15,100,15			
고	Trade accounts receivable, net			4,619,594			3,257,078	2,41,578				
	Other receivables				135,416		6,685					
_	Revenue			12,713,383		33,597,023		4,720				
-	Cash and cash equivalents	1,425,768	8,902,563					95,639	38,156			
	Trade accounts payable					21,235,983		509,491	8,156,882			
	Cost of sales		13,915,909		102,210,985				3,362,481			

Unexpected account combination

Expected account combination

intra-account movement



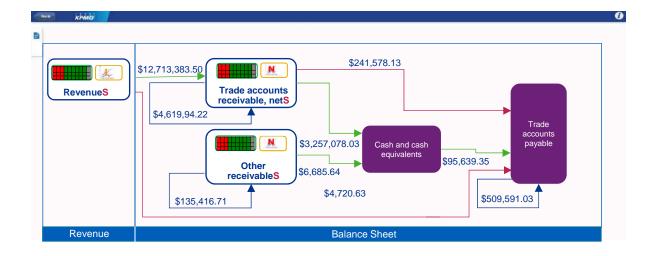
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General ledger analyses (continued)

Example: Financial flow

- Highlighting the "art" of visualizations, in this example the account pairing analysis is converted from a tabular format into a flow diagram
- Enhanced visualizations illustrate the general ledger flow of transactions to help rapidly identify manual "risk points" in key financial recording and reporting processes





General ledger analyses (continued)

Example: Detail testing

- D&A capabilities allow auditors to generate highly customizable ad-hoc analyses that may assist in the identification of inappropriate journal entries either due to manual errors or override of controls. For example:
 - by generating entity specific procedures to identify journal entries over inappropriately capitalized costs, revenue smoothing or inconsistent account combinations
 - by analyzing historical performance to identify current period outliers/anomalies

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	ed or Manual Entry User N		Jser Name Distinct Count		Amount in Document Currency – Sum		Document Number – Distinct Count		Amount in Documen Currency – Sum		
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Manual Tot	al			90	3,	577,211		319	676	6,879	
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Key takeaways - General ledger analyses

Changing the auditor/entity interaction	Potential benefits to entity
 Enhancing audit quality Shifting the data burden from accounting/finance to IT Focusing the auditor on unexpected/anomalous transactions Acknowledging auditor independence – delivering meaningful insights to the organization 	 Assessment of manual vs automated entries can drive how activities are performed within an organization Leverage investment in ERP/integrated accounting systems Identification of unnecessary redundancy or manual intervention in processes

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Polling question #3

Would you be willing to increase the volume of data and/or aggregate additional data sources to share with your auditor (internal and external) to potentially obtain deeper more impactful insights on your business?







KPMG Subjecter analyses

Key items to consider

In this example

- Focus on the concept of leveraging multiple data elements within your organization to deliver actionable insights
- Consider the differences in a traditional sampling approach to a D&A enabled approach
- Consider the potential to analyze a population of subledger transactions in its entirety
 - How would your thinking around risk assessment and scoping change?
 - How would you approach risk assessment given this information?
 - When you think about key analytics around the information we will be examining which metrics would be relevant to auditor's risk assessment?

Remember, when deploying D&A, focus on the key challenge and the primary objective. However, empower your staff to highlight additional analytic opportunities and insights which may be a complementary derivative of the primary D&A procedures.



Subledger analysis – purchases 3 way match



Evaluates purchase activities for each period by matching transactions in accounts payable-trade to relevant information per the purchase order, receipt of goods document, and vendor invoice



A three-way match for goods based on key information: the purchase order, receipt of goods document and invoice (e.g., quantity per the vendor invoice is agreed to the receipt of goods and purchase order information and pricing per the vendor invoice is agreed to the purchase order information)



A two-way match for services based on the purchase order and invoice



Subledger analysis – purchases 3 way match Identification of outliers (continued)

Total purchases: 325,550,864 Subject to match: 320,846,154 124 transactions for a total 94.5 percent of transactions \$922,422 total "extended" of \$17,613,913 were identified analyzed contained no price difference or 0.3 percent of Not tested: 4,704,710 differences total amount tested with price differences **Price difference analysis** Purchases subject to # of Extended % (number) **Price risk category** 3 or 2 way match % (amount) difference transa ctions No difference 303,232,241 1640 94.5% 92.9% 0 PO > invoice price14,438,076 73 4.5% 4.2% 823,682 PO < invoice price 3,175,837 51 1.0% 2.9% 98,740 320,846,154 1764 100.% 100.0% Total 922,422

Quantity difference analysis									
Purchases subject toQuantity risk category3 or 2 way match		# of transactions	% (amount)	% (number)	Extended difference				
No difference	320,846,154	1764	100.%	100.0%	0				



Subledger analysis – purchases 3 way match Identification of outliers (continued)

Total purchases: 325,55 Subject to match: 320 , Not tested: 4,704,710	124 transactio of \$17,613,91 with price diff	3 were ide			ercent of tran ed contained nces		\$922,422 difference total am	ce or ("extended" 0.3 percent of ested	
Price difference analysis Price risk category		s subject to ay match		of ctions	% (ह	mount)	% (num	nber)		xtended fference
No difference		303,232,241		1640	94.5%		92.9%		92.9%	
PO > invoice price		14,438,076		73		4.5%		4.2%		823,682
PO < invoice price		3,175,837		51		1.0%		2.9%		98,740
Total		320,846,154		1764		100.%	10	0.0%	•	922,422
Quantity difference analysi	S									
		s subject to ay match	# of transactions		% (amount)		% (number)		Extended difference	



Categorize transactions into meaningful buckets which can enable action

1764

100.%

100.0%

For example, an incurred expense whereby the invoiced and recorded amount is greater than the approved PO:

— in a single transaction by less than 3% may be considered inconsequential

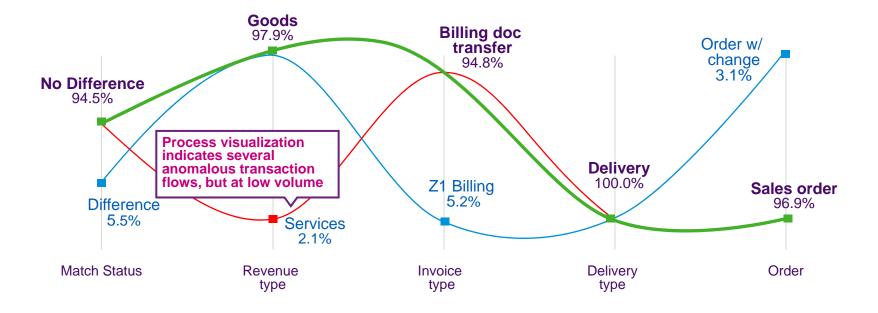
320,846,154

however, when found to be occurring on thousands of transactions at a single vendor, the conclusion
may change to be more than inconsequential. Although the individual transaction differences may be
below approved tolerance levels, systemic abuse of known tolerances could result in real losses



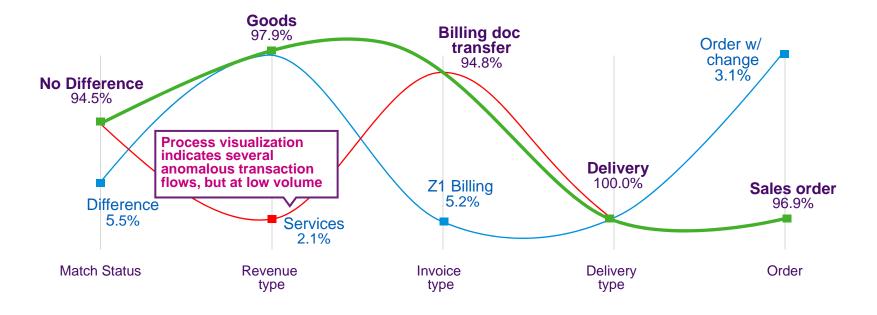
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Subledger analysis – purchases 3 way match VISUAIIZING OUTIERS AND PROCESS FLOWS





Subledger analysis – purchases 3 way match VISUAIIZING OUTIERS AND PROCESS FOWS



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The more transaction flows that are present and available for use, the higher the risk of confusion when accounting staff are recording transactions

Configuration and maintenance of the system when many transaction flows are available raises IT complexity and costs



Subledger analysis – supply chain risk insights Vendor analysis and fraud index

Analysis of supply chain risks provides insight into risks within the purchase to pay process (PTP) that can:



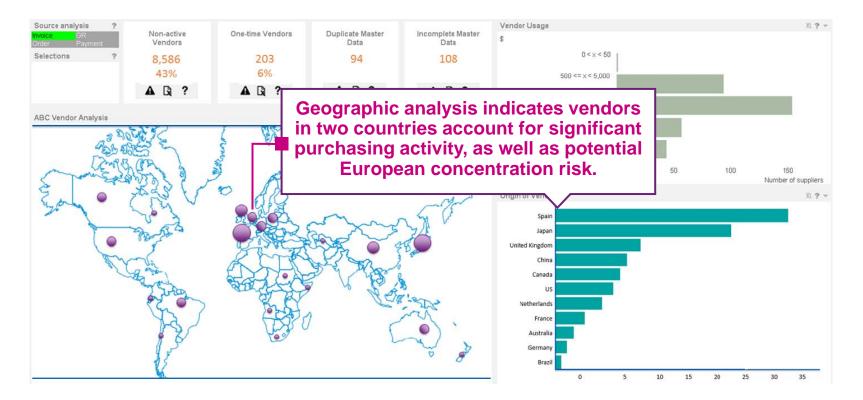
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Inform risk assessment activities

Help identify fraud risk factors by enabling identification of areas of higher risk profiles, such as origin of vendors and vendor usage

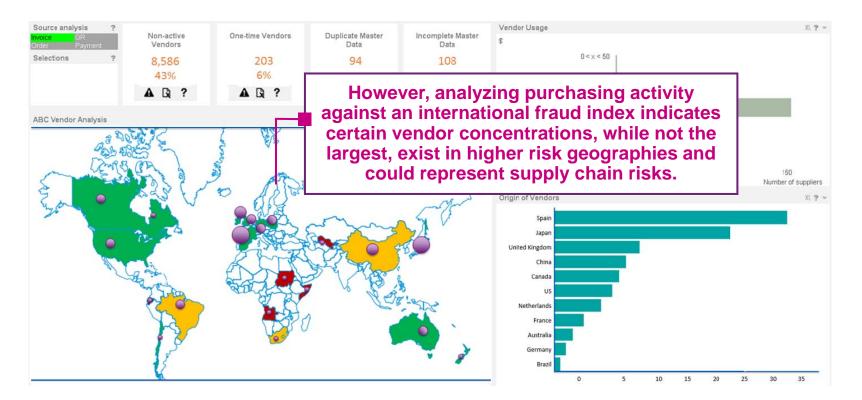


Subledger analysis – supply chain risk insights Vendor analysis and fraud index (continued)



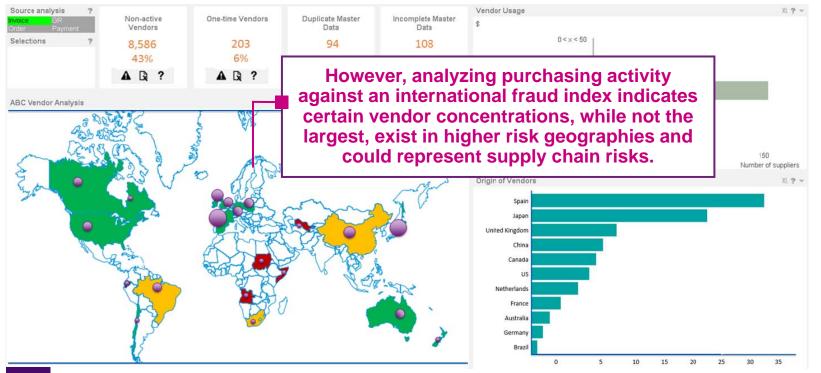


Subledger analysis – supply chain risk insights Vendor analysis and fraud index (continued)



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Subledger analysis – supply chain risk insights Vendor analysis and fraud index (continued)



Geographic analyses may help indicate potential concentration risk rather than potential market risks.

A limited number of vendors supplying raw materials may reveal unexpected dependencies on these suppliers, such as a limited number of vendors supplying raw materials rather than a fraud risk.



Key takeaways - Subledger analyses

Changing the auditor/entity interaction Potential benefits to entity - Enhancing audit quality Leverage investment in **ERP/integrated accounting** - Shifting from traditional sampling approaches to systems entire population assessments, the conversation is naturally changing - Supply chain risks may lead to - Leveraging entity and industry specific factors reputation or monetary losses combined with 3rd party data feeds Acknowledging auditor independence – delivering meaningful insights to the organization



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Polling question #4

If using advanced technology in the audit offered enhanced insights on your business, which one of the following would be of greatest importance to your organization?



Identification of control risks



Accounting system design

Operation/process improvements



Customer/vendor usage analyses







Advanced analytic tools in the hands of experienced auditors

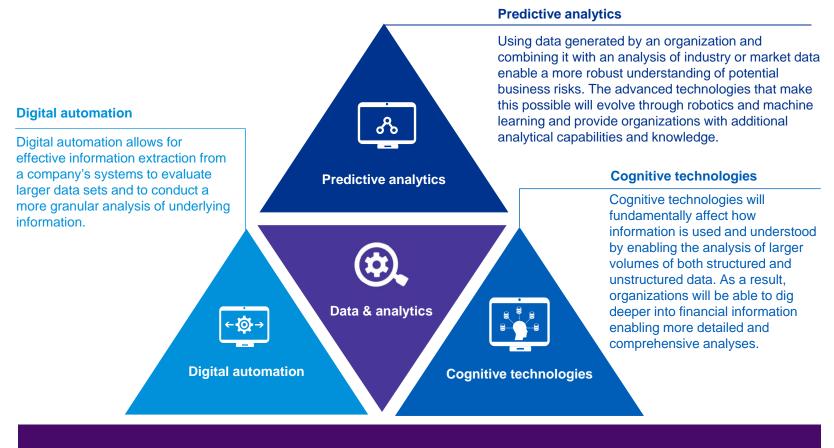
Quality through completeness	Detailed analysis	Innovative insights	Delivering value
 Traditional sampling methodologies limited the scope of data that could be analyzed Analysis of large data populations is now possible Increased clarity and quality results in higher confidence in audit results 	 More detailed analysis can uncover the business reasons behind and root causes of anomalies and exceptions Formerly hidden opportunities across and throughout the business become visible 	 Auditors can offer additional insights into performance, operations and risk exposure External data sources (industry, macroeconomic, unstructured) enable deeper and broader views across the organization 	 Exceptions and anomalies can be identified with more speed and clarity Experienced auditors can prioritize investigations and analysis on the most important areas of the audit

For example:

- Entity internal data combined with meaningful external data using advanced D&A techniques may enable the auditor to generate sophisticated predictive analyses in industry relevant ways
- New advanced technologies and abilities to harness large data sets in their entirety, may provide auditors visibility
 across complicated organizational and reporting structures, by isolating underlying patterns and anomalies



Advanced analytic techniques - D&A at the center



New advanced technologies and cognitive techniques can further empower your comprehensive D&A strategy by enabling strategic automation and creating capacity for finance professionals to enact organizational changes based on actionable insights.



Webcast agenda





Questions?





Innovation technology webcast series

Upcoming:

- Part III–November: Advanced technologies: Enabling cognitive capabilities
- Part IV–December: Tax technology
- **Previous:**
- Part I–September 8: <u>How Data and Analytics is Transforming</u> <u>Corporate Finance and the CFO's Agenda</u>



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