The new machine age of analytics in Tax

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*Americas Tax Campus Recruiting Leader*
EY analytics
The human element

http://www.ey.com/analytics
Drivers of the new machine age of analytics in tax

- Taxing authorities are using analytics.
- Companies want better business/tax integration.
- Technology advancements make it possible to gain insights from data.

Taxing authorities

- Risk management
- Cost reduction
- Value identification

Clients
Enterprise tax data management and analytics

The new machine age of analytics in Tax
Overview

- Pleasant disruption
- New foundations in data management:
  - Guiding principles
  - A new approach
- Tax big data management:
  - Component layers of a big data solution
  - Iterative approach based on value, needs and efficiency
  - Core feature functionality and how it relates to tax
Defining tax data reporting and analytics

Data analytics often describes many different activities:

- Load tax process software
- Analyze accounts
- Review transactions
- Prepare work papers
- Track tax positions
- Monitor risks
- Respond to audits
- Discover business trends
- Monitor transfer pricing
- Track and manage effective tax rate and cash tax rate
- Tax-influenced business decisions

Tax big data management is scalable, supports the entire tax function and facilitates business decisions.
### Big data
Four Vs in tax big data management

<table>
<thead>
<tr>
<th>Four Vs</th>
<th>Volume</th>
<th>Velocity</th>
<th>Variety</th>
<th>Veracity</th>
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</thead>
<tbody>
<tr>
<td>Direct</td>
<td>► General ledger (GL) documents</td>
<td>► Provision</td>
<td>► Dozens of source systems</td>
<td>► Reconciliation of GLs to transactions</td>
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<td></td>
<td>► Journal entry adjustments</td>
<td></td>
<td>► Hundreds of GLs</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>► workpapers</td>
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<tr>
<td>Controversy</td>
<td>► Multi-year transaction detail</td>
<td>► Access to data &gt; 3-10 years old</td>
<td>► Dozens of source systems</td>
<td>► Accuracy to the tax return</td>
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<tr>
<td></td>
<td>► Accounts payable (AP)/ accounts receivable (AR)</td>
<td></td>
<td>► Hundreds of GLs</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>► workpapers</td>
<td></td>
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<tr>
<td>International</td>
<td>► Supply chain (order to cash)</td>
<td>► Country to corporate level data access</td>
<td>► Foreign exchange (FX)</td>
<td>► FX issues</td>
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<tr>
<td></td>
<td>► Operational data</td>
<td></td>
<td>► Corporate structures</td>
<td>► Currency conversion issues</td>
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<td></td>
<td></td>
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<td>► Country laws</td>
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<tr>
<td>Indirect</td>
<td>► Sales tax</td>
<td>► Point of sale transactions</td>
<td>► FX</td>
<td>► Data quality issues in transaction data</td>
</tr>
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<td></td>
<td>► Value-added tax (VAT)</td>
<td></td>
<td>► Exceptions (import VAT, output VAT)</td>
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</table>

The new machine age of analytics in Tax
### Benefits of a big data solution

<table>
<thead>
<tr>
<th>Tax functions</th>
<th>Benefits</th>
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</table>
| **Direct**    | ► One view of all GLs, documents, adjustments from all sources  
               | ► Ease of reconciliation between provision, return, uncertain tax positions (FIN 48), Foreign Account Tax Compliance Act (FATCA), country-by-country (CbC) reporting |
| **Controversy** | ► Access to archived data across multiple years, all transactions from AR/AP, including workpapers, GLs  
               | ► Bridgeable between audited financials and source data |
| **International** | ► Reconcile statutory to generally accepted accounting principles (GAAP)/International Financial Reporting Standards (IFRS) to tax, including FX impacts  
               | ► Transparent legal entity ownership, transfer pricing, customs, base erosion and profit shifting (BEPS) |
| **Indirect** | ► Efficient surfacing of exceptions, data quality issues, return filings, absorption of acquisitions  
               | ► Potential to access all transactions across the enterprise |
Tax data dilemma
Traditional tax data flow (income tax)

Traditional tax data flow considerations:
► General ledger is “general”.
► Trial balance is only the starting point.
► Tax calculations are based on detail.
► Finance/accounting is in the business of summarizing information, yet tax reverts to them for more data.
► Finance/accounting reverts to operations and source systems.
This is what tax data management used to look like …

Source systems
- Source systems are not tax sensitized
- Summary and details exist in different systems
- Data not 100% reliable
- Limited standards established
- Poorly defined and documented metadata

Data access/transfer
- Numerous tools and technologies
- No common delivery approach or tool
- No common data format
- No format data quality process
- Limited standards established

Tax functions and systems
- Limited data and document sharing capabilities
- Duplicate data requests
- Data owned by systems owners' no proper governance
- Multiple versions of truth
- Ownership of data is not clearly defined

Tax data warehouse (DW) mapping
- WMS
- Maximo
- AMS
- Other upstream systems

Legacy tables
- Miscellaneous (TU MSC DIST VW)
- Allocations
- Accounts receivable
- Accounts payable
- Billing
- Account receivables
- Projects
- Issues
- Tax
- Purchases

Excel workbooks
- GL

Manual data collect
- WMS

Point solutions
- PS Queries
- BNA analyzer

Lack of integration
- Other Request
- Other upstream systems

Details transactions from distribution tables
- KS Drive (knowledge management)

Details transactions from source systems
- K-drive (knowledge management)
The new machine age of analytics in Tax
# Old vs new paradigm

<table>
<thead>
<tr>
<th>Solution</th>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>Traditional DW</td>
<td>► Rigid standardized data model</td>
<td>► Data mapping intense (total cost of ownership and expense)</td>
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<td>► Strict data standards</td>
<td>► Slowest time to market</td>
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<td></td>
<td>► Manages structured data</td>
<td>► Difficulty in handling unstructured data requirements</td>
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<td></td>
<td>► Technology/resource availability</td>
<td></td>
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<tr>
<td>Tax data management services</td>
<td>► Agile-based approach for rapid prototyping and development</td>
<td>► Data marts, like traditional DW, still needed</td>
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<tr>
<td></td>
<td>► Faster time to market</td>
<td>► Technology resources not as readily available</td>
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<tr>
<td></td>
<td>► Data extract and reporting similar to traditional data warehouse</td>
<td>► Data governance is still required</td>
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<tr>
<td></td>
<td>approach</td>
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<td></td>
<td>► Reduced reliance on data modeling</td>
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<td></td>
<td>► Provides a discovery component</td>
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<td>► Managed service or in-house</td>
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Data analytics
Impact on tax management
Embedding analytics across tax services

Analytics is not an isolated tax offering.

Analytics is the method through which all tax services will be delivered.

Analytics is the future of tax.
Data analytics
Impact on tax management – VAT
Data analytics: impact on VAT management

Global scope of VAT

Note that countries in yellow have VAT regimes. Countries in grey do not have VAT regimes.

VAT includes: GST/HST, ICMS, IPI, ISS, PIS/COFINS, municipal VATs, withholding VAT and various other similar taxes.

Recent VAT system introduction: Bahamas and Malaysia. India is currently debating a national GST regime.
Data analytics: impact on VAT management
Impact on global companies

► More effective and efficient management of global VAT:
  ► Process and risk reviews
  ► Identification of potential cash tax savings
  ► Optimization of working capital and cash flow
  ► Global dashboarding

► Increased tax authority scrutiny:
  ► More effective analysis including remote audits
  ► More in-depth scrutiny
  ► Increased risk of exposures and penalties
Data analytics: impact on VAT management
Impact on professional services

Global VAT reviews
Planning | Accounting | Compliance | Controversy
► Process and risk reviews
► Cash recovery/cash flow savings reviews
► VAT function reviews
► ERP health checks (pre- and post-implementation reviews)

Global VAT compliance
Accounting | Compliance | Controversy
► Preparation of VAT returns
► Global visibility
► VAT controversy

Supply Chain planning
Planning
► Supply chain mapping and modeling
► Working capital/cash flow management

New VAT regimes
Planning | Accounting | Compliance | Controversy
► Pricing and predictive modelling to assess the impact of the new indirect taxes

VAT and the tax function

Global finance transformation
Planning | Accounting | Compliance | Controversy
► Implementation of new ERP systems
► Adapting global ERP systems
Data analytics: impact on VAT management
Scope of data analytics

- **Cash savings**
  - Unclaimed VAT,
  - Overpaid VAT
  - Wrong rate

- **Exposures**
  - Unpaid VAT
  - Over-claimed VAT
  - Wrong rates
  - Process errors

- **Dashboarding**
  - Continuous data monitoring
  - Global visibility

- **Vat data analytics**

- **Predictive data analytics**
  - Supply chain management
  - Tax data market
The analysis of purchases posted without VAT provides a detailed perspective of the company transactions, such as the countries/states of suppliers, type of purchase (local, import, etc.), month of purchase, tax codes, number of vendors, etc.
Data analytics - Impact on management of VAT
Scope of data analytics

The company can analyse the timeline of the issuance of invoices (left graphic above) along the month and the timeline of the canceled document (right graphic above) on the following month.

Additionally it is possible to identify the users that are canceling the documents (right graphic).
Data analytics
Impact on tax management: compliance
Global data analytics services
Connecting the phases of the tax life cycle

Benefits
► Be proactive in seeking potential issues and concerns that impact your organization
► Generate insights to help you plan for future taxes and resolve issues
► Take advantage of leading-edge tools to access data in real time
► Build knowledge about your tax data and prepare for tax controversy
► Deliver tax filings locally; manage them globally
► Support your return to provision analysis
► Plan your estimated tax payments
Summary of local tax attributes
Global tax data points

Values and benefits

► Identification of potential local cash tax opportunities requiring investigation
► Prioritization of countries where focus may be merited
► Standardized approach to identify planning opportunities applied globally
► Ability to measure on a country by country basis against key performance indicators
Global tax payments process

Global tax payments

Values and benefits

- Identify local entities where potential cash flow can be improved by not overpaying estimated taxes or where taxes are paid for loss entities
- Provide enhanced control and visibility over penalties and interest impacting overseas subsidiaries
- Identify potential US reporting of items such as foreign and deemed paid tax credit computations
Tax risk management assistance
Country executive summary

Values and benefits

► Streamline and standardize review for tax risk assessment and identification of uncertain tax positions
► Eliminate redundant data gathering
► Identify local tax planning opportunities for further consideration
► Stay abreast of local tax controversy and tax developments
► Access local finance and EY member firm country resources
The future tax professional
We need resources with the competencies to embed and consume analytics in our services

"Whenever new technologies … enter the market, they present an enormous opportunity but create another skills deficit to fill."

– Mike Merritt-Holmes
CEO Big Data Partnership

Analytics delivery

Analytics consumption

Data capture
Analytics innovation
Analytics planning and coordination

Professionals with an analytics mindset
We need resources with the competencies to embed and consume analytics in our services

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<thead>
<tr>
<th>Competency</th>
<th>Data capture</th>
<th>Analytics innovation</th>
<th>Analytics planning and coordination</th>
<th>Professional with analytical mindset</th>
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<tbody>
<tr>
<td></td>
<td>Execute the process to efficiently and cost effectively obtain client data by establishing repeatable capture methods</td>
<td>Design and build process and sector specific analytics that align with our respective service methodologies</td>
<td>Assist engagement teams with developing analytics plans and coordinate analytics delivery</td>
<td>Integrate analytics into the service delivery process using analytics to high quality work products and insight</td>
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<tr>
<td>Skills</td>
<td>▶ Understanding and experience with various techniques for extracting data from client systems</td>
<td>▶ Understand the delivery process, methodology and objectives</td>
<td>▶ Executing the end-to-end analytics process</td>
<td>▶ Core experience complemented by an understanding of the impact of analytics on each phase of service delivery</td>
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<td></td>
<td>▶ Knowledgeable on data structures with key ERP systems</td>
<td>▶ Skilled at designing and building analytic models</td>
<td>▶ Creating client-specific plans defining nature and scope of analytics</td>
<td>▶ Understand the flow of data through key business process and key account relationships</td>
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<td></td>
<td>▶ Experience managing the transfer, reconciliation and validation of large data sets</td>
<td>▶ Understand the flow of data through business processes on common ERP or business systems</td>
<td>▶ Identifying the client data needed to support the plan</td>
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<td>Knowledge</td>
<td>▶ Basic accounting and finance</td>
<td>▶ App design and programing experience</td>
<td>▶ Coordinating the delivery of analytics to the engagement team</td>
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<tr>
<td></td>
<td>▶ Data structures and big data</td>
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<td></td>
<td>▶ Business information systems</td>
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<td></td>
<td>▶ Extraction tools and techniques</td>
<td>▶ Programming</td>
<td>▶ Project management</td>
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<td></td>
<td></td>
<td>▶ Data management</td>
<td>▶ Strong communication</td>
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<td></td>
<td></td>
<td>▶ Data visualization</td>
<td>▶ Service delivery methodology</td>
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<td></td>
<td></td>
<td>▶ Analytics application</td>
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<td></td>
<td>▶ Data science and statistics</td>
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Questions and/or comments
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