Data Analytics for Procurement

Acquired Services and Assets Sector, Office of the Comptroller General

Presented by: Josephine Dahan

September 9, 2020
AGENDA

- Context
- Overview & Industry Trends
- Tools and Techniques
- Making sense and creating value
- Additional learning and resources available
Context
Context - priorities

Alignment with Government of Canada Priorities

**PSPC to modernize procurement practices**

The 2015 Mandate Letter of the Minister of Public Services and Procurement Canada included direction to *modernize procurement practices so that they are simpler and less administratively burdensome*. The 2019 letter specified to continue to collaborate with TBS.

**TBS to modernize comptrollership**

The 2015 Mandate Letter of the President of Treasury Board and Minister of Digital Government specified to *modernize comptrollership, which includes procurement policies and community*.

**Budget commitment**

Budget committed to *strengthening the Public Service* to ensure it is innovative, agile, collaborative and high performing.
The GoC has introduced new functional and technical competencies that are essential to the procurement function.

Many organizations currently struggle with a lack of e-enablement, resourcing, poor planning, a gap in skills and knowledge, and limited time to be strategic.

The procurement function has evolved to a function at the center of government’s capacity to deliver departmental programs and onboard government priorities.
Context – Procurement Modernization Initiatives

Procurement Modernization Integration Team
May 2016 – April 2018
Initiated development of the future procurement professionals' vision; Future of Procurement Community Workshop (Feb 2017)

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2017
- PG05 Collective Recruitment Processes
- Explore options for GC Development Programs

2018
- Procurement Career Map
- Launched Roadmap for Partnerships with Universities
- GoC Procurement Onboarding
- Published GoC Procurement Community Competencies

2019
- Chief Procurement Officer Pilot Project
- New Procurement Policy Requirements
- PG Best-fit Interview Event (July 2019)
- Onboarding Program (Fall 2019)
- Launched Procurement Recruiting Website

2020
- Published MM competencies Update (target)
- Launched Webinars in partnership with CIPMM
- PG02 and PG04 Post-Secondary Recruitment
- Submitted case studies to post-secondary schools
- PG collective process evaluation

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Internal Audit Evaluation of Certification Program

Evaluation Recommendation Implementation Delivery
Late Fall 2018 Fall 2020 Winter 2020 Mar 31, 2022

Continue work with CSPS to identify alternative service providers for training on complex procurement and the new procurement competencies
Research approaches for revised Certification Program
Context – Strengthen Procurement Community

Solution
Modernizing the procurement competencies to help professionalize the function, increasing recruitment and community development efforts, equipping the community with new tools, and transitioning to a more principles-based policy approach.
Learning Opportunities for Procurement Professionals

- Training Online or In-person
- Webinars & Videos
- Meetings & Presentations
- Coaching & Mentoring
- Internally learning within department, e.g., classroom, online, lunch and learns, etc.
- TBS CMO learning events
- GCPedia
- CIPMM
- CIPS & GC Campus
- Private sector learning opportunities
- Applied through experience
- Universities and colleges
- Working groups & committees
Overview
Objective

To introduce procurement analytics, some relevant tools and techniques, and explain how data can be used to create value.
Procurement Analytics Defined

**Procurement analytics** is the process of collecting and analyzing procurement data to derive actionable insights and support evidence-based decision making. It involves collecting data from a number of different sources, cleansing and enriching the data, classifying and standardizing data, and displaying data in a visualization dashboard or within business intelligence tools in order to develop meaningful data. Value comes from more timely, accurate and actionable insights and the ability to measure procurement’s contribution to achieving its intended outcomes or to improve business performance.

[Source: Adapted from Sievo]
Poll Question # 1

Did you know what procurement analytics, category management, commodity management, or spend analytics was before registering for this webinar?

- **52%** No
- **48%** Yes
Poll Question # 2

Have you ever taken a course on procurement analytics, category management, commodity management, or spend analytics prior to registering for this webinar?

- Yes: 83%
- No: 17%
Industry Trends
Investing in procurement analytics help organizations elevate procurement’s role

### Procurement Priorities

<table>
<thead>
<tr>
<th>Priority</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Reduce and avoid purchase costs</td>
<td>85%</td>
</tr>
<tr>
<td>Elevate the role of procurement to a trusted advisor</td>
<td>81%</td>
</tr>
<tr>
<td>Increase spend visibility</td>
<td>76%</td>
</tr>
<tr>
<td>Improve agility</td>
<td>74%</td>
</tr>
<tr>
<td>Increase stakeholder satisfaction</td>
<td>70%</td>
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<tr>
<td>Reduce supply continuity risk</td>
<td>68%</td>
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<tr>
<td>Deepen influence on complex indirect spend categories</td>
<td>65%</td>
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<tr>
<td>Strengthen / protect the company’s brand</td>
<td>63%</td>
</tr>
<tr>
<td>Tap supplier innovation</td>
<td>55%</td>
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<tr>
<td>Reduce regulatory non-compliance risk</td>
<td>51%</td>
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### Procurement Areas of Investment

<table>
<thead>
<tr>
<th>Area of Investment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Category management</td>
<td>85%</td>
</tr>
<tr>
<td>Strategic sourcing</td>
<td>83%</td>
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<tr>
<td>Talent management</td>
<td>76%</td>
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<tr>
<td>Supplier relationship management</td>
<td>74%</td>
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<tr>
<td>Data analysis and reporting</td>
<td>67%</td>
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<tr>
<td>Supply market intelligence</td>
<td>51%</td>
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<tr>
<td>Procurement software</td>
<td>51%</td>
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<tr>
<td>Procurement CoEs</td>
<td>45%</td>
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<tr>
<td>GBS / Shared Services</td>
<td>37%</td>
</tr>
<tr>
<td>Continuous improvement (e.g. Lean, Six Sigma)</td>
<td>35%</td>
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Source: The Hackett Group, Key Issues Study, 2016
Spend Analysis Benchmark Performance: Spend Maturity

Industry Average
51-90% spend under management

30%

Laggards
Less than 50% spend under management

50%

Best in Class
More than 90% spend under management

20%

Leading companies achieved benefits:
• 2-12% reduction in material costs through informed sourcing
• 50% reduction in off-contract spending
• 20-70% reduction in inventory levels
• 5-50% reduction in inventory costs
• 20% reduction in redundant or unnecessary parts and materials

Poll Question # 3

Does your department have any plans to develop a data analytics program related to procurement?

- 68% I don't know
- 24% Yes
- 8% No
Evolution of Spend Management
Visibility, Analytics and Beyond ...

Value Chain Creation % of Spend

Spend Visibility
- Generating enterprise wide spend visibility with drilldown capability
- Understanding how and where the organization is spending

Spend Analytics
- Focus on analyzing spend for value creation opportunities
- Understanding spend for leverage purposes

Strategic Sourcing
- Business influence and focus
- Supply side TCO focus

Category Management

Portfolio and Category Management
- Focus on demand and supply integration
- Focus on end-to-end TCO

Supply Chain, Supplier and Customer Integration
- Cross supply chain integration with toolset enablement
- Deep supplier and customer integration
- Leveraging shared service delivery models

Industry Leaders

Most Organizations

Source: PWC (2010) Spend Analytics and the Supply Chain, 2012 America School of Mines
Poll Question # 4

What is the procurement maturity stage of your department?

- Don't know: 30%
- Spend Analytics: 26%
- Spend Visibility: 22%
- Category Management: 9%
- None of the above: 9%
- Strategic Sourcing: 4%
IDC FutureScape: Worldwide Analytics, Cognitive/AI, and Big Data Predictions

IDC prediction worldwide market for content analytics will reach $9.2B by 2019 – doubling since 2014
Spend Analytics Software
Spend Matters 2017 Q4 technology SolutionMap

Spend Matters did not map all solution providers
Poll Question # 5

Does your department have available or use any of the identified spend analytics software?

- Yes: 48%
- No: 28%
- I don't know: 8%
Poll Question # 6
Do you primarily use Microsoft Excel or Power BI to analyze data?

- Yes: 68%
- No: 5%
- I don't analyze data: 27%
Poll Question # 7

What is your proficiency in Microsoft Excel or Power BI?

- 65% Intermediate
- 22% Advanced
- 13% Beginner
Leading procurement organizations are now positioning themselves as trusted advisor focused on driving business value.

**Value Proposition**

- **Increased business value** (beyond savings) derived from spend
- **Reduce** demand activity, complexity and variability
- Shift from lowest cost to **TCO**
- Right goods/services at the right price
- Right goods/services at the right time and place

**Role of Procurement**

- **Value Management**: Trusted business advisor and change agent
- **Demand Management**: Spend / budget consultant and relationship management
- **Total Cost of Ownership**: Supply expert / Team leader / Project Manager
- **Price**: Negotiator
- **Supply Assurance**: Buyer / Planner

Source: The Hackett Group, Five Characteristics of World-Class Procurement Organizations, 2014
Poll Question # 8
What would you say is the procurement maturity of your department?

- Don't know: 26%
- Total Cost of Ownership: 22%
- Value Management: 17%
- Price: 13%
- Supply Assurance: 9%
- Demand Management: 9%
- Price: 4%
Why is data analytics important to procurement?
Analytics is widely regarded as one of the most important resources and disruptive forces in procurement. According to a recent survey by Deloitte, most Chief Procurement Officers (CPOs) view analytics as the technology area with the most impact on business. What’s more, Ernest and Young identified analytics as the most disruptive force in procurement over the next decade.

[Source: Sievo]
Why is data analytics important to procurement?

**Procure-to-Pay**
- Transactional analysis such as purchase order cycles and improve payment terms to drive process improvements
- It can also support analysis to assess payment accuracy, rebate opportunities, and reduce fraud

**Category Management**
- Identify savings and reduce costs
- Segment and prioritize suppliers
- Address supply risk opportunities
- Explore new sourcing opportunities and facilitate innovation

**Client Satisfaction**
- Measure and monitor service standards and client satisfaction
- Measure and monitor against planned benefits or outcomes

**Strategic Sourcing**
- Identify opportune times to source requirements
- Provide rich information into supplier and market capabilities
- Linking procurement strategy with intended-outcomes

**Sustainability and Social Procurement**
- Measure and monitor compliance
- Identify risks in the supply chain and procurement
- Identify environmental or social impacts of procurement decisions
- Identify opportunities for more sustainable alternatives

**Contract Management**
- Alert when issues or risks arise
- Provide data to prepare for contract negotiations
- Identify maverick spending or compliance issues
- Improve budget planning and spending

[Source: Adapted from Sievo]
The ability to effectively analyze and interpret data is not based on just one skill and competency but many.
Poll Question # 9

What are the top 3 aspects you find most challenging?

- Financial and Cost analytics
- Conflict management
- Market research
- Risk management
- Digital proficiency
- Systems Thinking
- Contract negotiations
What is the process?
Data Analytics Process

Data analytics is not a one-time activity but an iterative and continuous process.

01 Extract, Cleanse and Enrich
- Quality data is essential to making effective evidence-based decisions.
- Multiple sources of data may be gathered from invoices, purchase orders, acquisition cards, external data sources etc to gain a full picture.

02 Analyze and Gather Insights
- Compile and analyse data in a data warehouse solution.
- Collaborate with multiple stakeholders to gain multiple perspectives.
- Explore further potential opportunities to help identify procurement strategies.

03 Forecast and Plan
- Develop procurement strategies based on insights gained.
- Incorporate strategies into investment plans.
- Develop plans and strategies with key stakeholders to obtain buy-in.

04 Monitor and Measure
- Implement compliance and governance processes to ensure data is continuously being monitored and measured to achieve intended-outcomes.
- Build executive dashboards to communicate results to key stakeholders and demonstrate the value of procurement.
Balanced Scorecard for Procurement

**Financial Perspective**
- Align Key Performance Indicators (KPIs) and goals with the procurement team and key stakeholders.
- Demonstrate procurement’s value and contribution to finance.

**Customer Perspective**
- Identify and engage key internal stakeholders.
- Seek ways to measure and expand collaboration.
- Measure client satisfaction and achievement of intended outcomes.

**Internal Processes**
- Measure and monitor service standards and compliance to procurement processes and procedures.
- Look for opportunities to improve processes and ways to automate.

**Learning & Growth**
- Assessment and development of the procurement team’s competencies, experience and knowledge.
- Attract, empower and retain top talent.
- Bring in innovation from suppliers and partners.

*The ability to communicate effectively at this level will help gain buy-in from senior management and elevate the value of procurement.*
### Key Performance Indicators for Procurement

<table>
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<tr>
<th>Indicator</th>
<th>Description</th>
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<tbody>
<tr>
<td>Spend under Management</td>
<td>Cost Savings and/or Cost Avoidance</td>
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<tr>
<td>Spend vs. Budget</td>
<td>Average Payment Terms</td>
</tr>
<tr>
<td>Total Cost of Ownership</td>
<td>Number of Suppliers</td>
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<tr>
<td>Contract Coverage</td>
<td>Exchange Rate Exposure</td>
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<td></td>
<td>Vendor Performance</td>
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Poll Question # 10

Do you currently have a dashboard or Key Performance Metrics related to procurement in your department?

- 50% Yes
- 30% No
- 20% I don't know
Example

Category Management
Extract, transform and load the data

- PO Data
- AP Data
- AC Data

Cleanse
Classify
Enrich

SPEND DATA WAREHOUSE
Example: Natural categorization

Category: Furniture

• Classification too high-level to do proper analysis.
• Master records were not established resulting in significant manual categorization.
• Inconsistent terminology language used.
• Information from many difference sources in SAP and other systems.

Data classification is not a black and white exercise. It can sometimes be complex and not always simple to implement, but they can be improved over time. [Source: Sievo]
Spend Classification

Krajic Model

- **Critical**: Specification Focus
- **Strategic**: Relationship Focus
- **Tactical**: Process Focus
- **Leverage**: Negotiation Focus

Risk / Supply

Cost / Value
Opportunity Analysis & Prioritization

Wave 1
- Construction
- Security Guards
- Cabling
- HVAC
- A&E
- Building Materials
- Passenger Vehicles
- Office Furniture
- Residential Furniture
- Appliances

Wave 2

Wave 3

Low

High

Ease of Implementation

Business Impact / Savings
Category Opportunities

Opportunities:

- Consolidate spend and reduce number of contracts and suppliers
- Optimize logistics costs
- Improve lead times
- Reduce contract price
- Leverage online ordering and vendor stored inventory
- Reduce inventory holdings through Just-in-Time procurement
- Improve asset management and business planning
- Standardize business requirements

Overall Results

Realized over $50M in savings, reducing lead time by 30-50% for numerous processes, and significantly improving key stakeholder collaboration, engagement and satisfaction.
Poll Question # 11

Have you gone through a similar exercise in your current or previous department(s)?

- Yes: 67%
- No: 33%
Additional Resources Available
STRATEGIC THINKING:
- Developing the Strategic Thinking Skill of Seeing the Big Picture (X007)
- Using Strategic Thinking to Consider the Big Picture (G028)
- Leading Strategically (P113)

ANALYSIS:
- Business Analysis (F106)
- Big Data Fundamentals (I017)
- Big Data Interpretation (I018)

PROBLEM SOLVING:
- Getting to the root of a problem (T041)
- Defining Alternative Solutions to a Problem (D009)
- Investigating Arguments (C054)
- Reaching Sound Conclusions (D012)
- Choosing and Using the Best Solution (D007)
- Confronting your Assumptions (W023)

NEGOTIATION:
- Negotiation Essentials: Planning for Negotiation (X037)
FINANCIAL MANAGEMENT:
- Comprehending Financials: A Guide to Financial Statements (F004)
- Financial Statement Analysis for Non-Financial Professionals (F005)
- Choosing and using the best solution (D007)
- Aligning unit goals and imperatives (G007)

PROCESS IMPROVEMENT:
- Fundamentals of Process Management (T400)
- Innovating with Lean Product Management (T935)
- Introduction to Six Sigma (X010)

TIME MANAGEMENT:
- The Art of Staying Focused (D014)

RISK MANAGEMENT:
- Identifying Risks in your Organization (G017)
- Assessing Your Organization's Risks (G008)
- Integrated Risk Management (C361)
- Responding Effectively to Risks (D013)
- Analyzing Risk (PMBOK® GUIDE SIXTH EDITION) (T933)
CONFLICT MANAGEMENT:
- Handling Team Conflict (W008)
- Facing and Resolving Conflict in the Workplace (W022)
- The Many Approaches to Facing Workplace Conflict (W016)
- Controlling Conflict, Stress and Time in a Customer Service Environment (W021)
- Difficult People: Strategies to Keep Everyone Working Together (W020)
- Effective Team Communication (X170)
- Creating a Respectful Workplace (G417)

CHANGE MANAGEMENT:
- Managing Change: Building Positive Support for Change (X031)
- Managing Change: Dealing with Resistance to Change (X032)
- Managing Change: Sustaining Organizational Change (X033)
- Managing Change: Understanding Change (X034)
- Managing Change Stick (X181)
- Leading Change (X026)
- Managing Change in Complex Times (E301)
- Moving Forward with Change Planning (X180)
REPORTS AND WRITING:

- Preparing a business case (C220)
- Developing an Effective Business Case (T038)
- Preparing and implementing a business plan (C073)
- How to do a 2-minute briefing (Video)
- Managing a meeting (C332)
Other Learning Opportunities

CATEGORY MANAGEMENT:
There is a wealth of information online and numerous white papers on data analytics related to procurement. Good sources include Procurement Leaders, GEP, Hackett Group, Deloitte, Ernst & Young, KPMG, Sievo, Basware, SAS, IBM etc. A few examples are included below:
- Category Management and Strategic Sourcing – Foundations Courses and white papers (Denali-WMS)
- Procurement Analytics Guide by Sievo.
- Purchasing Practice also has a lot of interesting information.

MARKET RESEARCH:
- Public Procurement Practice published a guide on market research.
  The Institute for Public Procurement also has numerous other publications on this topic and others.

TOTAL COST OF OWNERSHIP:
- The Institute for Public Procurement also published a white paper on Total Cost of Ownership.

VISION MAPPING / STRATEGIC PLANNING:
- The Institute for Public Procurement published a presentation on strategic planning and vision mapping.
Useful Information

PROCUREMENT DASHBOARDS:

- **KPI Management Solutions** has useful information on Procurement Dashboards.
- **Empowering CPO** has a good infographic on procurement dashboards.
- **Claritum** explains the steps to creating a dashboard.
- **Microsoft** has a good demo of how to create a procurement dashboard using Power BI.

YOUTUBE VIDEO – POWER BI AND EXCEL:

Explore various course or explore online learning (paid or free) on how to use Excel and/or Power BI, particularly on how to use filters, pivot tables and creating dashboards. CSPS also has a page on tips and tricks for Excel.

- **How to Build Power BI Dashboards**
- **Introduction to Pivot Tables, Charts, and Dashboards in Excel (Part 1)**
- **Introduction to Pivot Tables, Charts, and Dashboards in Excel (Part 2)**
- **How to Create a Dashboard Using Pivot Tables and Charts in Excel (Part 3)**
- **How to Build Interactive Dashboards in Excel**

You can also explore courses at local colleges or universities on business analysis or data analytics.
Additional Resources Available

- Be familiar with reporting capabilities in SAP. Consult with your internal SAP team for learning and development opportunities.
- Consult with your departmental librarian (if you have one) for various market research subscriptions that your department may have available e.g. Factiva, Dun & Bradstreet, etc.
- Consult with your IM/IT office on available software for the purposes of data analytics.
- Join as a member as part of the Data Analytics Working Group (DAWG) within your department.
- Register for other webinars or learning opportunities provided by CIPMM or other organizations within the government of Canada
- Refer to the Communities of Practice GCPedia site for additional information related to Competencies, upcoming events and latest updates.
Questions?

Thank you

Please send additional questions to:
Josephine.Dahan@tbs-sct.gc.ca or
CMO-TBS-BGC-SCT@tbs-sct.gc.ca
Appendix: Key Performance Indicators – Descriptions
Source: Sievo

• **Spend under management** is the total amount of spend that is actively managed by the procurement organization. This metric reflects the maturity and control over spend.

• **Spend vs Budget:** tracks the actual spend against planned spend. Tracking this will ensure alignment with key stakeholders such as finance. Success is measured by budget accuracy.

• **Total cost of ownership** is the cumulative cost of the entire investment from acquisition to disposal, including direct and indirect costs. This metric provides a cost basis for the total economic value of an investment.

• **Average payment terms:** measures the average time (in days) invoices are paid and late payments processed. Improving or harmonizing payment terms among and within suppliers is a key method to improving working capital. Many suppliers are willing to provide discounts for early payments or rationalizing invoices to reduce administrative costs.
• **Cost savings:** is measured by the cumulative amount of savings gained over time. The savings is tracked to see how cost saving targets are met. Cost savings could be achieved through standardizing and rationalizing the spend, establishing longer term contracts or introducing more competition, ordering in larger quantities, implementing vendor managed inventory systems, or using combinations of these different levers.

• **Cost avoidance:** is used to describe any actions that help avoid absorbing inevitable additional costs. These costs could be due to inflation, shorter payment terms, exchange rate fluctuations, requirements for additional features or services, etc. Cost avoidance will not be reflected in budget or financial statements but can be used as a measure for procurement performance.
Appendix: Key Performance Indicators – Descriptions
Source: Sievo

- **Number of suppliers:** The number of suppliers informs how many distinct suppliers are being utilized in the procurement organization, or in a specific category. Reducing the number of overlapping suppliers in a category can result in efficiencies or cost savings. Increasing the number of suppliers in key categories may be advantageous to reduce supply risk.

- **Contract coverage:** Contract coverage measures the amount of spend that is covered by a contract. In contrast, maverick buying highlights the possible loss of value that occurs when buying outside of a contract. Increasing the amount of spend that is covered by contracts (or procurement approved purchase orders) can result in savings, while also reducing compliance risk.
Appendix: Key Performance Indicators – Descriptions

Source: Sievo

- **Exchange rate exposure**: Exchange rate exposure measures the changes currency fluctuations and conversions have on the overall spend. The long-term impact of exchange rates can be measured and isolated from realized savings measurement.

- **Vendor performance**: measures a suppliers’ performance and how they are responsible for handling errors and claims. Examples of vendor performance measurement include defect rate, lead time and the cumulative amount of incidents per supplier. The goal of vendor accountability is to ensure that the overall best product or service is delivered, and the development of more strategic supplier relationships.