Data Analytics for Procurement

Acquired Services and Assets Sector,
Office of the Comptroller General

Presented by:

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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.

Current Environment

The GoC has introduced **new functional** and **technical competencies** that are essential to the procurement function.
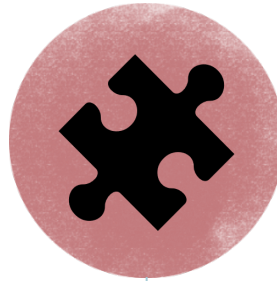
Many organizations **currently struggle** with a lack of e-enablement, resourcing, poor planning, a gap in skills and knowledge, and limited time to be strategic.
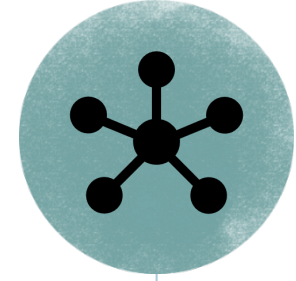
The procurement function has evolved to a **function at the center of government's capacity** to deliver departmental programs and onboard government priorities.

Context – Procurement Modernization Initiatives
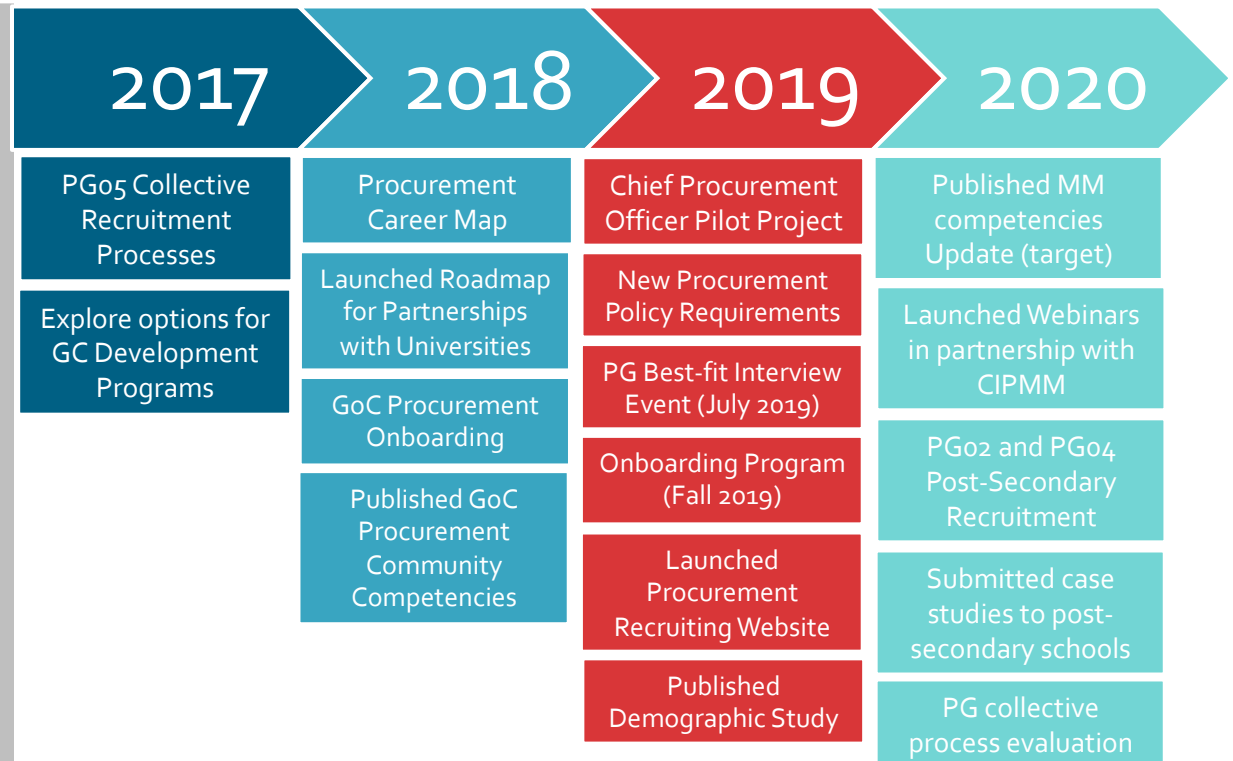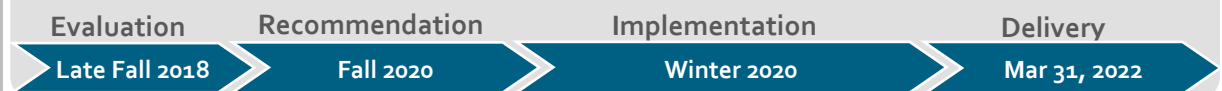
Procurement Modernization Integration Team

May 2016 – April 2018

Initiated development of the future procurement professionals' vision; Future of Procurement Community Workshop (Feb 2017)

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
- Published Demographic Study

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

Internal Audit Evaluation of Certification Program

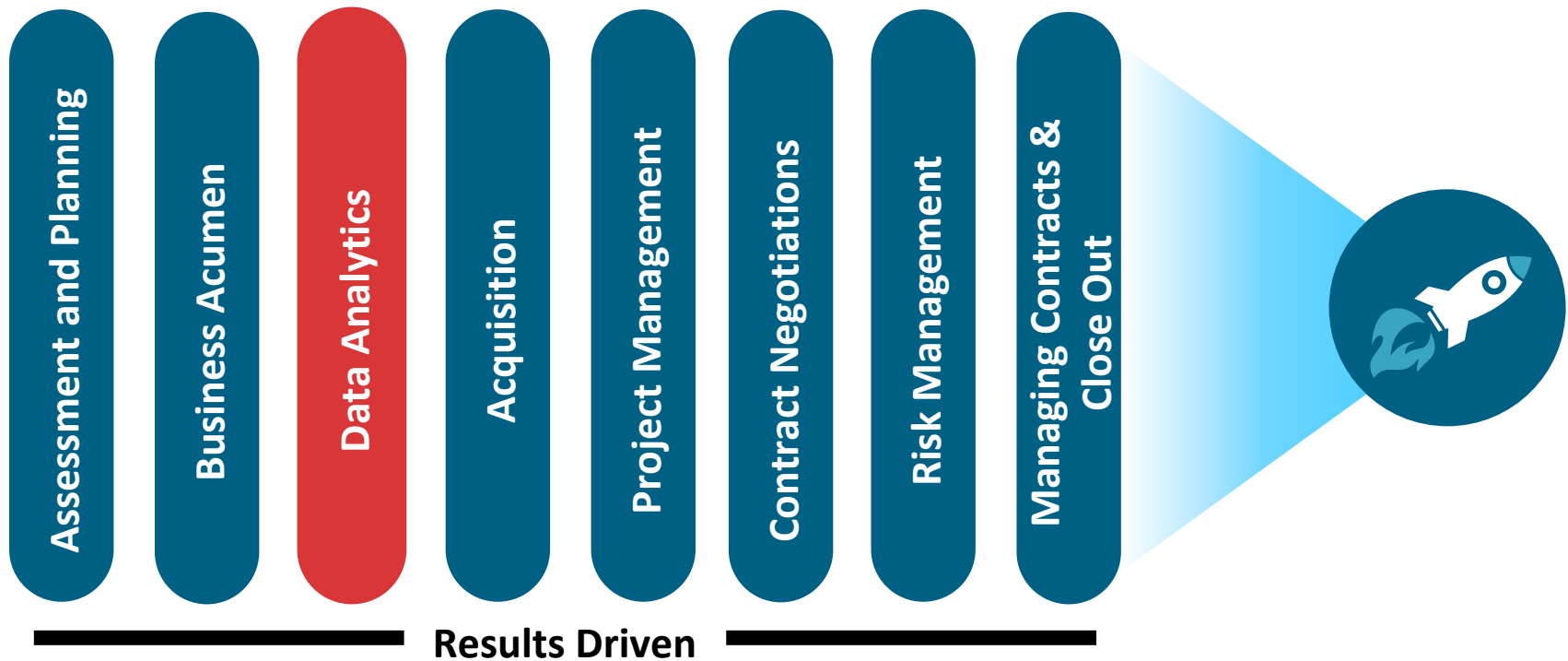| Evaluation	Recommendation	Implementation	Delivery
Late Fall 2018	Fall 2020	Winter 2020	Mar 31, 2022

Continue work with CSPS to identify alternative service providers for training on complex procurement and the new procurement competencies

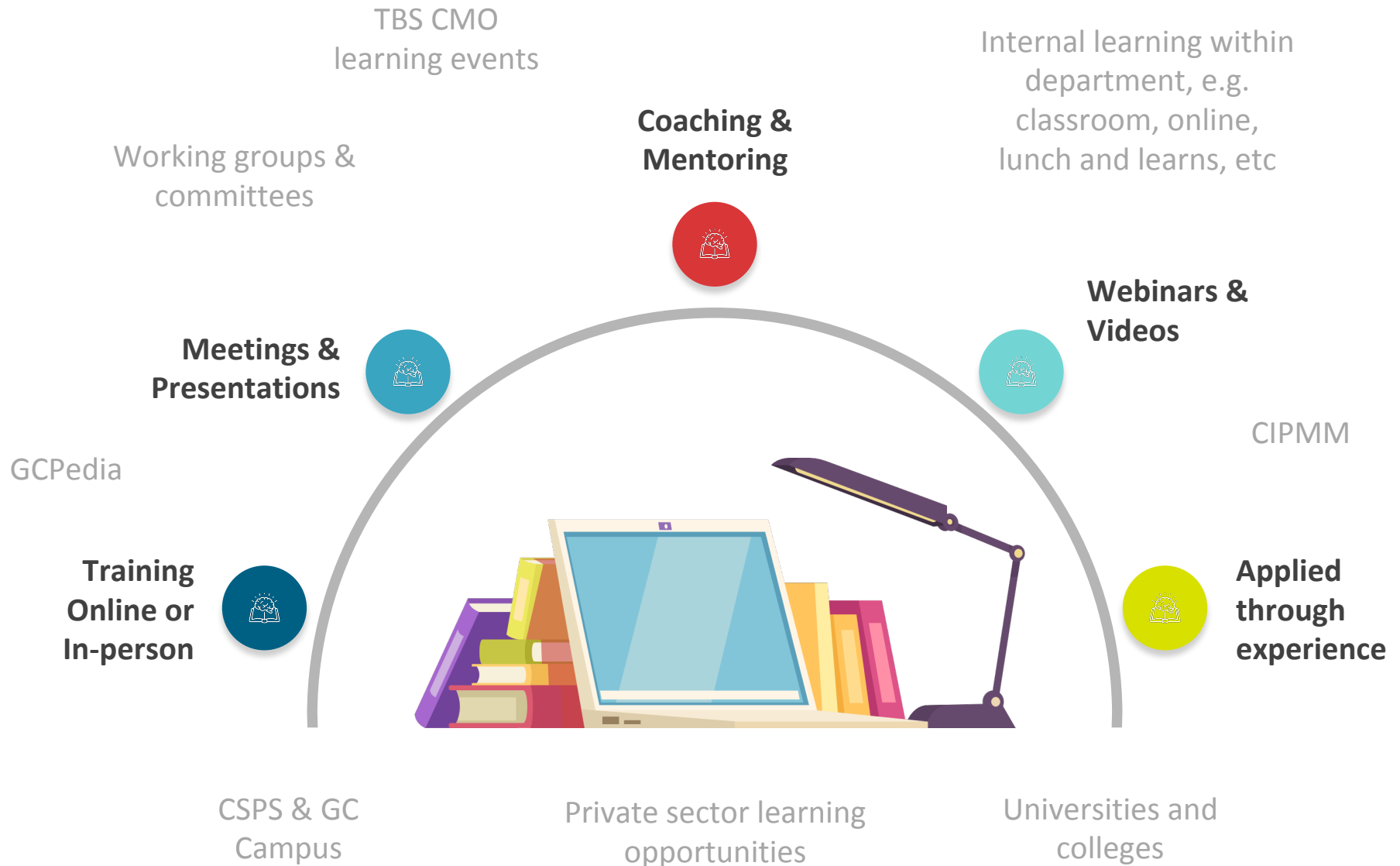Research approaches for revised Certification Program

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.

Assessment and Planning | Business Acumen | Data Analytics | Acquisition | Project Management | Contract Negotiations | Risk Management | Managing Contracts & Close Out

Results Driven

Learning Opportunities for Procurement Professionals

TBS CMO learning events

Internal learning within department, e.g. classroom, online, lunch and learns, etc

Coaching & Mentoring

Working groups & committees

Webinars & Videos

Meetings & Presentations

GCPedia

CIPMM

Training Online or In-person

Applied through experience

CSPS & GC Campus

Private sector learning opportunities

Universities and colleges

Overview

Objective

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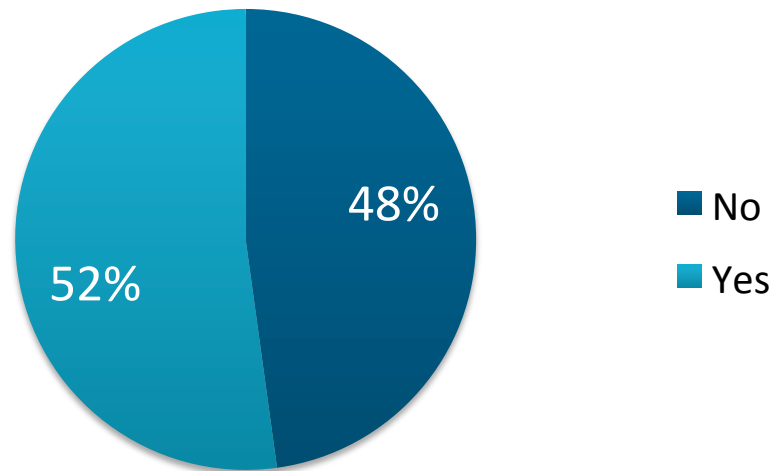
Procurement Analytics Defined

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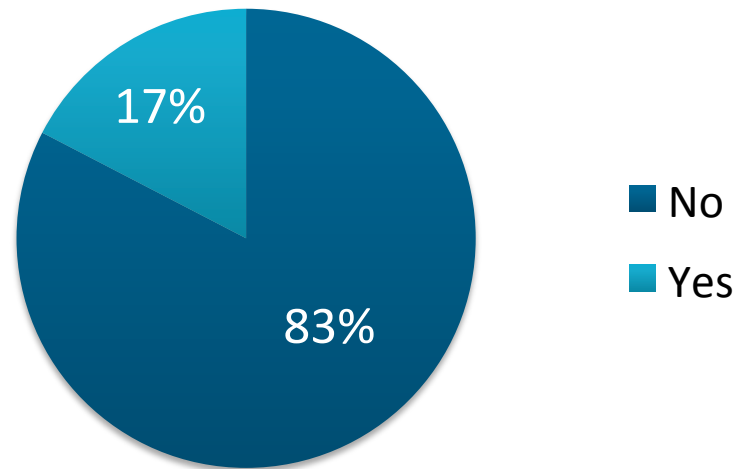
Did you know what procurement analytics, category management, commodity management, or spend analytics was before registering for this webinar?

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?

Pie chart: 83% No (dark blue), 17% Yes (light blue)

Industry Trends

Investing in procurement analytics help organizations elevate procurement's role

Procurement Priorities

Reduce and avoid purchase costs	85%
Elevate the role of procurement to a trusted advisor	81%
Increase spend visibility	76%
Improve agility	74%
Increase stakeholder satisfaction	70%
Reduce supply continuity risk	68%
Deepen influence on complex indirect spend categories	65%
Strengthen / protect the company's brand	63%
Tap supplier innovation	55%
Reduce regulatory non-compliance risk	51%

Procurement Areas of Investment

Category management	85%
Strategic sourcing	83%
Talent management	76%
Supplier relationship management	74%
Data analysis and reporting	67%
Supply market intelligence	51%
Procurement software	51%
Procurement CoEs	45%
GBS / Shared Services	37%
Continuous improvement (e.g. Lean, Six Sigma)	35%

Spend Analysis Benchmark Performance: Spend Maturity

Laggards

30%

Less than 50% spend under management

Industry Average

50%

51-90% spend under management

Best in Class

20%

More than 90% spend under management

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?
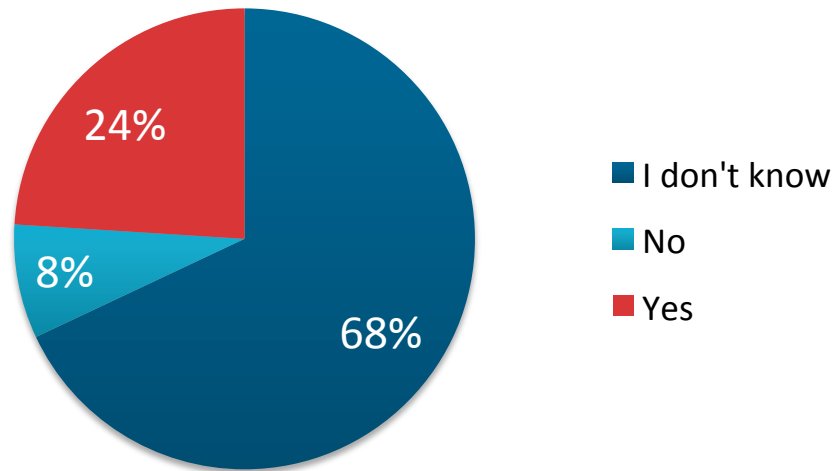
Evolution of Spend Management
Visibility, Analytics and Beyond …
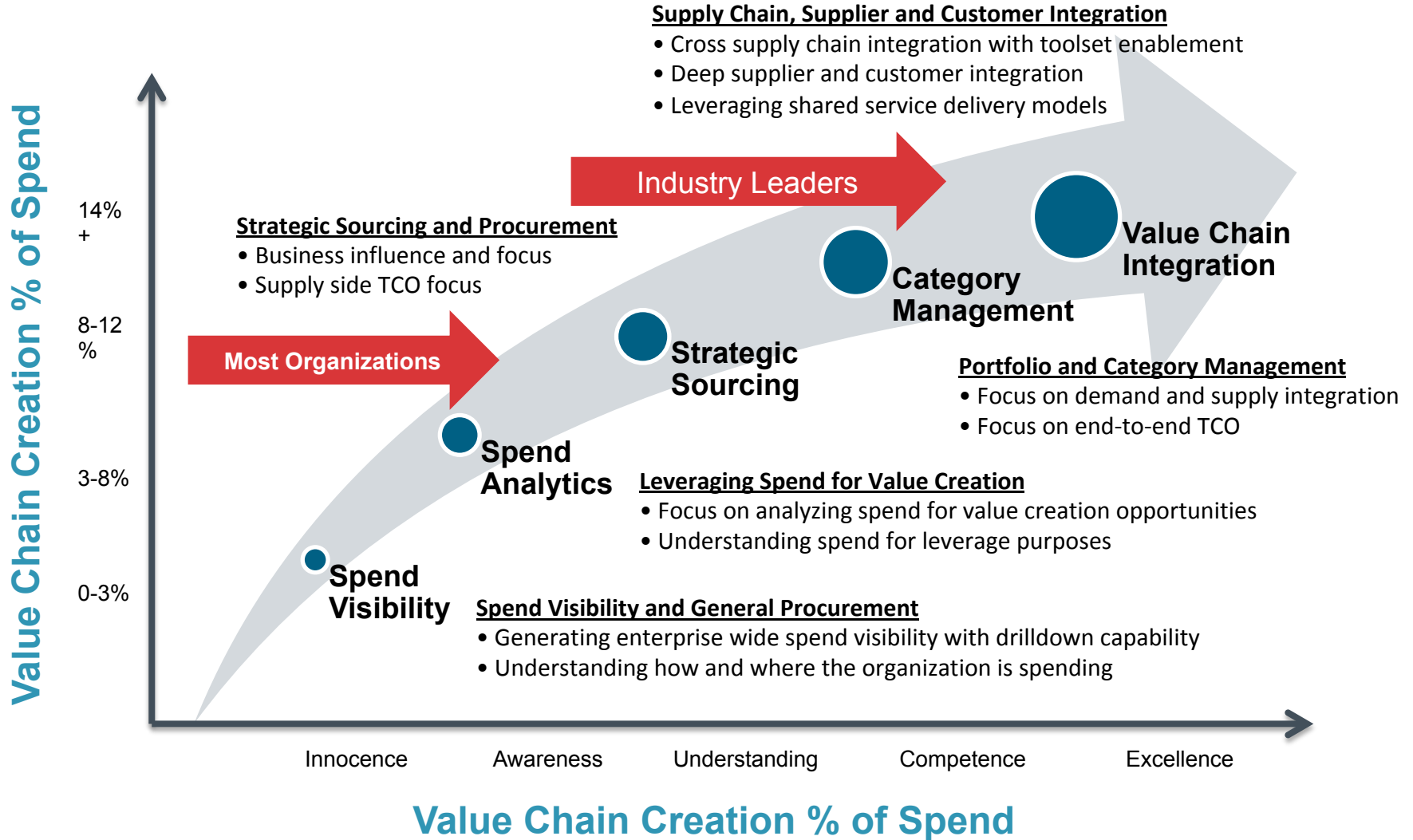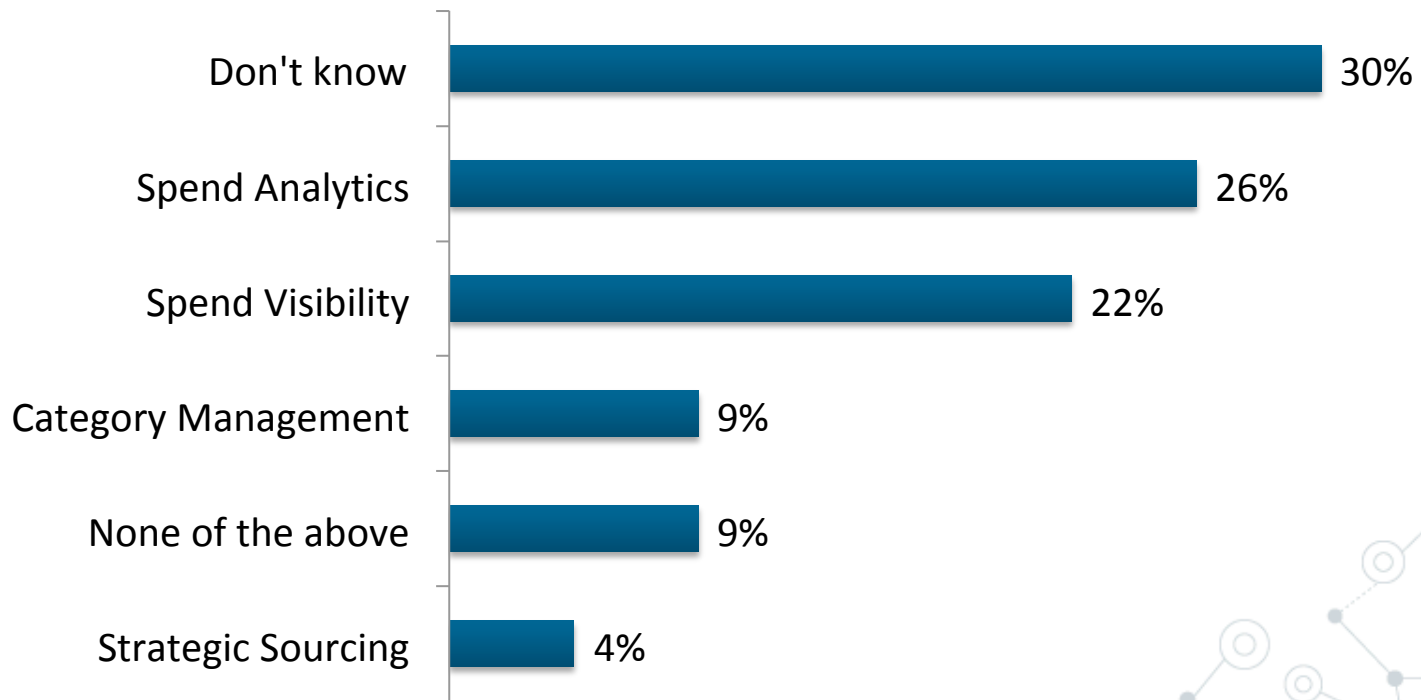
Supply Chain, Supplier and Customer Integration
- Cross supply chain integration with toolset enablement
- Deep supplier and customer integration
- Leveraging shared service delivery models

Value Chain Creation % of Spend (y-axis)

14% +

Industry Leaders

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

8-12 %

Value Chain Integration

Category Management

Most Organizations

Strategic Sourcing

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

3-8%

Spend Analytics

Leveraging Spend for Value Creation
- Focus on analyzing spend for value creation opportunities
- Understanding spend for leverage purposes

0-3%

Spend Visibility

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

Innocence Awareness Understanding Competence Excellence

Value Chain Creation % of Spend

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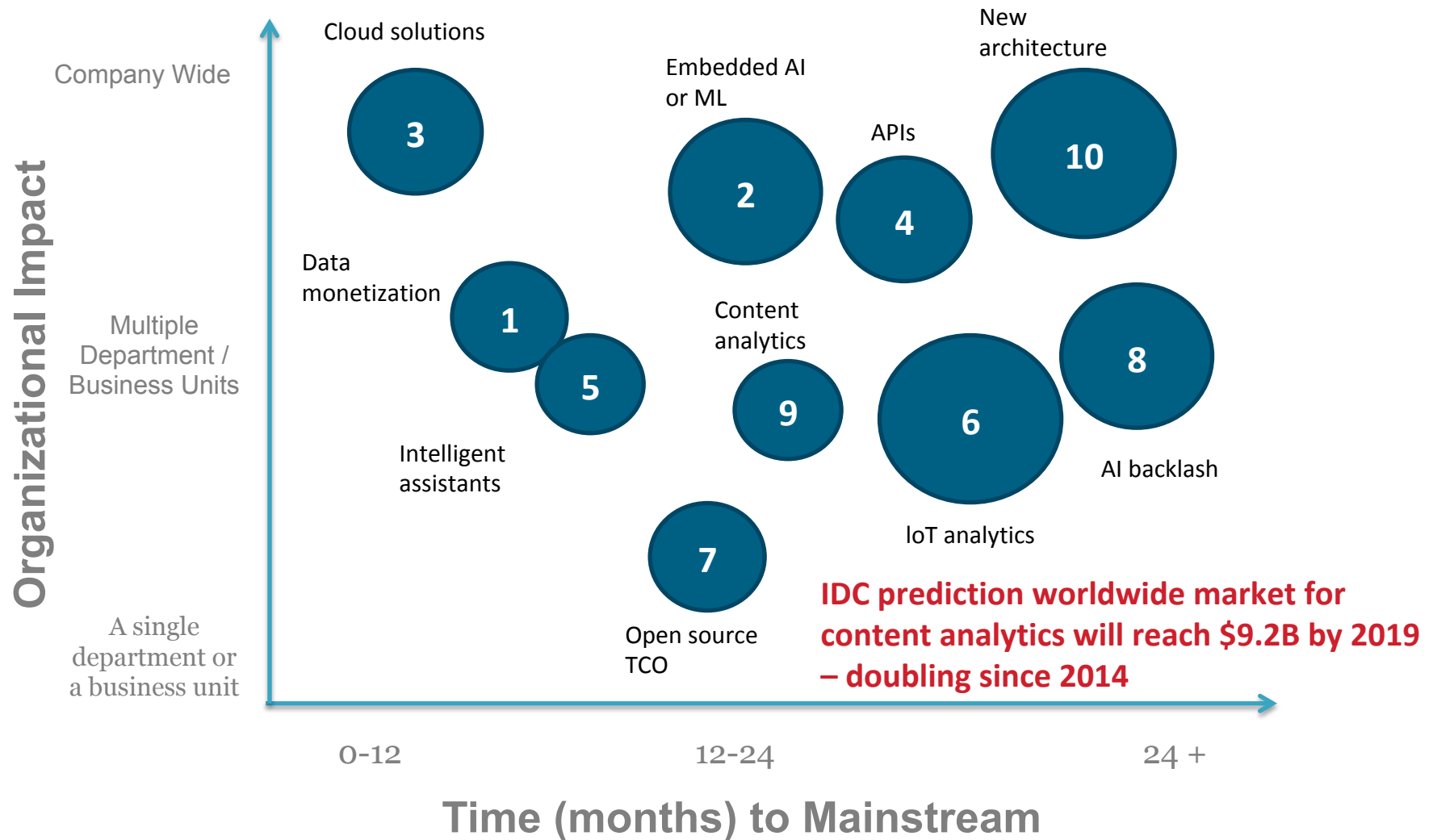
Poll Question # 4

What is the procurement maturity stage of your department?

IDC FutureScape:
## Worldwide Analytics, Cognitive/AI, and Big Data Predictions

Organizational Impact

Company Wide

Multiple Department / Business Units

A single department or a business unit

Cloud solutions — 3

Embedded AI or ML — 2

New architecture — 10

APIs — 4

Data monetization — 1

Content analytics — 9

8

5

Intelligent assistants

6 — IoT analytics

AI backlash

7 — Open source TCO

IDC prediction worldwide market for content analytics will reach $9.2B by 2019 – doubling since 2014

0-12   12-24   24 +

Time (months) to Mainstream

20

Spend Analytics Software
Spend Matters 2017 Q4 technology SolutionMap

AnyData

Solution Leader

Value Leader

Ivalua

SpendHQ

Zycus

GEP

- Analyst Score +

Sievo

BravoSolution

Spendency
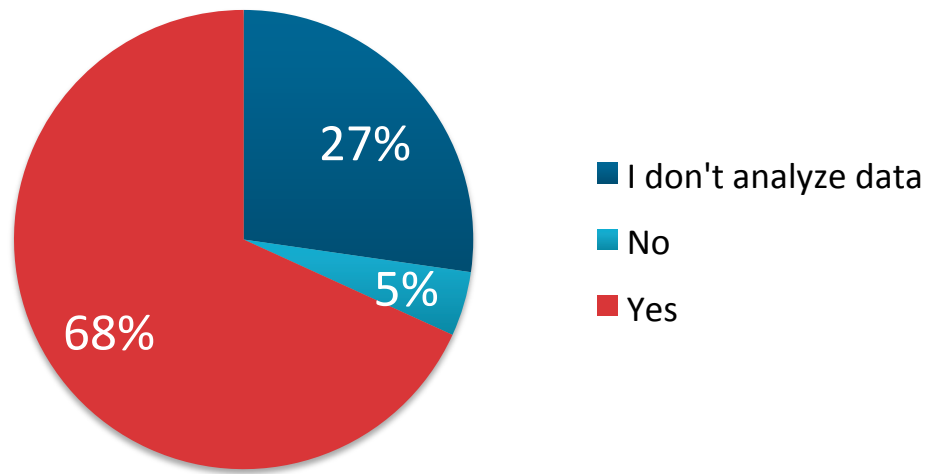
Jaggaer

SAP Ariba

Emergent Contender

Customer Leader

- Customer Score +
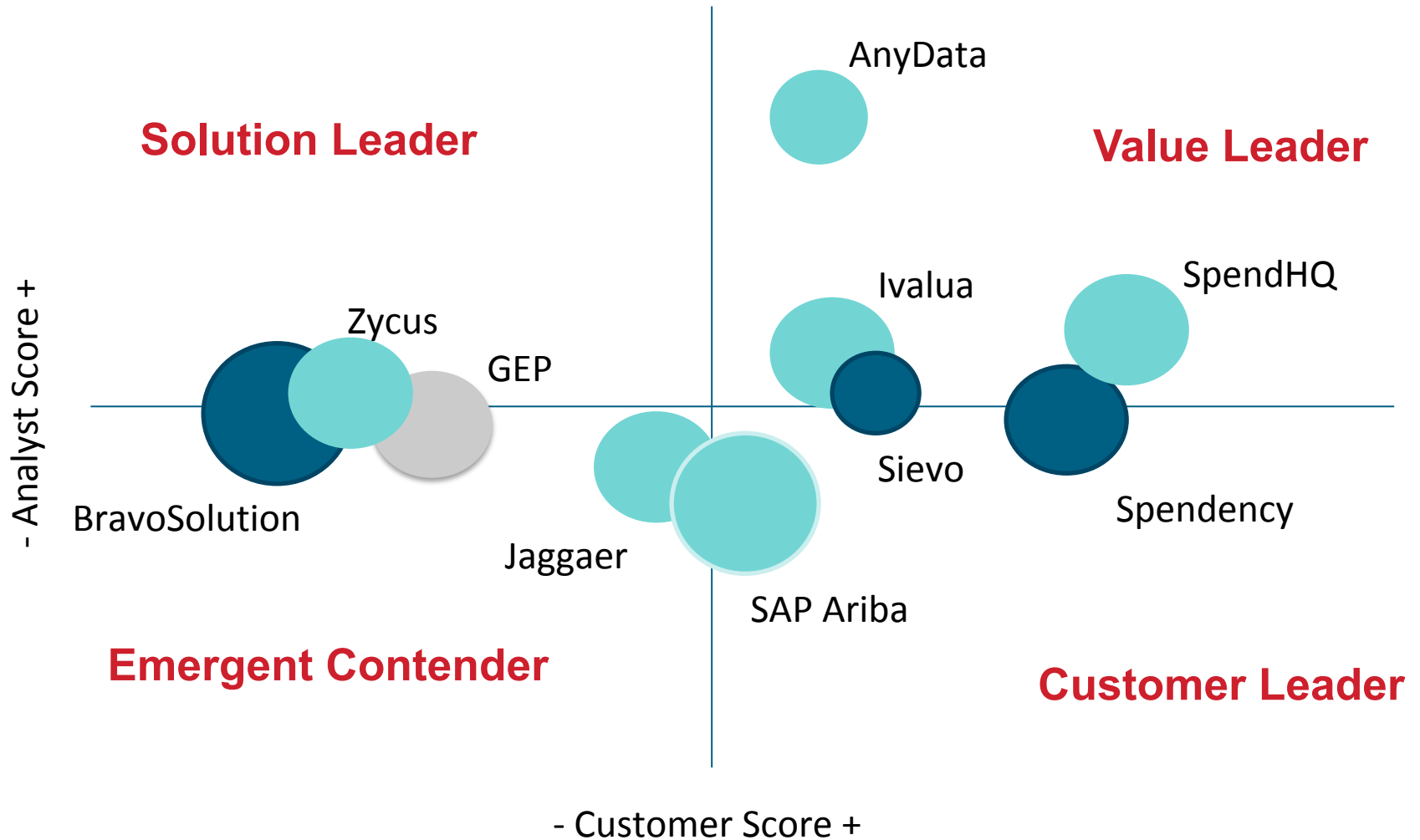
Poll Question # 5

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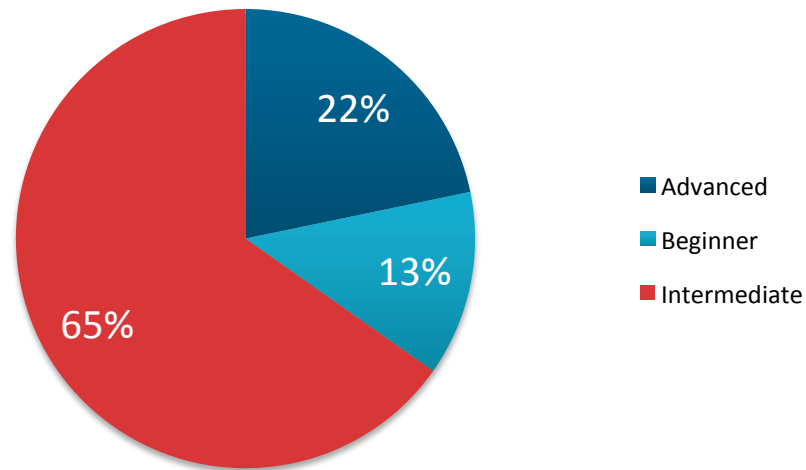

- I don't know
- No
- Yes
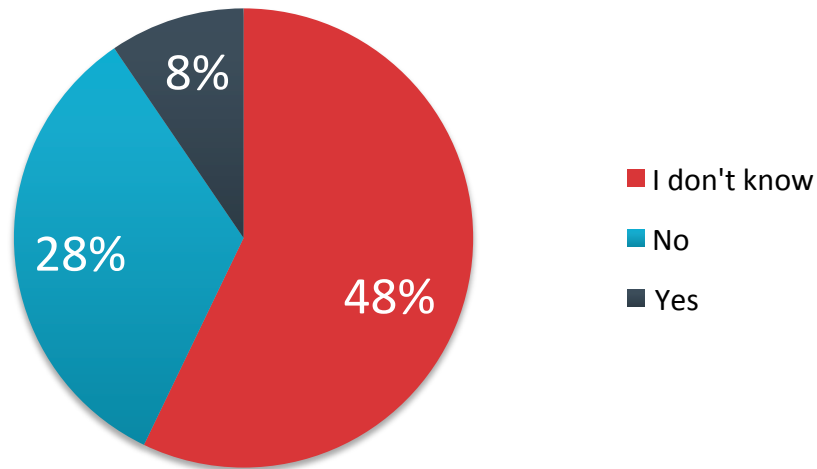
Poll Question # 6

Do you primarily use Microsoft Excel or Power BI to analyze data?

Poll Question # 7

What is your proficiency in Microsoft Excel or Power BI?

Leading procurement organizations are now positioning themselves as trusted advisor focused on driving business value

Value Proposition

Role of Procurement

Value Management

Increased business value (beyond savings) derived from spend

Trusted business advisor and change agent

Demand Management

Reduce demand activity, complexity and variability

Spend / budget consultant and relationship management

Total Cost of Ownership

Shift from lowest cost to **TCO**

Supply expert / Team leader / Project Manager

Price

Right goods/services at the right price

Negotiator

Supply Assurance

Right goods / services at the right time and place

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?

Category	Percentage
Don't know	26%
Total Cost of Ownership	22%
Value Management	17%
Price	13%
Supply Assurance	9%
Demand Management	9%
Price	4%
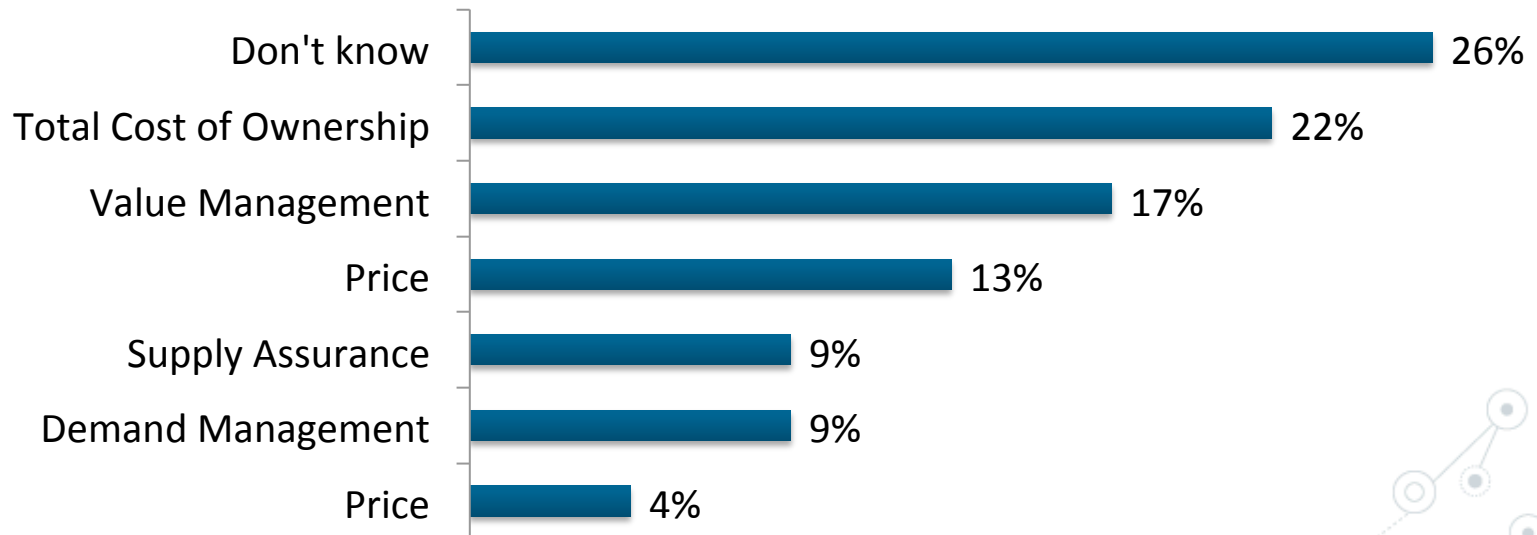
Why is data analytics important to procurement?

Value of Analytics in 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

Client Satisfaction

- Measure and monitor service standards and client satisfaction
- Measure and monitor against planned benefits or 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

Category Management

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

Strategic Sourcing

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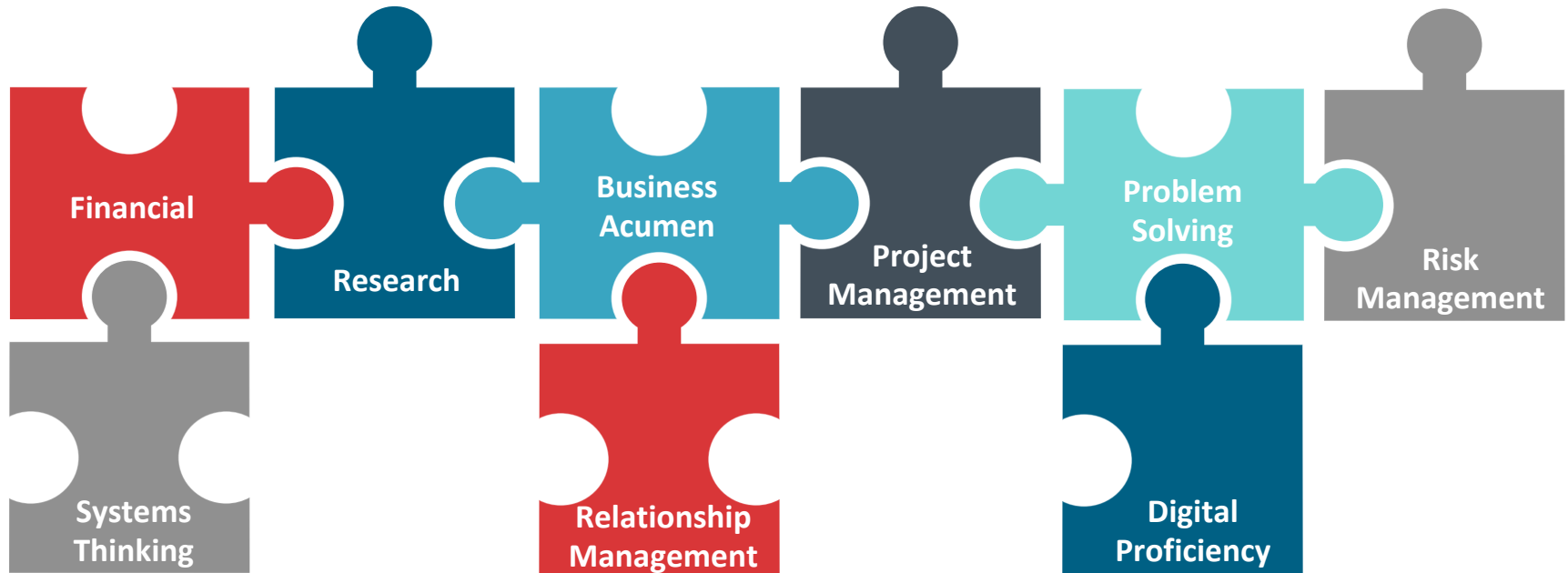- Linking procurement strategy with intended-outcomes

Contract Management

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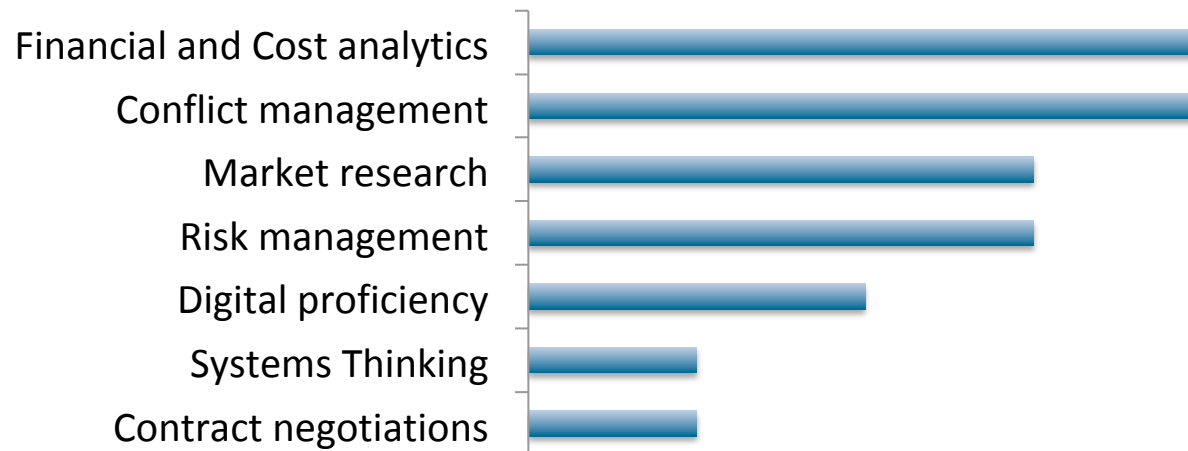- Improve budget planning and spending

[Source: Adapted from Sievo]

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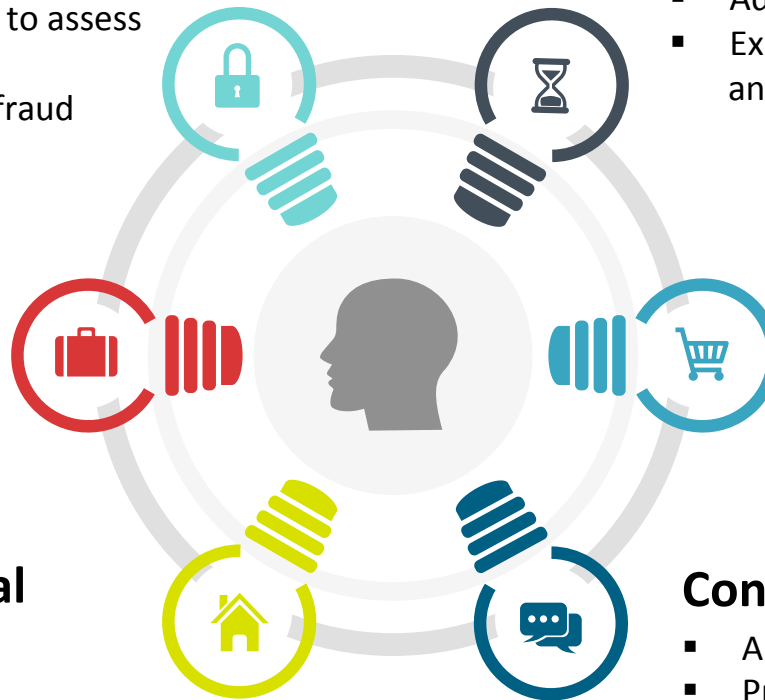
Skills and Competencies Required to Analyze Data

The ability to effectively analyze and interpret data is not based on just one skill and competency but many.

Financial

Research

Business Acumen

Project Management

Problem Solving

Risk Management

Systems Thinking

Relationship Management

Digital Proficiency

Poll Question # 9

What are the top 3 aspects you find most challenging?

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.

Analyze and Gather Insights 02

- 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.

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.

Forecast and Plan 03

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

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.

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Key Performance Indicators for Procurement

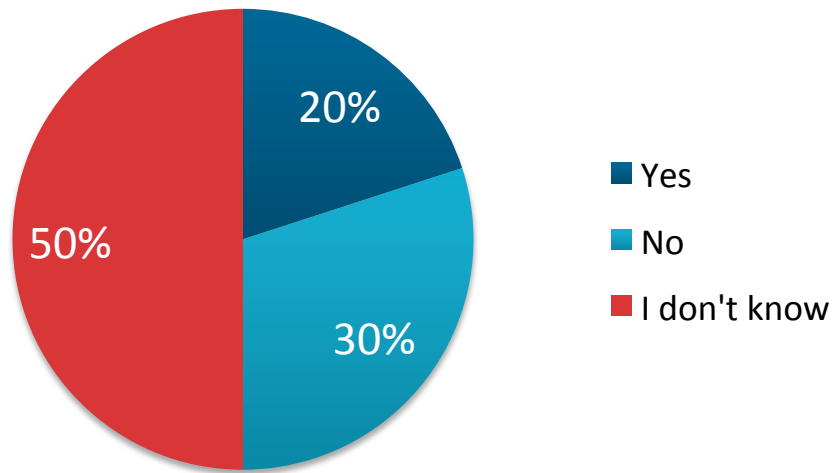|		
Spend under Management	Spend vs. Budget	Total Cost of Ownership
Cost Savings and/or Cost Avoidance	Average Payment Terms	Number of Suppliers
Contract Coverage	Exchange Rate Exposure	Vendor Performance

Poll Question # 10

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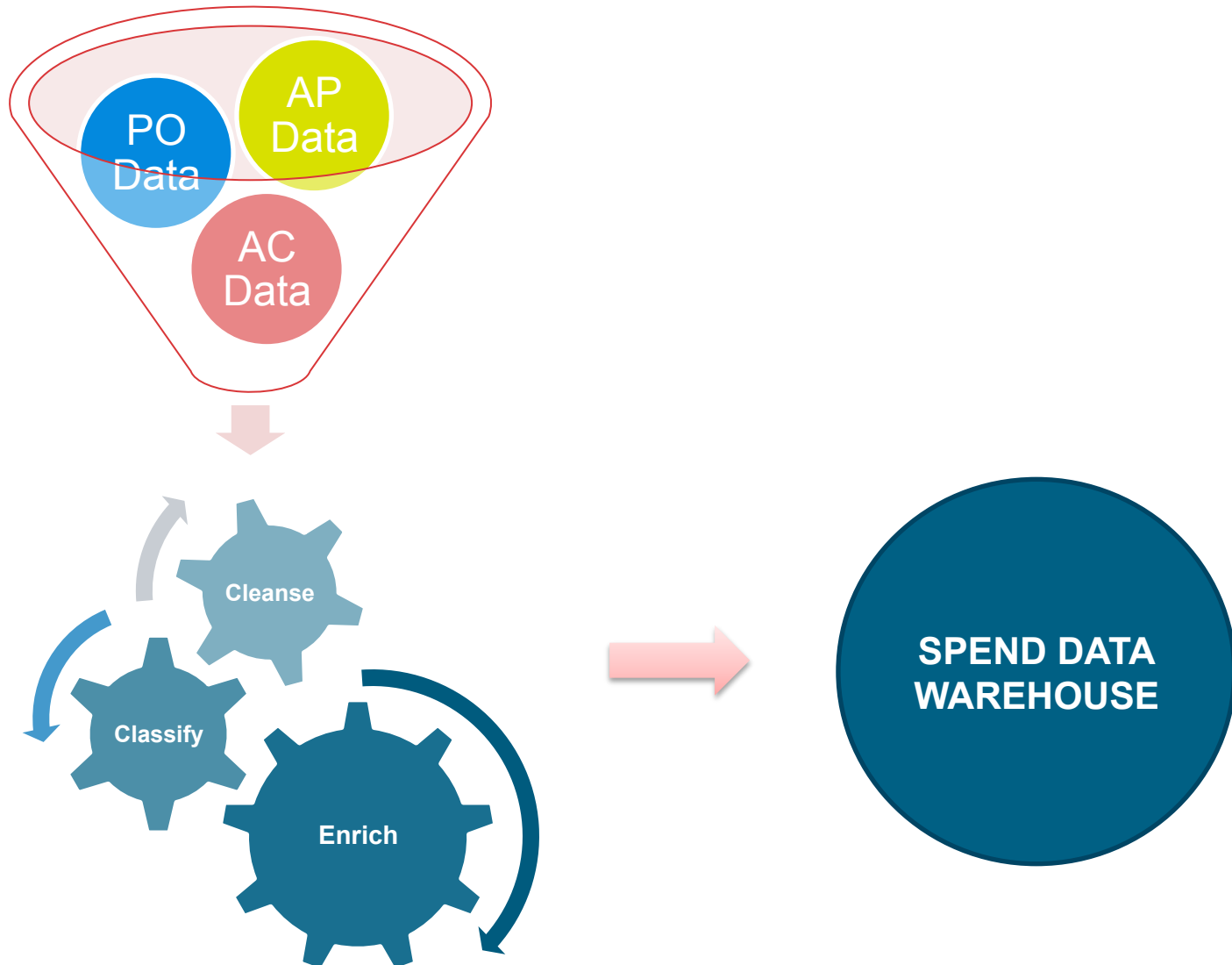
Example

Category Management

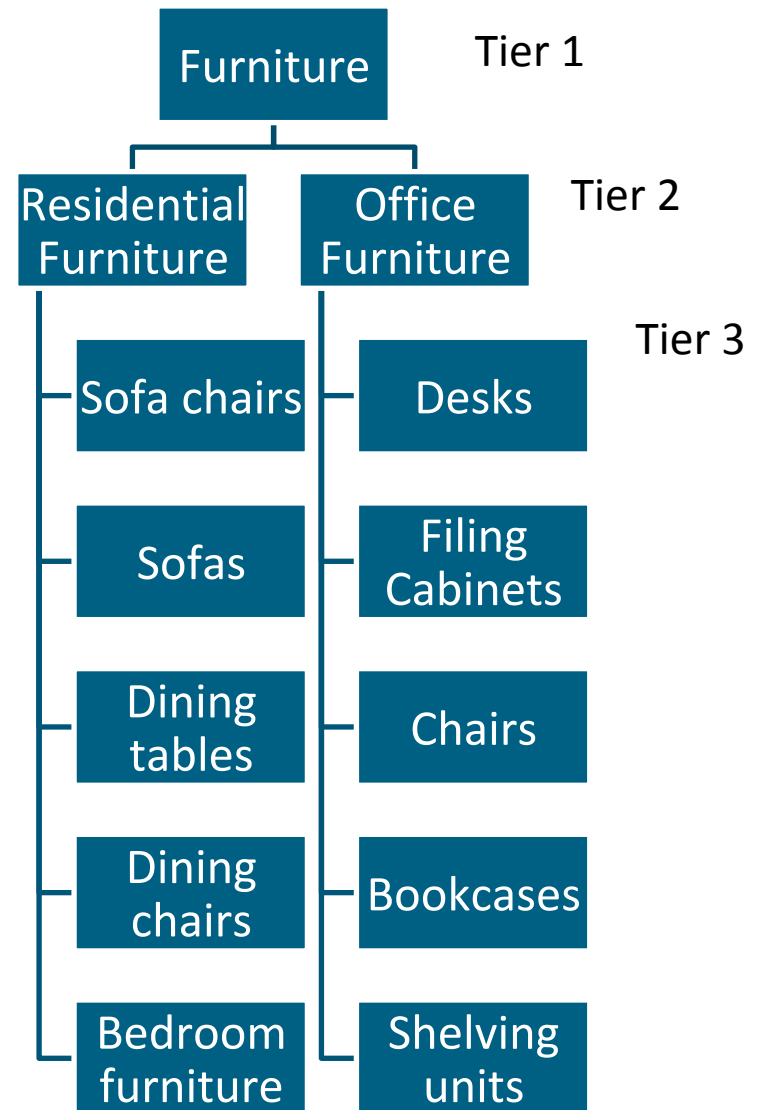# Extract, transform and load the data

Example: Natural categorization
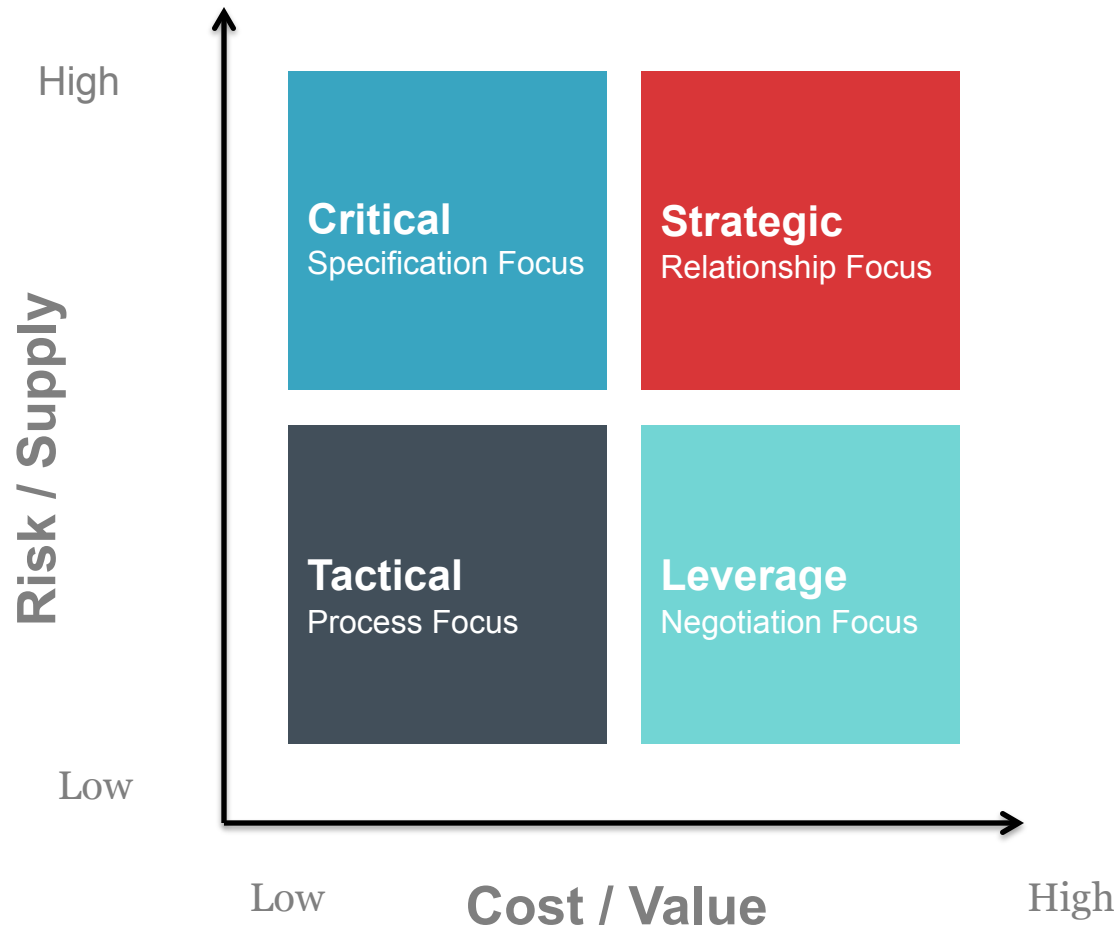
Category: Furniture

- 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]

Furniture — Tier 1

Residential Furniture — Office Furniture — Tier 2

Tier 3

Sofa chairs — Desks

Sofas — Filing Cabinets

Dining tables — Chairs

Dining chairs — Bookcases

Bedroom furniture — Shelving units

Spend Classification

Krajic Model

Risk / Supply (vertical axis: Low to High)
Cost / Value (horizontal axis: Low to High)

Critical
Specification Focus

Strategic
Relationship Focus

Tactical
Process Focus

Leverage
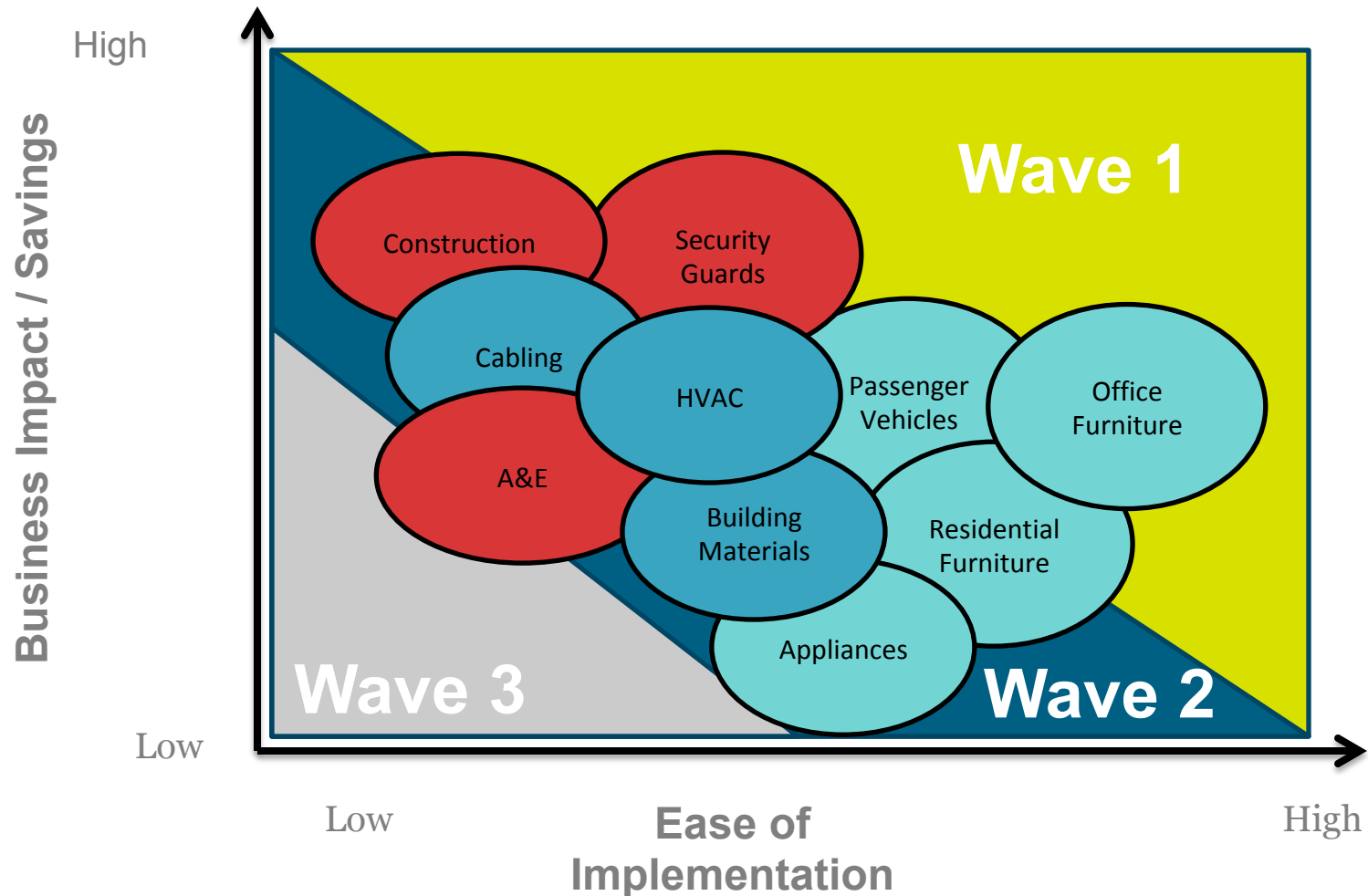Negotiation Focus

Opportunity Analysis & Prioritization

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)?
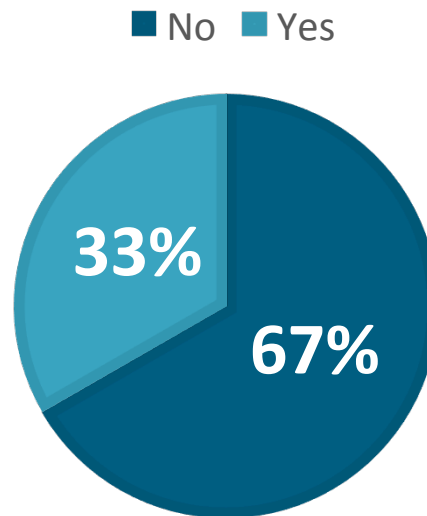
■ No ■ Yes

33%

67%

Additional Resources Available

Canada School of Public Service

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)

Canada School of Public Service

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)

Canada School of Public Service

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)

Canada School of Public Service

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

- **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.

- **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.

- **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.