IBM Cognos Analytics

Solving Retail Demand Forecasting Challenges

Bi Solution Report

Sharon, Selena, Charmy & Lekhya

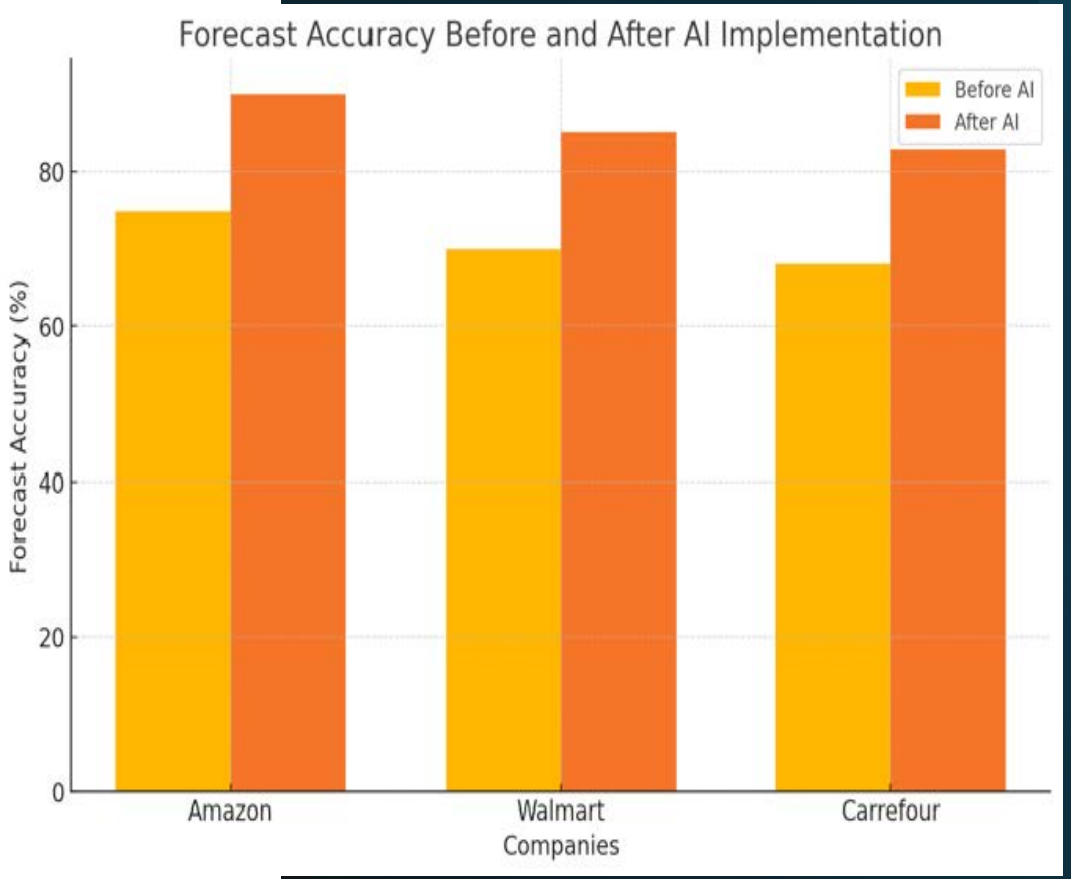
ISM6255

Agenda

- Introduction
- BI Needs & Retail Challenges
- How IBM Cognos Solves the Problem
- AI & Analytics Capabilities
- Dashboard & Data Visualization Tools
- Competitive Landscape
- Case Studies
- Recommendations & Conclusion

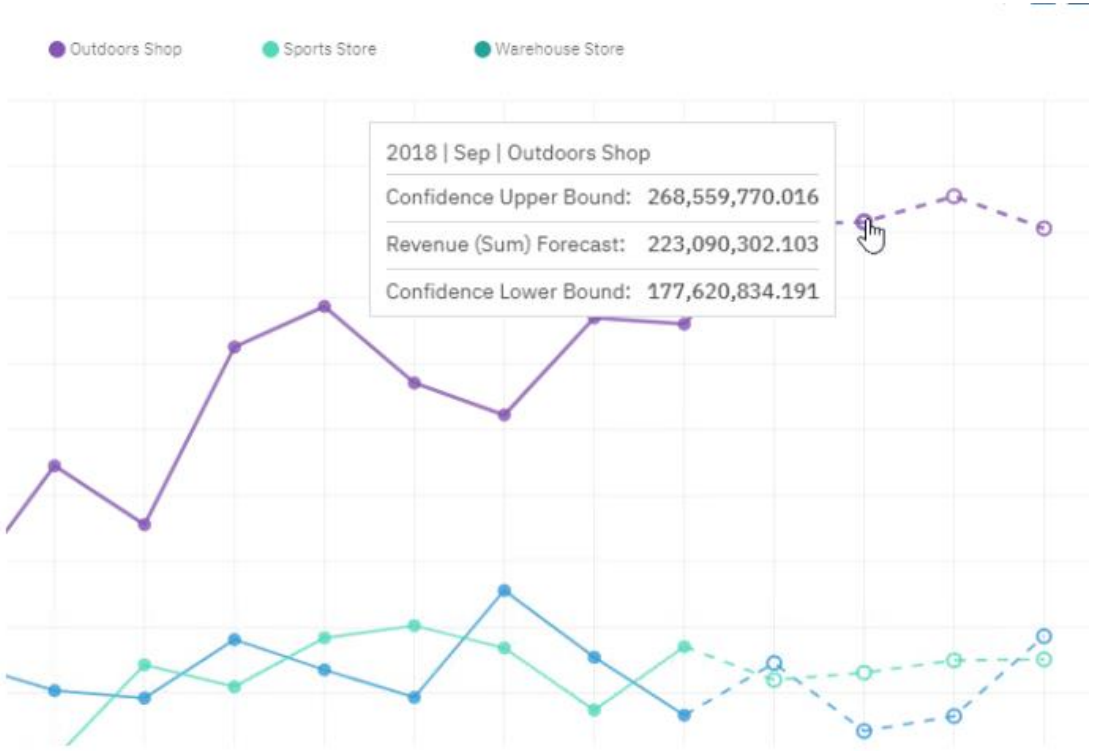
BI Needs & Retail Challenges

- Rapid retail changes demand real-time decisions
- BI transforms data into forecasting, inventory & customer insights
- Common issues: forecast errors (up to 30%), data silos, manual Excel
- Consequences: overstocks, stockouts, lost sales
- AI tools can cut inventory errors by 50%, boost sales 3–5%



How IBM Cognos Solves the Problem

- AI-driven forecasting & scenario planning
- Connects sales, inventory, marketing, supply chain data
- Self-service dashboards reduce IT dependency
- Delivers 77% ROI over 3 years (Forrester)
- $1.1M efficiency gains, $670K from retiring legacy tools



AI & Analytics Capabilities

- AI Assistant answers plain-language questions instantly
- Smart data discovery detects patterns & anomalies
- Predictive models use historical + external data (seasonality, weather, promos)
- “What-if” scenario modeling supports proactive decisions
- Example: Novolex cut forecast time from weeks to hours

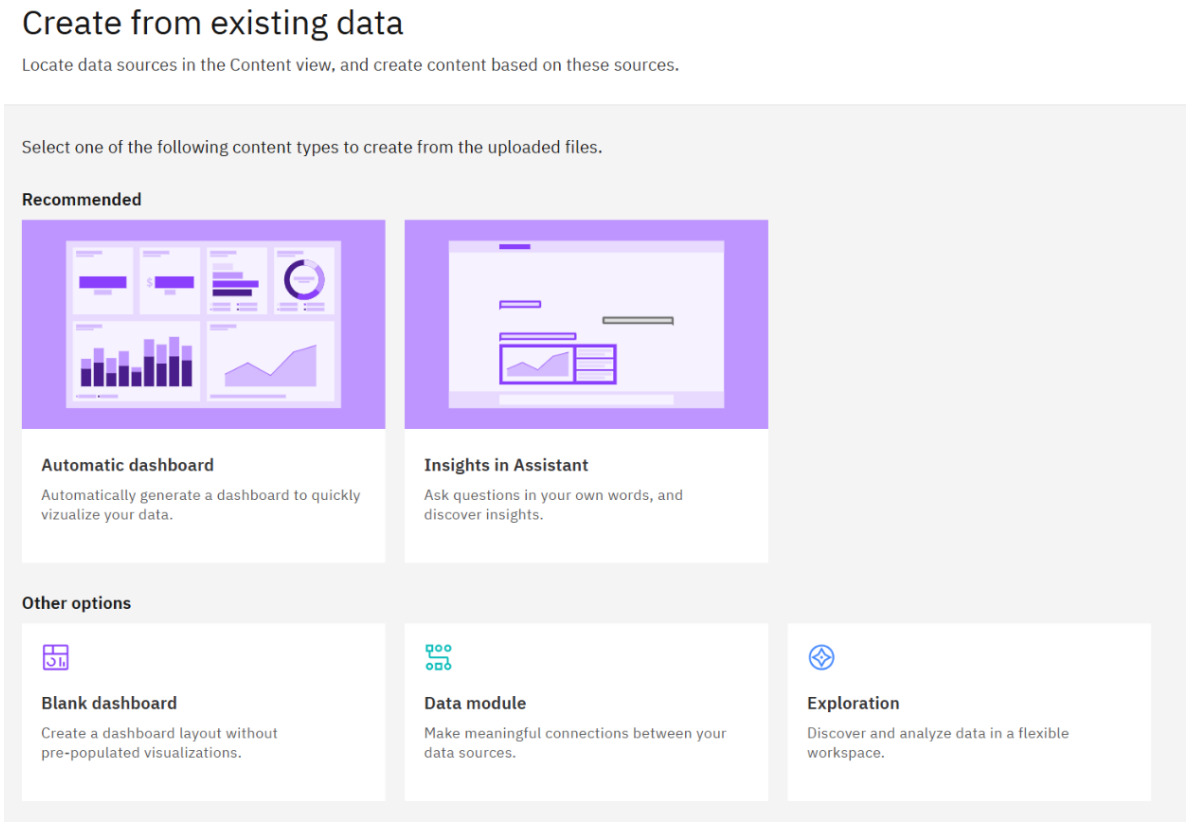
Dashboard & Data Visualization Tools

Dashboard & Data Visualization Tools

- Dashboards are a core BI feature for rapid decision-making
  - Quickly interpret complex data
  - Improve accuracy & efficiency of decisions
- Analytics-driven companies achieve better results
  - 1.5× more likely to see above-average growth
  - 5% higher return on sales (Hjelle et al., 2024)
- Visualization tools deliver significant competitive advantages

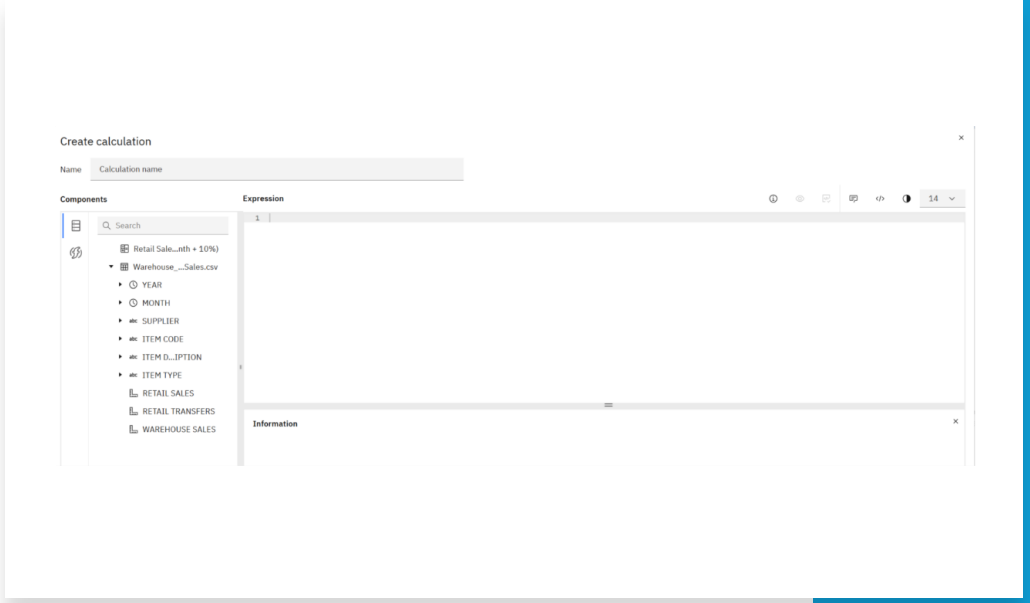
Turning Data into Actionable Insights

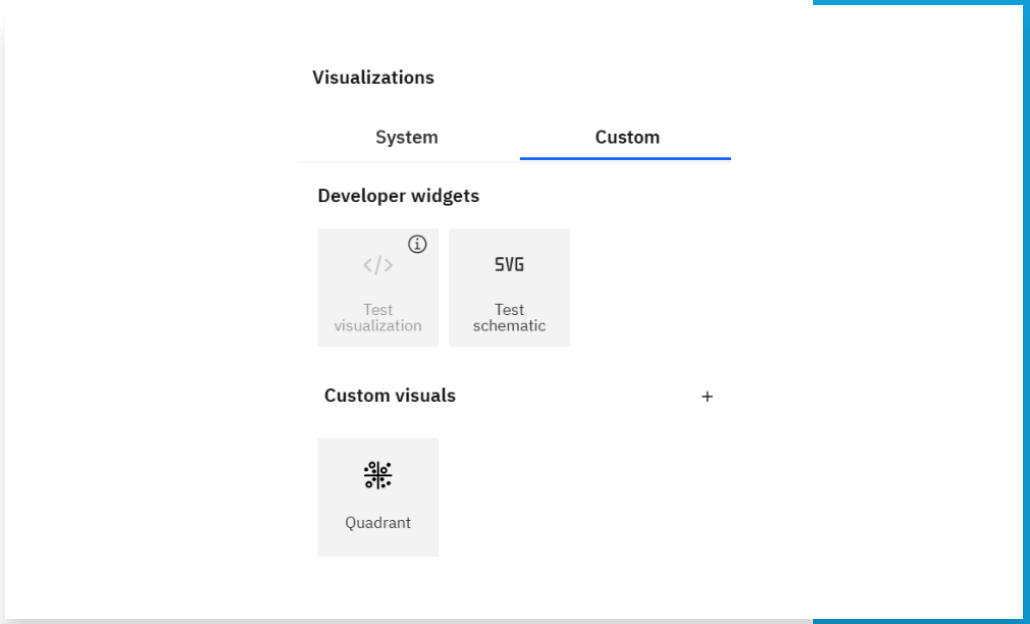
- IBM Cognos converts raw sales & inventory data into insights
  - Addresses costly overstocks & stockouts in retail
- Project dataset: Kaggle Warehouse & Retail Sales
- “Create from Existing Data” function
  - AI auto-builds dashboard in seconds
  - Selects relevant charts, KPIs, and comparisons

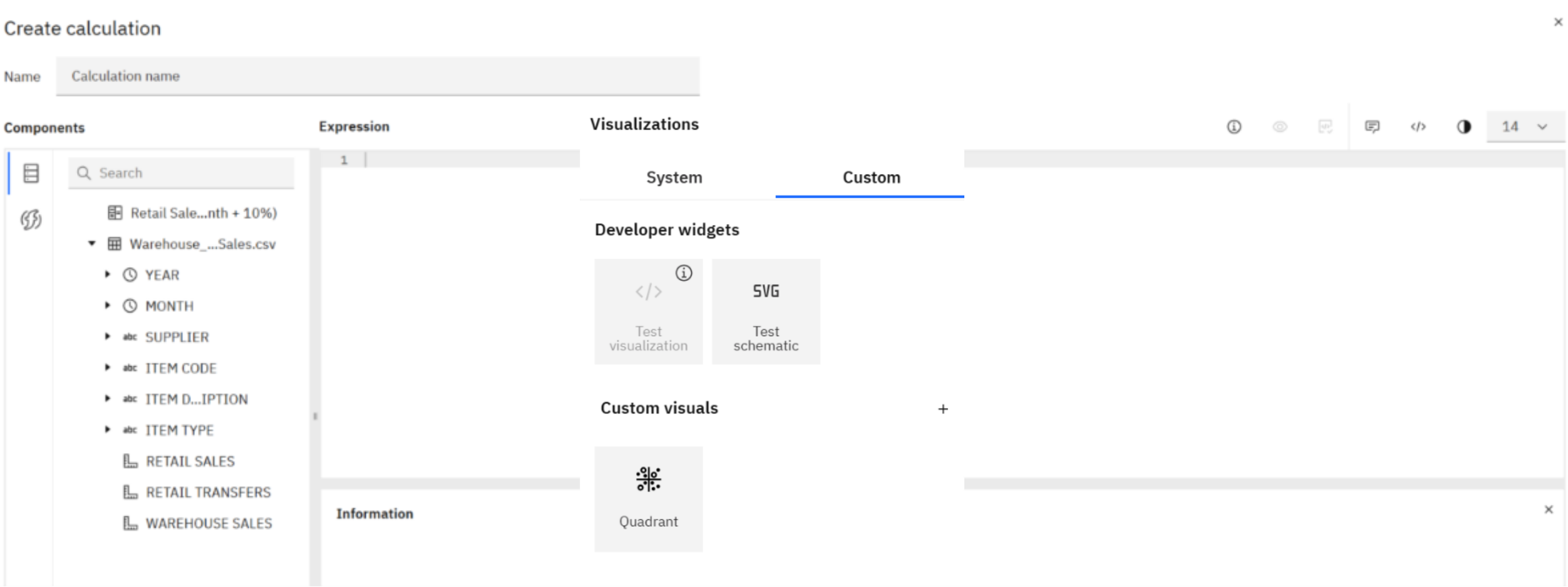


Customization & Advanced Personalization

- Custom expressions & calculated fields
  - Create new measures, dimensions, KPIs
- Scenario-specific filters
  - Example: show only items with >10% sales deviation from forecast
- Flexible visualization formats
  - Bar, line, heat maps, KPI tiles, bubble charts, etc.

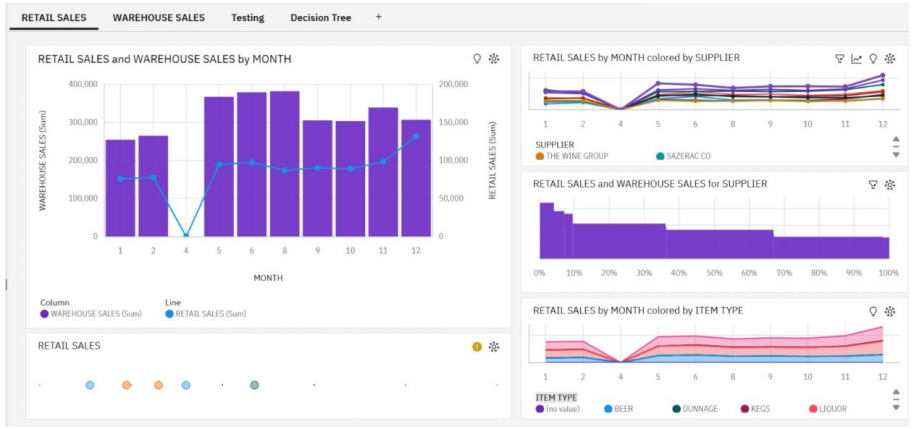


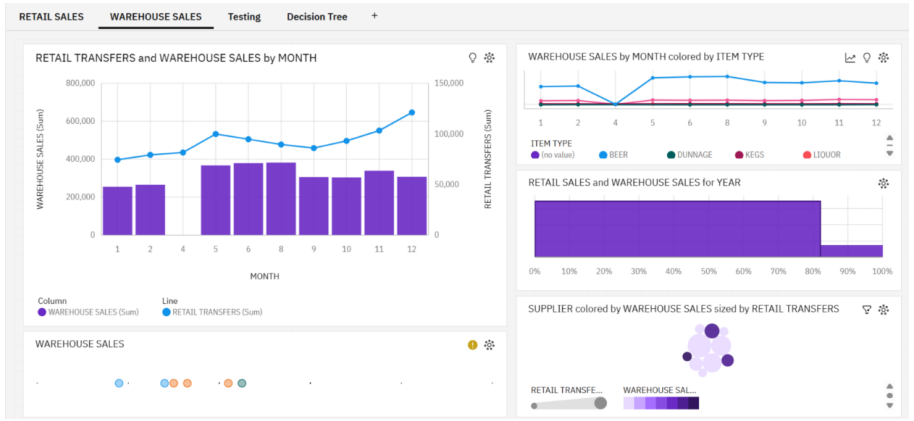


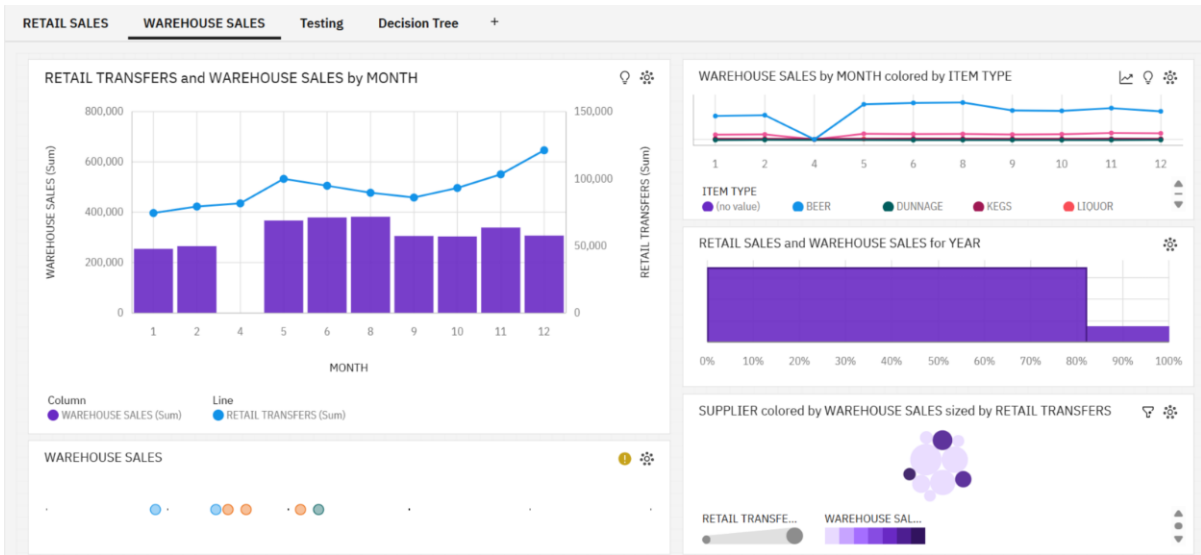

Create calculation
Name
Calculation name
Components
Search
Retail Sale...nth + 10%)
Warehouse_...Sales.csv
YEAR
MONTH
SUPPLIER
ITEM CODE
ITEM D...IPTION
ITEM TYPE
RETAIL SALES
RETAIL TRANSFERS
WAREHOUSE SALES
Expression
1
Visualizations
System
Custom
Developer widgets
Test visualization
SVG
Test schematic
Custom visuals
Quadrant
Information
14

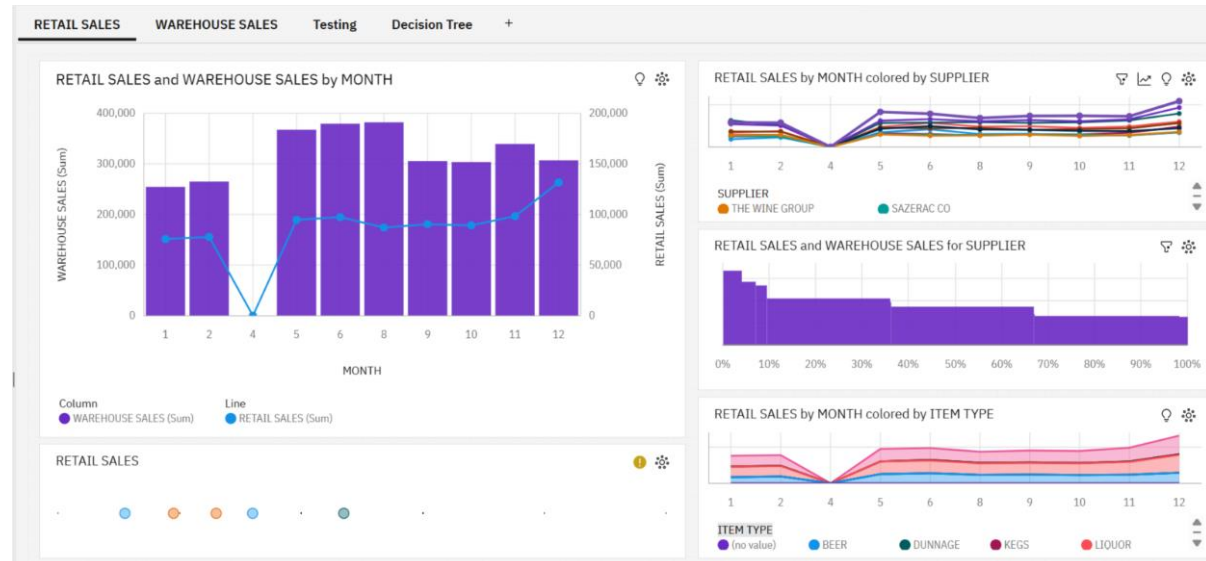
Forecasting & Insights

- Forecast tool projects monthly sales trends
  - Identifies seasonal peaks & risk periods
- Narrative Insights
  - AI-generated text summaries detect outliers & trends
- Filters for “All Tabs” and “Current Tab”
  - Drill into specific suppliers, item types, time periods
- Custom KPI charts
  - Compare warehouse transfers & retail sales over time






RETAIL SALES
WAREHOUSE SALES
Testing
Decision Tree
+
RETAIL TRANSFERS and WAREHOUSE SALES by MONTH
WAREHOUSE SALES (Sum)
RETAIL TRANSFERS (Sum)
MONTH
Column
WAREHOUSE SALES (Sum)
Line
RETAIL TRANSFERS (Sum)
WAREHOUSE SALES by MONTH colored by ITEM TYPE
ITEM TYPE
(no value)
BEER
DUNNAGE
KEGS
LIQUOR
RETAIL SALES and WAREHOUSE SALES for YEAR
SUPPLIER colored by WAREHOUSE SALES sized by RETAIL TRANSFERS
RETAIL TRANSFE...
WAREHOUSE SAL...
WAREHOUSE SALES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RETAIL SALES and WAREHOUSE SALES by MONTH
WAREHOUSE SALES (Sum)
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Column
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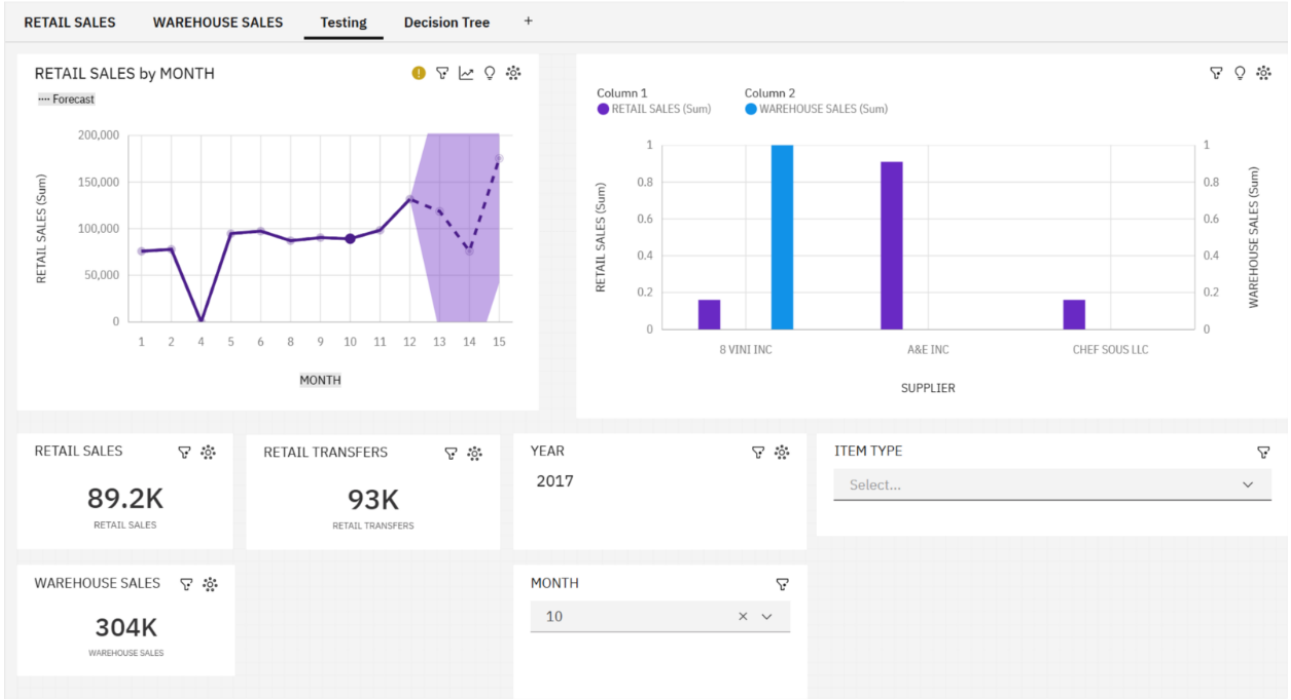
Line
RETAIL SALES (Sum)
RETAIL SALES by MONTH colored by SUPPLIER
SUPPLIER
THE WINE GROUP
SAZERAC CO
RETAIL SALES and WAREHOUSE SALES for SUPPLIER
RETAIL SALES by MONTH colored by ITEM TYPE
ITEM TYPE
(no value)
BEER
DUNNAGE
KEGS
LIQUOR
RETAIL SALES

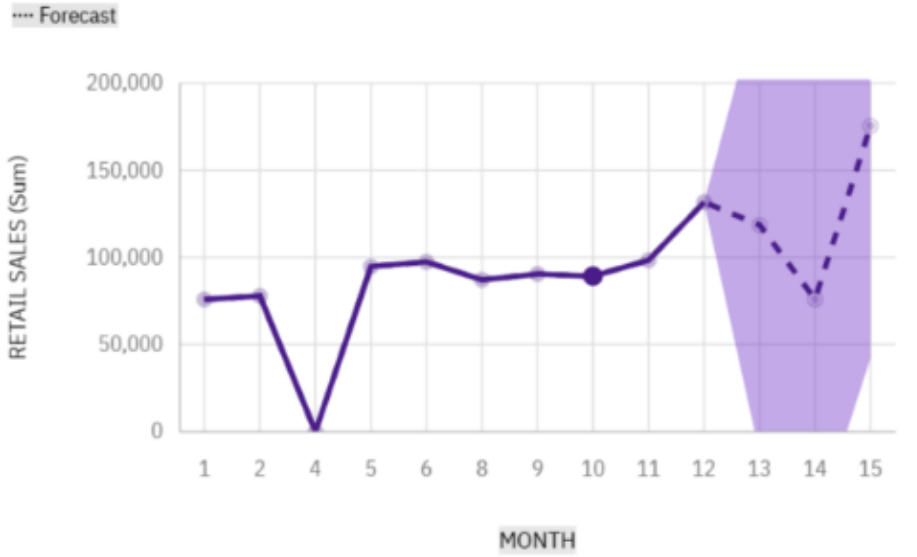
KPI Integration & Interactivity

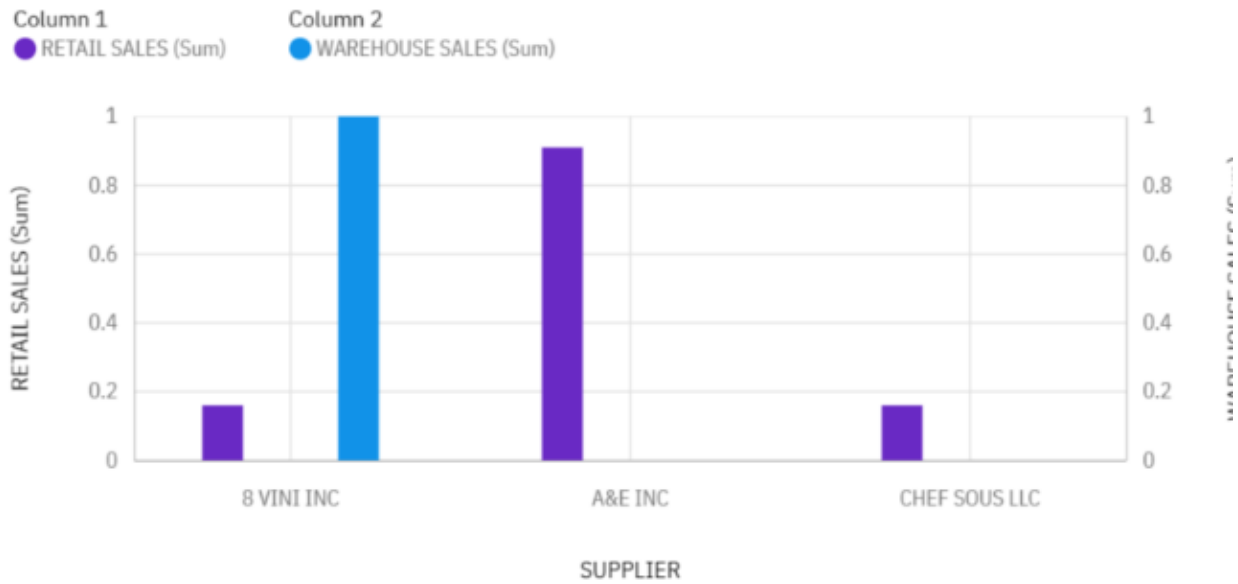
- KPIs track performance vs. forecast in real time
  - SMART: Specific, Measurable, Attributable, Realistic, Time-bound
- Interactive dashboard elements
  - Filters, drop-down menus, drill-through navigation
- Example: supplier filter to compare transfers vs. sales



RETAIL SALES | WAREHOUSE SALES | Testing | Decision Tree | +

RETAIL SALES by MONTH





RETAIL SALES

89.2K

RETAIL SALES

RETAIL TRANSFERS

93K

RETAIL TRANSFERS

YEAR

2017

ITEM TYPE

Select...

WAREHOUSE SALES

304K

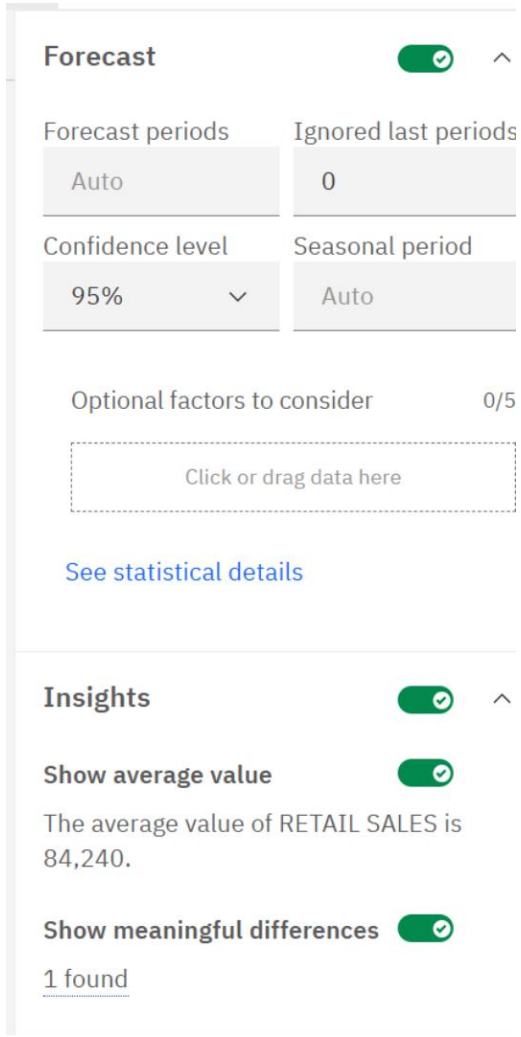
WAREHOUSE SALES

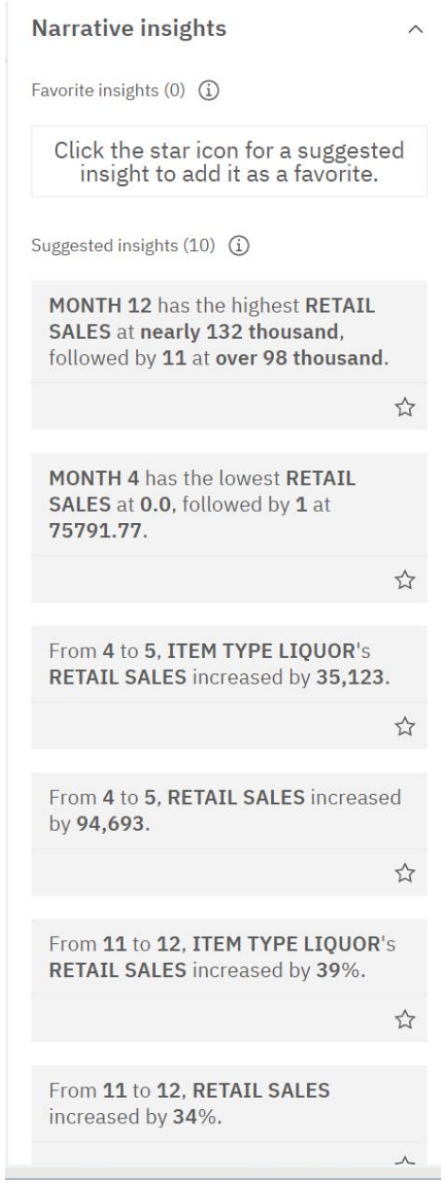
MONTH

10

AI-Driven Narrative Insights

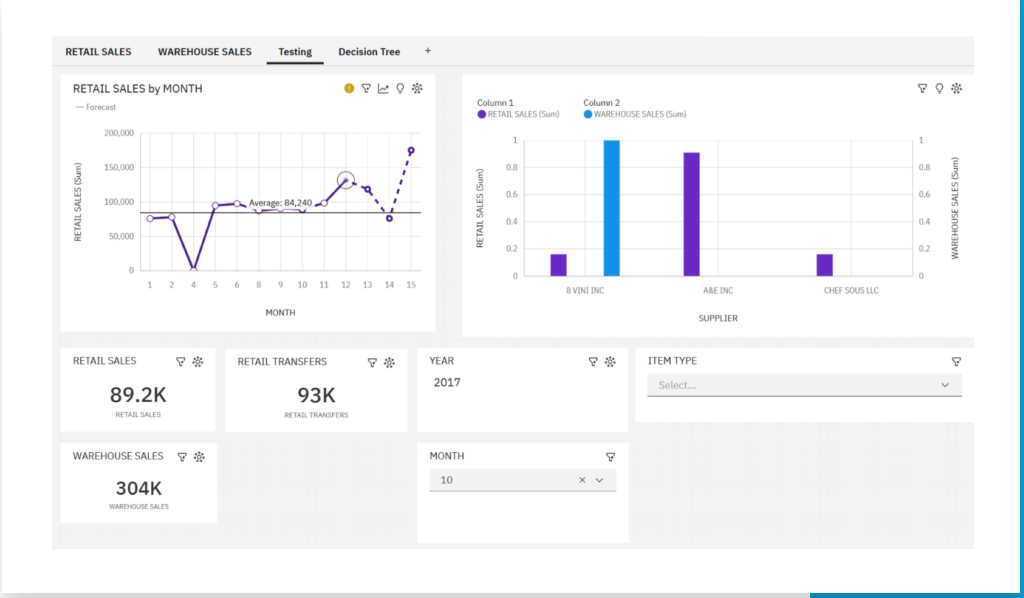
- Automatically highlights key changes in data
  - Example: Month 8 highest warehouse sales (382K+)
  - Example: Beer category sales surge from Month 4 to 5
- Flags anomalies early
  - Supports proactive adjustments in ordering & promotions
- Saves time on manual interpretation

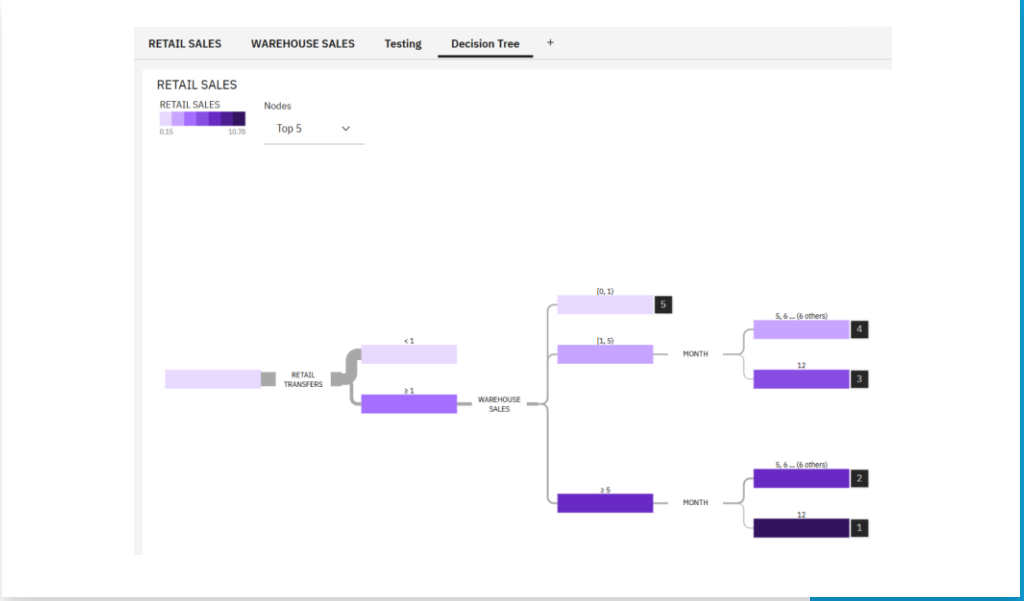




Decision Tree & Advanced Visuals

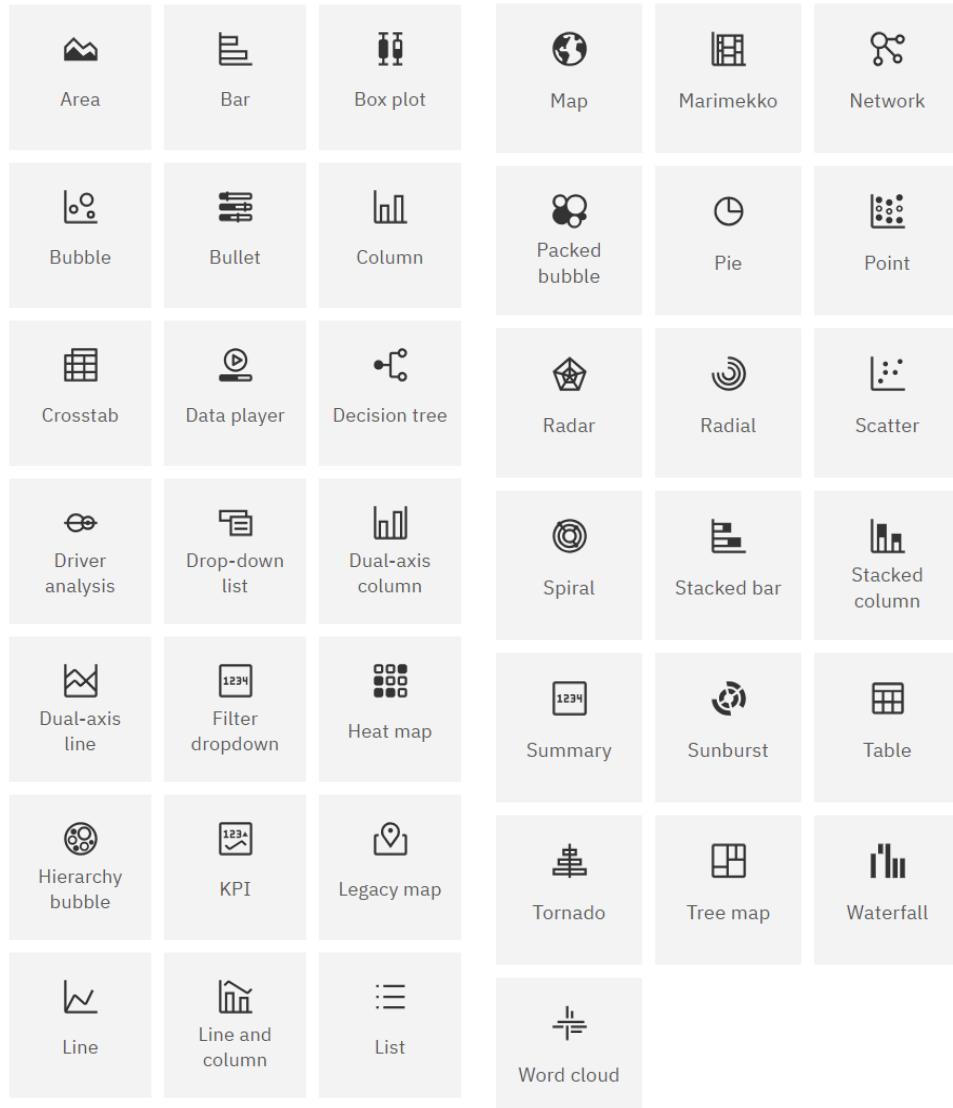
- Dashboard monitored retail sales, warehouse transfers, supplier performance
- AI-generated decision tree
  - Shows how transfers, warehouse sales, and months affect demand
- Advanced visual options for deeper insight
  - Heat maps, sunburst diagrams, waterfall charts, radar charts, word clouds





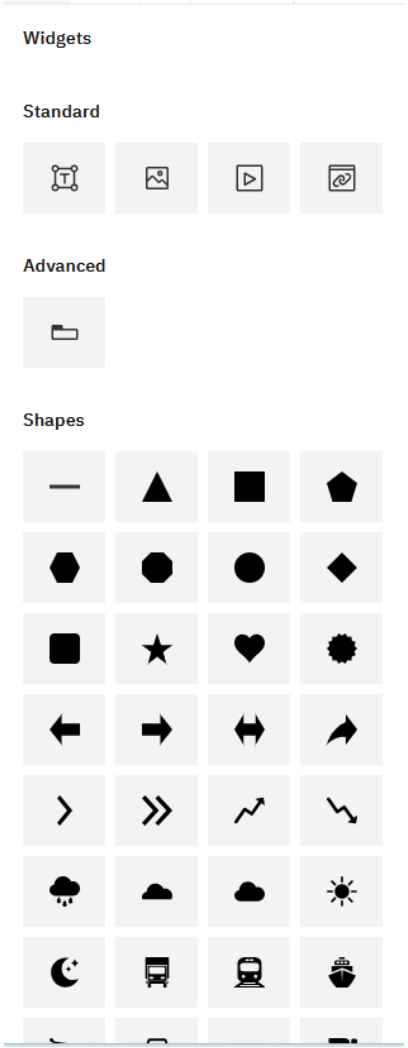
Visualizations

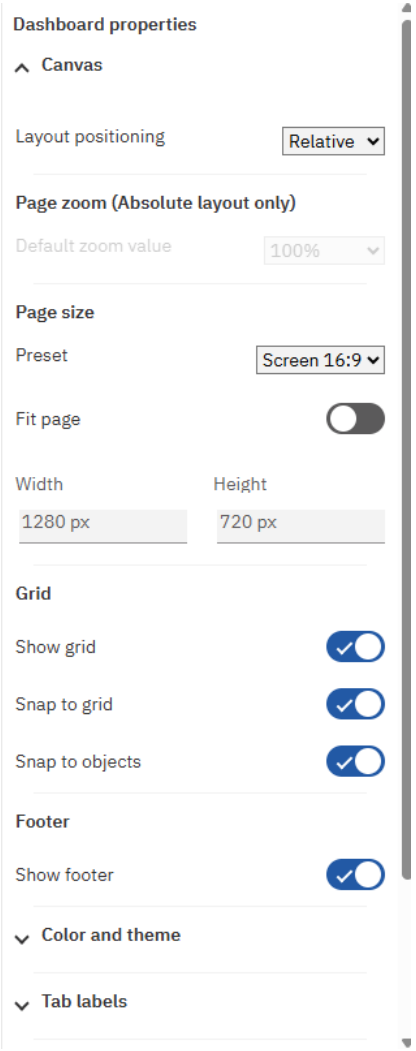
System | Custom

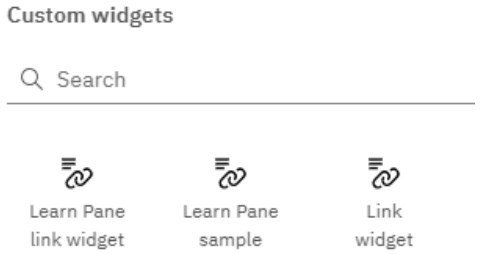


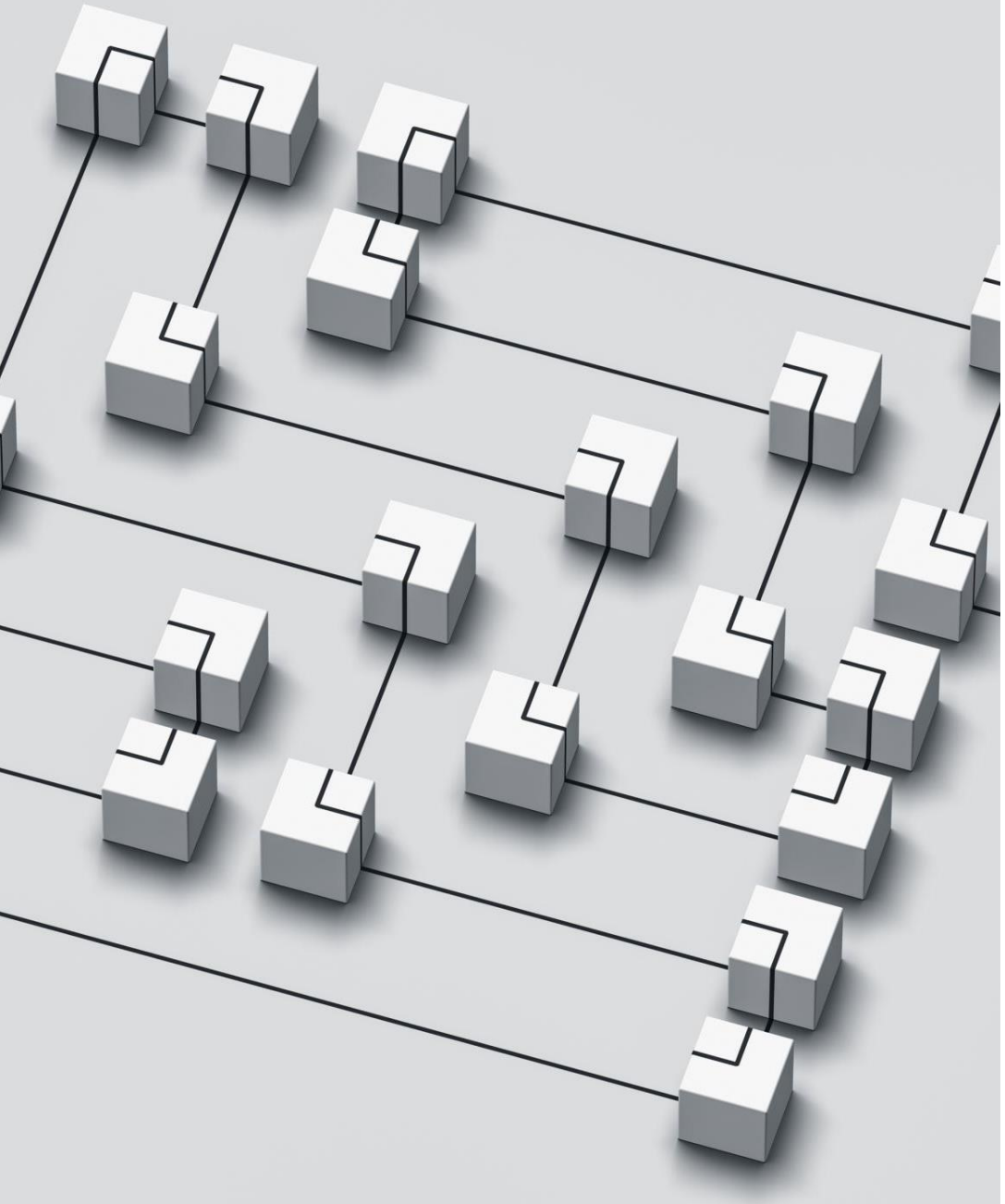
Widgets & Dashboard Properties

- **Regular widgets**
  - Images, videos, text boxes, shapes, containers, advanced elements
- **Custom widgets**
  - Specialized tools, external web content, unique visualizations
- **Properties panel**
  - Page size, layout, alignment, themes, color schemes, tab labels









Data Integration & Connectivity

- Integrates multiple data sources into one model
  - Warehouse, POS, supplier databases
- Eliminates silos → improves forecasting accuracy
- Calculated measures from multiple sources
  - Example: warehouse-to-retail ratio by supplier
- Dynamic filters
  - Updates metrics instantly across all visuals

Experience & Customization Options

- Focus on usability, simplicity, clarity
  - Critical for SMEs
- Affordable, intuitive interface
  - 63% say Cognos supports financial decisions
  - 66% value data visualization (Magoma et al., 2021)
- Custom layouts & themes
  - Interactive filters, synchronized across visuals
- Calculated fields for dynamic updates

Summary of Features

IBM Cognos = dynamic decision-support system

Combines forecasting, AI insights, multiple visualization formats

Enables timely, confident decisions

Reduces forecasting errors & optimizes inventory

Competitive Landscape, Strengths, Case Studies, and Recommendations

Competitive Landscape

Competitors: Power BI, Tableau, Qlik Sense, SAP Analytics Cloud, Looker

Cognos strengths: AI-driven insights, scalability, governance

Each tool has unique strengths & limitations

Feature Comparison Highlights

- **Cognos:** Built-in AI Assistant, advanced forecasting, 100+ data connectors, enterprise security
- **Power BI:** Low cost, Microsoft ecosystem
- **Tableau:** Visualization & storytelling leader
- **Qlik Sense:** Associative data model, predictive modeling

Strengths of Cognos

- **AI insights** for non-technical users (e.g., hospital network queries)
- **Scalability:** suitable for SMEs & global enterprises
- **Flexible deployment:** cloud, on-prem, hybrid
- Strong security & compliance features

Weaknesses of Cognos

Higher starting cost than Power BI

Less visual creativity than Tableau

Smaller community than Microsoft tools

Platform	Strengths	Limitations	Example Use Case
Microsoft Power BI	Affordable, strong Microsoft integration, user-friendly	Limited with large datasets; advanced AI features cost extra	Small bakery using Microsoft 365 for sales dashboards
Tableau	Best-in-class visualizations, strong storytelling	Expensive, steep learning curve	Marketing agency creating interactive client visuals
Qlik Sense	Associative data model, flexible analysis	Complex for beginners, performance with big datasets	Logistics firm optimizing delivery routes
SAP Analytics Cloud	Integrated BI, planning, and predictive analytics	Less value outside SAP ecosystem; higher cost	Manufacturing firm with SAP ERP for inventory planning
Looker (Google Cloud)	Embedded analytics, centralized data modeling	Requires SQL skills; high licensing cost	E-commerce company embedding dashboards into apps

Case Study 1 – European Supermarket Chain

- **Challenge:** Forecasting demand accurately
- **Solution:** Integrated POS & warehouse data with ML
- **Result:** 33% error reduction, €170M annual savings

Case Study 2 – Global Manufacturing Company

- **Challenge:** Data scattered across 20 ERP systems
- **Solution:** Centralized reporting hub with Cognos
- **Result:** Reporting time cut from 2 weeks to 2 days; downtime reduced by 15%

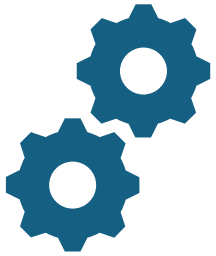
Case Study 3 – Local Retail Store Chain

- **Challenge:** No real-time inventory insight
- **Solution:** Dashboards for daily sales & inventory
- **Result: 8%** profit increase in 3 months

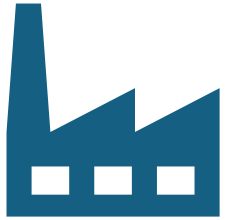
Recommendations

Start	Start small, scale later
Use	Use correct license per role
Integrate	Integrate all key data sources
Train	Train staff on AI insights

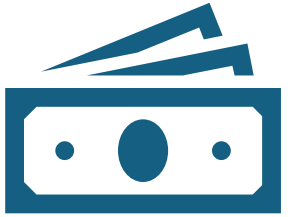
Conclusion



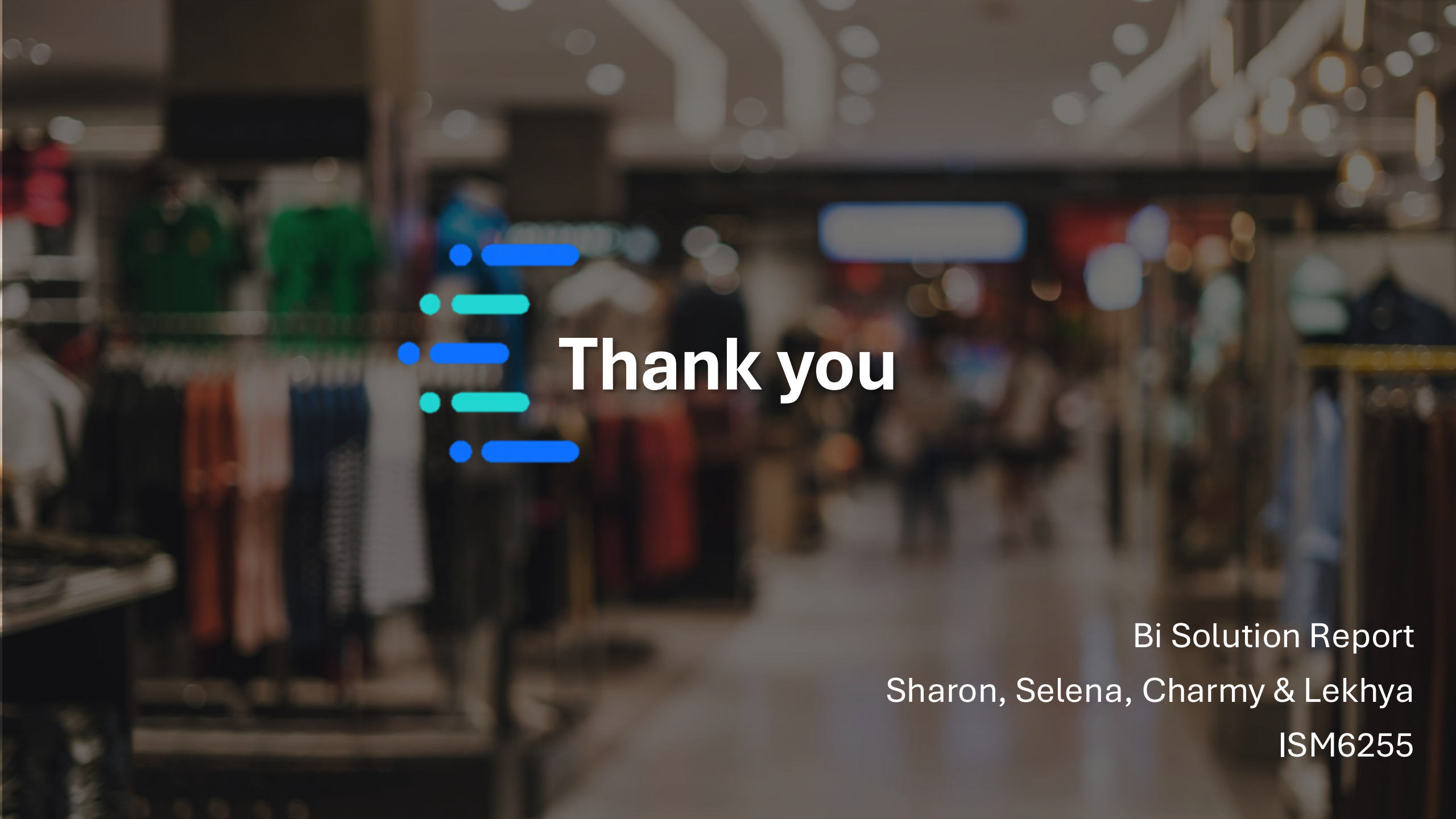
Cognos: More than BI—predictive & governance tool



Ideal for compliance-heavy industries



Strategic choice despite higher cost



Thank you

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