Quicker and More Accurate Insight into Supply Chain Data: An Updated Guide to Leveraging the Latest Analytical Capabilities from SAP

Matt Campbell
SCMO2
What We’ll Cover

- What’s required to have a robust supply chain analytics strategy?
- Why has it been so challenging and costly to build in the past?
- What SAP analytics solutions are available?
- How to determine which solution is right for you
- How to be successful with an analytics transformation project
- Wrap-up
What Supply Chain Performance Analytics Are Needed for Your Business?

• **Metrics should help you answer three questions**
  1. Where do we want to go?
  2. How do we get there?
  3. How will we know when we have arrived?

• **Tracking metrics allows your business to:**
  - Assess performance improvement over time
  - Compare your performance to industry benchmarks
  - Align individual or department behaviors with corporate goals
What Type of Analytics Are Required in Supply Chain Planning

- Can classify analytics into categories
  - Key Performance Indicators (KPIs) and Operational Measurements to drive value
  - System Usage/Plan Quality
Linking the Vision to Operations

- Start by establishing the vision and mission
- Align KPIs with the vision and mission

Identify products, customers, competition, socioeconomic environment

Overall missions & goals of the company, recognition of distinct core competencies

The Corporate Strategy and associated needs drive the performance management process

Market & External Environment Analyses

Corporate Strategy

Future Direction (Global strategy, new products & services, etc.)

Competitive Priorities (Cost, Quality, Time, Price, etc.)

Functional Area Strategies (Supply Chain, Marketing, Finance, etc.)

Link Corporate Strategy with Competitive Priorities

Key Performance Indicators
How to Determine What You Should Measure

- Aligning KPIs with the vision and mission

Vision
- Earn a premium on our cost of capital
- Help our customer improve
- Ensure sustainability

Business Model
- Commodity Products
  - Transparent Pricing
  - Difficult to Differentiate

Competitive Priorities
- Lower Price
  - Reliable Delivery
  - Consistent Quality

KPIs
- Supply Chain Costs
  - On-Time Delivery
  - First-Pass Prime Yield

Tip
- Performance Management is a “Top-Down” Process
- Important to link KPIs to every employee’s personal compensation
Value Creation Drivers

Value Drivers

- Pricing
- Product mix
- Delivery performance
- Innovation (product and business models)
- Variable manufacturing cost
- Raw material costs
- Shipping costs
- Packaging costs
- Fix manufacturing costs
- Process innovation
- Transport costs
- Fixing inventories
- Receivables
- Forecast reliability
- Payment terms/dunning
- New investments
- Investments in expansions
- De-bottlenecking
Analytics for Driving Value

- Reducing costs and increasing profitability analytics
  - Total manufacturing cost per unit excluding materials
  - Manufacturing cost as a percentage of revenue
  - Net operating profit
  - Productivity in revenue per employee
  - Average unit contribution margin
  - Return on asset/return on net assets
  - Energy cost per unit
  - Cash-to-cash cycle time
  - Customer fill rate/on-time delivery/perfect order percentage
Analytics for Driving Value (cont.)

- Optimizing inventory analytics
  - Inventory turns
  - Working capital: inventory as % of NCS
  - End of month inventory
  - Case fill service rate
  - Days of supply
  - Forecast bias, variation, accuracy
  - Inventory aging
  - SKU management
  - Donation/destruction
Analytics for Driving Value (cont.)

- **Improving efficiency**
  - Throughput
  - Capacity utilization
  - Overall equipment effectiveness (OEE)
  - Schedule or production attainment
  - Downtime in proportion to operating time
Analytics for Driving Value (cont.)

- Customer experience and responsiveness analytics
  - On-time delivery to commit
  - Manufacturing cycle time
  - Time to make changeovers

- Improving quality
  - Yield
  - Customer rejects/returns
  - Supplier quality incoming

- Increasing flexibility and innovation analytics
  - Rate of new product introduction
  - Engineering change order cycle time
Analytics for Measuring Plan Quality and Adherence

- **Manufacturing schedule adherence (the absolute variance of actual production to scheduled production)**
  - When manufacturing over or under against plan, either service level or inventory investment is adversely affected

- **Solution quality (for advanced planning)**
  - Measure the percentage of orders that are manually changed by planners before they are executed (production, purchases, and shipments)
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APO Integrated with SAP BW (Not on HANA)

- No standard reports in APO (only some alerts)
- APO Datamart not designed for performance required to run reports
- So, custom reports must be developed in SAP BW
- Data must be replicated from APO planning areas into BW to get updated information
- This can be very slow depending on data volume
Customer Pain Points with APO/BW Reporting Solutions

• Missing decision support for ad hoc inquiries
• Dashboarding/reporting for APO data is not available without BW
• Data loading is very time consuming, no delta load capabilities
  ♦ “I have to wait until the next business day to see updates in my reports”
• Sub-daily planning processes may not be possible due to long loading times
• No delivered standard reports or business content in APO
• No aggregated views available to look at product groups, regions, and other hierarchy levels
  ♦ There is too much information at lower levels
• APO is not as user friendly as desired
• Visualization into APO data has always been a gap
Complex, Confusing, Inflexible, Slow, Costly

- Every time a new supply chain reporting requirement is requested ...
What Customers Require in a Supply Chain Analytics Solution

- Better decision making with near real-time information
- Ability to quickly analyze relevant planning situations at multiple levels of aggregation
- Visibility into key supply chain planning data in an easily consumable way
- Less time spent compiling, generating, and waiting for reports
- Ability to easily create ad hoc data models for analyze scenarios
- Standard delivered business content
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SAP Business Intelligence Platform

- Most of the business intelligence tools available can be utilized to build custom supply chain reports, dashboards, and alerts
- The architecture is the key differentiator
  - SAP BW (not on HANA) requires periodic full data loads
  - SAP BW on HANA allows for reporting with near real-time data
- SAP BusinessObjects Business Intelligence platform 4.1 bundles many of the BI tools available into one product offering
- No supply chain standard analytics delivered with the tool
SAP Business Warehouse on HANA Solution

Data source (APO, BW, ECC) — SAP HANA database — BI tools

LOAD

MODEL

SAP HANA Studio

ANALYZE
Simplifying the SAP BusinessObjects BI Portfolio

- Because SAP’s Business Intelligence product offering has grown over the past several years, it has become confusing for customers to know what to use.
- SAP has simplified things by bundling the offering in SAP BusinessObjects Business Intelligence platform 4.1.
SAP BusinessObjects BI Portfolio

- Ability to connect BI clients for ad hoc, self-service reporting by experienced business users

Create visual appealing Ad Hoc Reports using SAP Lumira

Create tabular reports allowing drill down in an Excel like environment

Custom Calculation Views

SAP Data Model

SAP HANA DB

Stay connected and updated to Data in SAP HANA

Source: SAP
SAP Lumira

- Tool for easily building custom data visualizations on a lightweight in-memory server
- Can quickly analyze large volumes of data and create data stories
SAP HANA – Predictive Analysis Library

- Although the SAP Business Intelligence tools do not have many standard delivered supply chain reports, SAP Predictive Analysis Library (PAL) has a robust analytics library.
- SAP Predictive Analytics is a statistical analysis, data mining, and predictive analytics solution that can be utilized with SAP BusinessObjects BI.
- Allows more sophisticated analysis using Big Data (ideal for data scientists).
- Large list of algorithms provided for:
  - Associated Analysis
  - Cluster Analysis
  - Outlier detection
  - Data Preparation
  - Classification Analysis
  - Probability Distribution
  - Time Series Analysis
  - Regression
  - Statistical Functions (Univariate)
  - Statistical Functions (Multivariate)
  - Link Prediction
Supply Chain Info Center (SCIC) – Powered by HANA
For APO Reporting

• Solution
  • Out-of-the-box analytical reporting with streamlined data load
  • Decision support based on near real-time information
  • Pre-defined dashboards for different use cases for APO Planning
  • Use cases based on best practices for operational reporting on APO data leveraging the full potential of HANA
  • Jump right from Analysis into APO Transactions

• Key benefits
  • Increased performance for APO analytics by order of magnitudes allows close to real-time reporting
  • Highly attractive, user-friendly UI design
  • Simplified approach for operative reporting (e.g., no BW reporting framework)
  • Reporting on Data aggregates possible (product family grouping)
Supply Chain Info Center (SCIC) Use Cases

- **Demand Planning**
  - Forecast Accuracy
  - Forecast Bias
  - Current Consumption
  - Demand Waterfall Analytics

- **Supply Network Planning**
  - Supply Projection Analytics
  - Stock Coverage Analytics
  - Capacity Analytics

- **Other**
  - Order Fulfilment, Custom KPIs
Supply Chain Info Center (SCIC) – Mobility

- Fiori allows planners to track short-term supply shortages, order confirmation, or demand fluctuations on different levels of aggregation; available on your tablet or any mobile device.

See how demand is developing over time using Forecast Waterfall Analysis.

KPI Overview Dashboard views can be easily personalized and made available on mobile devices.
Supply Chain Info Center (SCIC)
Capacity Analytics Available in SCIC

- **Resource-centric view**
  - Aggregated views on location or resource groups
  - Visual alerting of critical load situations
  - Analyze capacity patterns between resources
  - Simulate resource overtime (planned)
  - User-friendly, graphical drill down to consuming products

Material Groups -> Drill down to products -> Drill down to location
Can incorporate custom defined KPIs to dashboards within same look and feel

Create custom calculation views for specific KPIs

Can analyze custom key figures from APO planning books

Supplemental Information Center – Custom Analytics

Custom Calculation Views

Create custom calculation views for specific KPIs

SAP Data Model

SAP HANA DB

Source: SAP

Can incorporate custom defined KPIs to dashboards within same look and feel
Deployment Options for Supply Chain Info Center

SAP APO with SAP HANA Side-by-Side

- Full and delta replication of APO data for snapshot and near to real time analytics

SAP APO on SAP HANA database

- SAP Landscape Transformation (SLT) Replication
Supply Chain Info Center – Value Proposition

- View data by aggregates: time based, product, location, and resource
- Out-of-the-box support for custom key figures and characteristics
- 25+ pre-delivered KPIs for demand and supply planning
- Personalization features for user-specific views
- User-based favorite selection IDs
- Insight-to-action navigation to SAP APO interactive planning books directly from dashboard
- KPI Framework to support custom KPI calculations
- State-of-the-art usability with HTML5 UIs on any device
Integrated Business Planning – Supply Chain Control Tower

Solution

- Enable supply chain professionals to navigate, analyze and profitably manage the end-to-end supply chain in real-time
- Understand current supply chain status with flexible dashboards
- Provides historical and forward looking KPIs in a single view
- Enable user-configured dashboards and analytics
- Monetized impact of exceptions

Key benefits

- Increased on-time delivery performance
- Reduce supply chain cost
- Increase supply chain agility
- Decrease overall inventory levels while reducing risk

Source: SAP
Supply Chain Control Tower – Homepage and Analytics

- Flexible, role-based, tile dashboards
- Tile resizing and positioning on dashboards with single-value display of KPI values based on key figure
- Dashboard sharing by role and user
- Option for adding process visualizations to dashboards
Supply Chain Control Tower Architecture

- Integrates supply chain performance data from multiple systems
SAP Supply Chain Control Tower – Use Cases

- **KPI Dashboard**
- **Global Visibility**
- **Alerting to Action**
- **Task and Case Management**
Day in the Life Use for a Global Supply Chain Manager

Supply Chain Control Tower

- Understand the global supply chain status
- Identify the most important issues
- Analyze the Situation in more detail
- Perform rapid what-if analysis on how to resolve?
- Collaborate with key people to resolve the issue
Supply Chain Control Tower – Custom Analytics

• Custom alerts can be developed to provide context and priority
• Can understand the situation, impact, and analyze the end-to-end material flow in context of the alert

• Flexible alert conditions configurable by business users
• Monetized measures allow for prioritization based on business impact

Source: SAP
Control Tower KPI Definitions Available

- 37 SAP pre-delivered KPIs currently available in IBP-Control Tower (Version 4.0)
  - 20 generic SCM KPIs (i.e., Supply shortage %)
  - 17 SCOR based KPIs (i.e., POF Delivery Date Accuracy)

- Should expect more KPIs to be released in future releases

- Build you own KPIs available now

- Flexible model for customer defined:
  - Attributes
  - Hierarchies
  - Key figures
  - Calculations
IBP – More Embedded Analytics

- Most of the new SAP Supply Chain products are being developed and released with analytics included in the product offerings
- Analytics included in all of the IBP modules and DSiM

Source: SAP
SAP APO Demand Planning Add-In for Excel

- Use of the Demand Planning add-in for easy data entry to SAP APO
- Extension of Excel worksheets with local content (chart, formulas)
- Integrated management of SAP APO notes and Excel comments
- Excel flexibility for data analyses
- No SAP GUI needed
- No SAP APO knowledge is necessary for casual users
- Enter data in Online or Offline mode

Can add rows and columns on the fly to do calculations in Excel.
Can add conditional formatting.
SAP APO Demand Planning Add-In for Excel (cont.)

- Graphics that are filtered to specific combinations may also be viewed in table form
- Not designed for reporting, but has limited use cases for DP
What About Supply Chain Performance Management (SCPM)?

- 350+ Supply Chain KPIs delivered in SCPM
- SCPM has been removed from the SAP Price List
- Expect that some of the 350 KPIs will eventually be incorporated into IBP-Control Tower
Don’t Forget – APO Alerts

- APO Alert Monitor is designed to drive exception-based planning process based on real-time planning data
- APO has 100s of standard delivered Alerts covering Supply Planning, Production Planning & Scheduling, and GATP
- Can develop endless custom alerts using macros and by developing function modules
- Can drill directly into planning situations from Alert Monitor
APO Enhancements – Enhanced Product Planning (SCM7.0 EHP3)

- Cross-system navigation (direct navigation to ERP orders)
- New product-centric view providing element list
- New concept for notes management
- Side panels for additional data and information

Source: SAP
New navigation panel with order exploration and KPI information

View with order details, alerts, & pegging context
APO Enhancements – Planner’s Home Page (SCM7.0 EHP2)

Personalized Alert KPIs for quick overview

Favorite Selections and Reports

Date Selection and Filtering

Micro chart showing Trend of KPIs/Series in my Objects

Collaboration on latest events and planning activities
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SCMO2 Supply Chain Analytics Roadmap

- Understand corporate strategic objectives, vision, and goals
- Assess market and external environment
- Evaluate competitive priorities and future direction
- Develop functional area strategies
- Identify metrics that are vital measurements, that mean the most to your business in terms of meeting strategic objectives
- Get buy in from key stakeholders
SCMO2 Supply Chain Analytics Roadmap (cont.)

- Understand and agree the meaning of each of the metrics
- Understand the mechanics of each of the measurements, and what factors influence your results
- Identify any areas for improvement in your existing processes
- Set goals based on improvement areas
  - Aggressive yet attainable
  - Benchmarked against like companies, or % improvement year over year
- Align compensation plans for all employees with KPIs and targeted improvement
• Understand the corporate reporting and analytic tools available in-house and the long-term SAP reporting strategy
• Evaluate costs of SCM analytics tools not currently owned
• Consider how KPIs will need to be consumed across different user groups (executive dashboards, data analysis, reports, and mobility)
• Evaluate how many KPIs can be met using standard calculations available in each of the tools being considered
• Perform an analysis of development costs, performance, scalability for each of the tools considered
• Agree strategy and begin development
## SAP Supply Chain Planning Tool Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>APO Integrated with BW/BusinessObjects</th>
<th>BW/BusinessObjects on HANA</th>
<th>SCIC</th>
<th>IBP-Control Tower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Delivered Supply Chain KPIs</td>
<td>None</td>
<td>None</td>
<td>25+ for Demand &amp; Supply, some GATP</td>
<td>Currently 37 KPIs, but this will increase</td>
</tr>
<tr>
<td>Flexibility to build custom KPIs</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
<td>Yes</td>
</tr>
<tr>
<td>Near Real-time Integration, High Performance</td>
<td>Very Slow APO to BW data Replication</td>
<td>Yes (HANA based)</td>
<td>Yes (HANA based)</td>
<td>Yes (HANA based)</td>
</tr>
<tr>
<td>Delta Replication</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cloud or On-Premise</td>
<td>Both</td>
<td>On-premise or Hosted using HEC by SAP</td>
<td>On-premise or Hosted using HEC by SAP</td>
<td>Only Cloud (currently)</td>
</tr>
<tr>
<td>Mobility/Fiori Enabled</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost to Implement</td>
<td>High (all custom)</td>
<td>High (all custom)</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Ready for Prime Time?</td>
<td>Yes, but not the long-term solution due to performance issues</td>
<td>Yes - good platform to develop full SC reporting capabilities, but everything will be custom built</td>
<td>Limited number of KPIs and not much future development planned</td>
<td>Still a new product, but will be a good solution when more KPIs &amp; connectors are added</td>
</tr>
</tbody>
</table>

### Decision Point

1. **Analyze Business Strategy & Map KPIs**
2. **Agree KPI Definitions, Set Targets, Align Comp**
3. **Evaluate Analytic Tool Options**
4. **Develop Analytics & Implement Strategy**
5. **Monitor Results & Corrective Action**
SCMO2 Supply Chain Analytics Roadmap

- Develop specifications for each custom KPI
- Build reports and dashboards
- Develop a robust training and change management strategy
- Begin measuring KPIs to get a baseline
- Implement compensation incentive structure
- Deploy analytics across organization
SCMO2 Supply Chain Analytics Roadmap (cont.)

- Continuous monitoring of KPIs
- Agree frequency of KPI review and perform root cause analysis
- Develop detailed action plans for improvement including who, what, and when
  - Make sure that actions do not negatively effect other areas
- Track progress, manage resources, and adjust goals as required
- Ensure strong leadership, committed participation, and confident employees to drive results
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Keys to Success on Analytics Projects

- Focus on a few (3-5) key metrics in each area
- Supply chain measurements should have an owner (person or department) responsible for achieving agreed upon target on the metric
  - Tying incentives to metrics can be very effective
- Supply Chain Management needs to encourage and support the process changes to achieve the desired targets
- Spend time harmonizing metrics and KPI definitions early in the project before you start developing reports and dashboards
  - Empower someone to make hard decisions about global definitions
Pitfalls to Avoid on SCM Analytics Projects

• Don’t get too hung up on the definition
  • It is better to agree on a definition and start measuring improvement, than spending months debating the options

• Measurements alone are not the solution to your weak areas!
  • Need to develop action plans for corrective action

• Depending on your starting point, analytics projects often require a major change management effort to be successful
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Where to Find More Information

- Free Trial – SAP Lumira System Access

  - [www.advcoretech.com/ConfPres/BASF%201.pdf](http://www.advcoretech.com/ConfPres/BASF%201.pdf)

- Supply Chain Metric.com
  - [http://supplychainmetric.com/](http://www.slideshare.net/SAPTechnology/hana-sps08-newpredictiveanalysislibrary)

  - [www.slideshare.net/SAPTechnology/hana-sps08-newpredictiveanalysislibrary](http://www.slideshare.net/SAPTechnology/hana-sps08-newpredictiveanalysislibrary)
7 Key Points to Take Home

• Make sure you define your company vision and mission before defining which KPIs to measure

• SAP Business Intelligence on HANA will provide a high-performance platform to build your own custom analytics with near real time data

• The Supply Chain Control Tower is a new HANA-based platform that provides pre-delivered supply chain analytics and allows for custom analytics to be built based on data from APO, ECC, IBP, or any external data source

• The Supply Chain Info Center also is a HANA-based platform that provides some pre-delivered supply chain analytics and allows for some custom analytics based on APO data
7 Key Points to Take Home (cont.)

- There are many considerations when determining which tool will best meet your needs, including the timing for implementation, performance requirements, mobility, and budget.
- Make sure to have management buy-in and a top down approach to be successful.
- Tie KPI improvement to individual’s compensation to align behaviors with desired business results.
Your Turn!

Questions?

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Please remember to complete your session evaluation
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