Best Practices for Supply Chain Optimization in SAP for Vendor Managed Services

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About Presenters

Ken Kumar, Director – IT Applications, Celgene
• Ken’s expertise is in Supply Chain and Business Applications in Life Sciences, & CPG/Retail. Ken has more than 17 years of SAP system expertise and over 20 full lifecycle SAP implementation experience. He has successfully architected several applications and led many large implementations.

Gautam Mandal, Sr. Manager – SAP, Cognizant
• Gautam has 15 years of SAP implementation experience in supply chain and customer solution area. Gautam has done over 10 full cycle SAP implementations in Life Sciences, Hi-Tech, Manufacturing, Energy & Utility, and Chemical industry sectors.
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Agenda

- About the Presenters
- SAP Project Drivers
- Approaches for ERP Roll-out
- Classic SAP Application Overview
- A typical SAP ERP Landscape Illustration
- Adapt SAP ASAP methodology to Validation Protocols
- Supply Chain Process using Vendor Managed Services
  - Demand / Supply Planning
  - Contract Manufacturing Execution
  - Product Distribution using 3PL Service
- Conclusion
Business Drivers can include the following

- Consolidate legacy systems into one system for quicker access and better customer service
- Separation of business processes and system from prior divestiture
- Simplify and improving the current business process
- Foundation to build on future growth
- Reduce the amount of paper reports contributing to a greener environment
- Optimize Legacy Pricing structures
Approaches for ERP Roll-out

- **Big- Bang**
  - Big Bang with completed functionality
  - High Risk and no real time evaluation of success until later

- **Multiple phased**
  Typical recommended strategy is multi-phase approach with manageable functionality and/or Location
  - Phase 1: Finance, Order to Cash, Chargeback, and Procurement
  - Phase 2: Manufacturing Operations – MM/PP/QM/WM
  - Phase 3: Supply chain Roll-out
SAP integrates departments and processes across Company into one system, running on a single database, enabling various departments to share information and communicate with each other. The following SAP functions should be considered:

- **Finance & Controlling**
  - AR, AP, GL, Asset Accounting
  - Cost Center, Cost Element, Profit Center Accounting, Internal Order and Product Costing

- **Sales & Distribution**
  - Order to Cash

- **IP Vistex**
  - Contract Management and Chargeback Processing

- **Material Management**
  - Procure to Pay
  - Subcontracting
  - Stock transfer
  - Batch Management and Shelf life

- **Warehouse Management**

- **Production Planning**
  - Demand Management, MPS / MRP
  - PP-PI: Process Orders

- **Quality Management**
  - Quality Inspections
  - Quality Notifications
In addition to the business utilizing the business functionality of SAP, SAP houses data elements that are key outputs for the business users for decision making:

- Sales Reporting: A daily sales revenue report
- Purchasing Approval status report
- Chargeback report
- Order Reconciliation report
- Shipment report
- Government reports – ASP, AMP, VA report
- Pick lists in warehouse
- Packing Slips
- Invoice
- Goods issue document
- Purchase orders
A typical ERP Landscape Illustration with Vendor Managed Services

**SAP ECC 6.0**

- **Chargeback Processing (IP Vistex)**
- **Production Planning (PP)**
- **Quality Mgmt (QM)**
- **Warehouse Mgmt (WM)**
- **Material Mgmt (MM)**

**Finance & Controlling**
- General Ledger
- Bank Accounting
- Accounts Payable
- Accounts Receivable
- Fixed Assets
- Cost Center Accounting
- Profit Center Accounting
- Internal Orders & Product Costing

**Order Processing (SD)**

**3PL WMS System**

**SAP GRC**

**SAP BI**

**SAP RWD**

**BPC**

**SAP Solution Manager**
(Implementation, Support, documentation, Issue, defect tracking)

**Trading Partner**

**Direct Customer**

**EDI System (GIS)**

**Contract Manufacturer System**

Excel / Fax
Adapt SAP ASAP methodology to Validation Protocols

ASAP Methodology coupled with GxP Validation Process and SOX compliance

**Solution Manager**

**Business Benefits**
- Deliver Consistent Validation documents
- Reduction of cost of validation

**Installation Qualification (IQ)**
Validates hardware and software installation of Quality and Production systems

**Operational Qualification (OQ)**
Validates integrated systems/ processes. Generally performed by IT/ users in Quality system. It is equivalent to Integration testing or UAT

**Performance Qualification (PQ)**
Validates critical processes in Production system. Typically performed by users in Production system (PRD)

**Validation Master Plan**

**User Requirements**

**Business Process Models & Functional Specifications**

**Design & Program Specifications**

**HW/SW Installation**

**Installation Verification**

**Configuration Customizing**

**Acceptance Testing**

**Integration/System Testing**

**Unit Testing**

**Release**

**PQ**

**OQ**

**IQ**
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In the Context of Vendor Managed Services in Supply Chain operations, the following processes can be outsourced:

- Contract Manufacturing
- Finished Goods Distribution using 3PL

**Contract Manufacturing**

- A company plans for in-house manufacturing and external procurement
- Some manufacturing operations are subcontracted to a Third Party Contractor
  - Specialized operations managed by company and subcontract general services
  - Complete outsourcing of manufacturing operations
  - Contract manufacturing to meet additional demands
- Finished Goods Quality assurance is performed by Contractor and Company
Finished Goods Distribution using 3PL

- 3PL manages the Finished goods warehouse
- 3PL ships the products to customer based on ship order notification from Company

Key Features:

- Long / Medium term supply chain planning collaboration between Company and Contractor and demand/supply optimization
- Short term manufacturing schedule optimization e.g. sharing weekly production schedule for firm zone.
- Production plan amendment by Company or Contractor in collaboration if there is a resource constraint
- Contractor Manufacturing execution and process hand-off
- Collaborative Finished Goods Quality assurance
- Product cost calculation for Contract Manufacturing
- Distribution and Inventory optimization using 3PL
Supply Chain with Contract Manufacturing Operations - Schematic Diagram

SAP ECC6.0 system

- Demand Planning
- Supply Planning
- Planned Orders for Semi-Finished
- Process Order for In-house Mfg (Semi-Finished)
- Subcontract PO & issue Semi-Finished
- Goods Receipt against Subcontract PO
- Vendor Invoice Processing
- Inspection Lot

Contractor System

- Demand / Supply Plan
- Manufacturing of Finished Goods
- Quality Inspection
- Delivery
- Customer Invoice Processing
- Invoice
- Payment
- Finished Goods
- Inspection Lot

Closed Loop Process

- PR for Raw Material procurement
- PP-PI
- PP-PI
- Issue Components (Semi-finished Product)
- Finished Goods Inventory
- Finished Goods Distribution

Material Management

SAP ECC Demand Management
SAP ECC MPS and MRP
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Demand /Supply Planning: SAP ECC6.0 Demand Mgmt / MPS/ MRP based solution

- **Demand Plan using SAP ECC6.0**
  - Demand is generated and managed using SAP Demand Management as Plan Independent requirement (PIR)
  - Sharing Production plan data between Company and Contractor
  - Contractor performs their Demand / Supply and Capacity Plan and high level agreement is made

- **Supply Plan using SAP ECC6.0 – MPS and MRP**
  - Monthly MPS run to get all Finished Goods manufacturing plan
  - Weekly MRP generates Planned Order for In-house manufacturing and Purchase Requisition for external procurement and subcontract products
  - Capacity planning to review constraint resources
  - Communicate Medium Term production schedule to Contractor and agreement is reached. Any changes are fed back to Planning cycle
  - Share Final weekly production schedule for firm zone
Demand / Supply Planning : Alternative Approach

- Demand Planning using SAP-APO Demand Planner
- Supply Planning using SAP-APO SNP
  - Constraint base planning
  - Cost and implementation complexity is much higher
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Contract Manufacturing using PP-PI and MM
Subcontract Purchase Order (1)

- **Semi Finished Product Manufacturing using PP-PI**
  - Semi Finished Product is manufacturing using SAP ECC PP-PI Process Orders
  - SAP WM Material Staging functionality can be used to stage Raw Materials at shop floor

- **MM-Subcontract Order for Contract Manufacturing**
  - Semi Finished product is issued to Contractor against SAP ECC Subcontract Purchase Order
  - Contractor completes Finished Goods Manufacturing and delivers FG and report Semi Fished Product consumption
  - Receipt of FG and consumption of Semi Finished goods in SAP against Subcontract Orders
Contract Manufacturing using PP-PI and MM Subcontract Purchase Order (2)

- **Finish Goods Inspection and Release**
  - Inspection Lot is generated during Goods Receipt
  - Final release of FG will be carried out by Company. FG is released based on QA inspection report from Contractor and Company
  - Quality Notification functionality can be used for quality defect tracking and resolutions
  - The Release FG is moved to 3rd Party Logistics provider for Warehousing & Distribution
External Processing of Operations

- In this approach, Process Order operation steps using processed externally i.e. Contract Manufacturer.
- For example, Operation 20 is subcontracted to external Vendor and rest of the operations are managed in house.
Sub-Contracting

- Cost of Producing Semi-finished Material includes following inputs
  - Raw Material, Labor, Machine time, Manufacturing Overheads and Quality Overheads
- Cost of Producing FG Material includes
  - Bulk Material Cost, and Subcontracting Fee

External Processing

- Cost of Producing FG Material includes
  - Raw Material, Labor, Machine time, Manufacturing Overheads and Quality Overheads
  - Subcontracting Fee
SAP Configuration and Customization for Contract Manufacturing

- **Production Planning**
  - Demand Management
  - MPS
  - MRP
  - PP-PI: Process Order

- **Material Management**
  - Configure Subcontract Purchase Order
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Product Distribution using 3rd Party Logistics Services – System design consideration

- **Arms-Length Relationship**
  - Company and 3PL uses their own systems for internal operations
  - OTC and Inventory processes are integrated using EDI / interfaces
  - Provides Arm-length relationship with 3PL with independent infrastructure
  - Extendable for other providers easily
  - No SOX or Audit related issues
  - Typically higher investment in process design and maintenance

- **3PL using company’s IT infrastructure**
  - 3PL service personnel log-in in companies ERP system and perform relevant shipping and inventory management transactions
  - No investment in process or interface design
  - Manage separation of 3PL using tight Authorization control
3PL Arms-Length Relationship – Classic scenario for OTC and Stock Transfer

**Stock Transfer to 3PL Location**
- Stock Transfer Order (STO)
- Finished Goods
- STO - Delivery
- Goods Receipt Confirmation

**Order to Cash Processing**
- Customer Order
- Invoice
- Delivery
- PGI

**Inventory Management**
- Inventory Adjustment Transactions in SAP

**EDI / Interfaces**
- Advance Ship Notification (ASN)
- Warehouse Receipt
- Ship Order to 3PL
- Advance Ship Notification (ASN)

**3PL Warehouse**
- Goods Receipt at 3PL Warehouse
- Finished Goods
- Pick, Pack and Shipment

**Physical Inventory**
- Scrapping
- Reporting
SAP Configuration and Customization for 3PL Arms Length Relationship

- **Materials Management**
  - Configure Stock Transfer Order (STO) with delivery
  - SAP ALE/IDOC and EDI or custom interface with 3PL for
    - Shipment notification
    - Receipt confirmation
    - Inventory adjustment transactions

- **Sales & Distribution**
  - Configure Order, Delivery and Billing functions
  - SAP ALE/IDOC and EDI or custom interface with 3PL for
    - Ship order notification to 3PL
    - Shipment notification from 3PL
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Organizations are moving more towards virtual entity and managed services are becoming part of organization processes.

Integration of ERP with third party systems for vendor managed services is a must have requirement for effective control and reporting.

Integration with vendor managed processes is a challenging task for IT team.

SAP ECC system & processes provides a great deal of flexibility in process design and implementing best practice as described in two typical processes in the presentation e.g.,

- Third Party Contractor manages contract Manufacturing
- Finished Goods Warehousing & Shipment by 3PL Services
Questions?

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