Business Applications supporting Supply Chain Management (SCM)

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Global BA Lead Supply Chain and Procurement

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Who I Am

- 2002 Matriculation at German School in Pretoria (South Africa)
- 2006 B.Eng. Industrial Engineering @ University of Pretoria (South Africa)
- Supply chain trainee, coordinator and manager @ Avery Dennison (Netherlands, UK and Germany)
- 2013 M.Sc. Wirtschaftsinformatik @ University of Hamburg
- Business Analyst SC -> Global BA Lead Supply Chain and Procurement @ Avery Dennison
Who We Are

Avery Dennison is a global materials manufacturer of branding and information labeling solutions and functional materials for consumer goods, apparel, food, logistics, industrial and healthcare industries.

Number of employees worldwide
More than 32,000

Operations in more than
50 countries

Sales in 2020
$7 billion

Fortune rank as of the end of 2020
435
Our Businesses at a Glance

**Label and Graphic Materials**
- Label and Packaging Materials
- Graphics Solutions
- Reflective Solutions

**Retail Branding and Information Solutions**
- Tickets, Tags, Labels, and Embellishments for Retail Apparel
- Radio-Frequency Identification
- Printer Solutions

**Industrial and Healthcare Materials**
- Performance Tapes
- Adhesives
- Fastener Solutions
- Medical Solutions

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<th>Business Category</th>
<th>2020 Sales</th>
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<td>Label and Graphic Materials</td>
<td>$4.7 bil.</td>
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<tr>
<td>Retail Branding and Information Solutions</td>
<td>$1.6 bil.</td>
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<tr>
<td>Industrial and Healthcare Materials</td>
<td>$626 mil.</td>
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Business Applications supporting SCM

Classification: Avery Dennison - Public
Our Competitive Advantages

- Global scale; ~190 operating locations
  Recognized industry leader with a global footprint, including a strong presence in emerging markets

- Innovative materials science capabilities; vertically integrated in adhesives

- Innovative process technology

- Operational and commercial excellence

- Industry-leading innovations enabling functionality and sustainability
Avery Dennison Coating Machines
Avery Dennison Products
Avery Dennison End Products
Avery Dennison End Products
Supply-chain management has been defined as the "design, planning, execution, control, and monitoring of supply-chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally."
“Make to Order” Fulfillment Example

- A Customer in Ireland Orders a Speciality Product which requires Manufacturing
- The main manufacturing step (coating) can only be done in our French Factory in Champ-sur-drac
- All shipments into the Irish market are consolidated through our main Logistics hub in Athus
- The final manufacturing step (finishing) is done in the local Distribution Center in Dublin
- The final delivery to the Customer will be a small delivery vehicle to southern Ireland
Stakeholder Questions towards the Supply Chain (Current state)

- **Sales**: How many unfulfilled Sales Orders does this Customer have?
- **Finance**: Are there any outstanding Payments due and what risks are associated with this customers?
- **Procurement**: How much raw material is available in the production site and do we have an alternative approved supplier?
- **Operations**: When is the Production Planned for and do we require an overtime shift on the weekend?
- **Quality**: We received a Quality claim from the last production. Are there any other impacted Customers?
- **Trade Compliance**: Are deliveries travelling through the UK or will they travel by boat and stay within the European Union?
Digital Twin of the Current Supply Chain

Central ERP - Central System of Record

**MES**: Controlling the Shopfloor

**TMS**: Controlling Transport

**WMS**: Controlling the Warehouse

Business Applications supporting SCM

Classification: Avery Dennison - Public
Monitoring and Responding to Deviations in the Supply Chain

- EDW
- KPI Reporting
- Alerts
- Deviations
Stakeholder Questions towards the Supply Chain (Future state -> Planning)

- Sales:

- Finance:

- Procurement:

- Operations:

- Quality:

- Trade Compliance:
SCM Planning Matrix

- **Procurement**
  - long-term: Materials program, Supplier selection, Cooperations
  - mid-term: Personnel planning, Material requirements planning, Contracts
  - short-term: Personnel planning, Ordering materials

- **Production**
  - long-term: Plant location, Production system
  - mid-term: Master production scheduling, Capacity planning
  - short-term: Lot-sizing, Machine scheduling, Shop floor control

- **Distribution**
  - long-term: Physical distribution structure
  - mid-term: Distribution planning
  - short-term: Warehouse replenishment, Transport planning

- **Sales**
  - long-term: Product program, Strategic sales planning
  - mid-term: Mid-term sales planning
  - short-term: Short-term sales planning

**Flow of goods**

**Information flows**
Typical SCM Systems: Network Design
Typical SCM Systems: Forecasting

![Line chart showing observed and one-step ahead forecast over the years 2014 to 2018.]

Business Applications supporting SCM
Typical SCM Systems: Supply Planning
Typical SCM Systems: Detailed Scheduling
Typical SCM Systems: Transport Planning
Typical SCM Systems: Industry Specific Systems

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- **Show Cut Patterns**: Select the check box to show cut patterns in the solution.
- **Solution**: The solution is displayed in a grid with different colors indicating the placement of cuts. The cut patterns are:
  - 3x77.75/78 - 9 - 1x8 3x7.75 1x8 2x8.125 1x11.125 1x13.125
  - 2x77.625/78 - 7 - 1x8 1x9.75 2x11.125 1x13.125 2x13.25
  - 1x77.75/78 - 9 - 4x8 1x7.75 2x9.75 2x13.25
Key takeaways

- SCM: design, planning, execution, control, and monitoring of supply-chain activities
- Create a Digital twin of the current state of the Supply Chain
- Plan and orchestrate the future Supply Chain
- Differentiate between short, mid and long term planning
- Specific Algorithms and Solutions for different planning problems