***Supply Chain Management***

***Topic 2. Inventory, Logistics, Alliances***

Chapters out of Simchi-Levi Text.

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| **Inventory** | **Logistics** | **Alliances** |
| Chapter 2 | Chapter 7 | Chapters 8,9 |
| \*Inventory Control  -Stochastic Demand  --Continuous Review  --Periodic Review  --Single Period EOQ  \*Inventory Risk Pooling  \*Echelon Inventory  \*ABC Classification | \*Configurations  -Direct Shipment  -Intermediate Shipping  --Warehousing  --Cross-docking  --Transshipment  \*Transportation Modes  -Truck, Air, Rail, Water,  Pipeline | \*Partnerships  -3PL (Third-party Logistics)  -RSP (Retailer-supplier Partnerships)  -DI (Distributor Integration)  \*Outsourcing  -Products  -Components  -e-Markets |

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| **Objectives of Supply Chain Management** |
| Balance “High Service Levels” with “Low Costs”  Emphasize “Continual Improvement” |

Summary for Supply Chain Management

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| **Logistics**. From Simchi-Levi Text, Chapter 7. | |
| \*Configurations  -Direct Shipment  -Intermediate Shipping  --Warehousing  --Cross-docking  --Transshipment | \*The structure of distribution configurations.  -Direct Shipment. Eliminate warehousing.  -Intermediate Shipping  --Warehousing. Traditional shipping.  --Cross-docking. Decreases downstream transit time.  --Transshipment. Increases downstream service levels. |
| \*Transportation Modes  -Truck  -Air  -Rail  -Water  -Pipeline | \*Match modes of transportation with supply chain elements that include service levels, cost, regulations, material requirements, etc.  -Truck. Small loads. Short runs. Flexible. Domestic.  -Air. Small loads. Short delivery times. Expensive. International.  -Rail. Large loads. Longer delivery times. Inexpensive. Domestic.  -Water. Large loads. Long delivery times. Inexpensive. International.  -Pipeline. Continuous loads. Inexpensive. Product specific. Domestic. |

***Supply Chain Management – Logistics***

***Chapter 7***

🡨 Flow of Information 🡨

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| Supplier | 🡪 | Manufacturer | 🡪 | Distributor | 🡪 | Retailer | 🡪 | Customer |

🡪 Flow of Material 🡪

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| ***Distribution Configurations*** | |
|  | Intermediate Shipping |
| Direct Shipment | Warehousing  Cross-docking  Transshipment |

**Distribution Configurations**

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|  | Direct Shipment | | | | | | | | | |  |  | Traditional Warehousing | | | | | | | | | |  |
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|  | Cross-Docking | | | | | | | | | |  |  | Transshipment | | | | | | | | | |  |
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|  |  | **Trade-off Considerations** |  |  |
|  |  | Direct Shipment vs. Intermediate Shipping |  |  |
|  |  | Centralized vs. Decentralized |  |  |
|  |  | Inventory & Information |  |  |
|  |  | Transportation vs. Holding |  |  |
|  |  | Cost vs. Service Level |  |  |
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|  | Characteristics |  |

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|  | Characteristics. | | |  |
|  |  | Costs: | Holding, Transportation, Warehouse |  |
|  |  | Service Levels: | Information Lead Time, Transportation Lead Time,  FTL(FullTruckLoad), LTL(LessThanTruck Load),  Risk Pooling |  |
|  |  | Decisions & Shipping: | Centralized, Decentralized |  |
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|  | ***Characteristics*** | | ***Service Levels,***  ***Lead Time*** | ***Costs*** | ***Decisions &***  ***Shipping*** | ***Risk***  ***Pooling*** |  |
|  | ***Traditional*** | | ↑-Info, ↑-Trans | Higher Holding | Decentralized | Inventory |  |
|  | ***Direct Shipment*** | | ↑-Info, ↓-Trans | No Warehouse Holding | Centralized | Demand |  |
|  | ***Cross-docking*** | | ↓-Info, ↓-Trans | Lower Transportation | Centralized | Demand |  |
|  | ***Transshipment*** | | ↑-Info, ↑-Trans | Higher Transportation | Decentralized | Inventory |  |
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|  | Direct Shipment | | | | | | | | | |  |  | Traditional | | | | | | | | | |  |
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|  | Cross-Docking | | | | | | | | | |  |  | Transshipment | | | | | | | | | |  |
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|  | Strategies |  |

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| *Winners* | Inventory  Risk Pooling | No Warehouse  Holding Costs | No Warehouse  Costs | High Customer  Technical Support |
| **Warehousing** | X |  |  |  |
| **Cross-Docking** |  | X |  |  |
| **Direct Shipment** |  |  | X |  |
| **Transshipment** |  |  |  | X |

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| ***Description*** | **Advantages** | **Disadvantages** |
| **Warehousing** | **Immediate Inventory** | **Limited Product Variety** |
| **Cross-Docking** | **Efficient Transportation**  **No Warehouse Holding Cost** | **Information Requirements** |
| **Direct Shipment** | **No Warehouse Cost**  **Simplifies Logistics** | **Higher Transportation Costs** |
| **Transshipment** | **Product Availability**  **Virtual Customer Support** | **Distributor Coordination** |

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| ***Drivers*** |
| Warehousing 🡪 Cross-Docking |
| Warehousing 🡪 Direct Shipment |
| Cross Docking 🡪 Direct Shipment |
| Distributed Inventory 🡪 Centralized Inventory |
| Distributed Information 🡪 Centralized Information |

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|  | Modes of Transportation |  |

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| *Mode* | **Distance** | **Size of Load** | **Overseas** | **Cost** | **Speed** |
| **Truck** | Short | Small | No | Medium | Medium |
| **Air** | Long | Small | Yes | High | High |
| **Rail** | Long | Large | No | Low | Low |
| **Water** | Long | Large | Yes | Very Low | Very Low |