***Supply Chain Management (SCM) – Introduction***

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| **Operations Management**  *“Transformation of Inputs to Outputs”* | | | | | | |
|  | Inputs | → | Operations | → | Outputs |  |
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| **Supply Chain Management**  *“Management of Systems between Supplier and Customer*  *that Satisfies Customer Demands”* | | | | | | | | |
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|  |  | Supplier | ↔ | Operations | ↔ | Customer |  |  |
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| **Supply Chain Management** |  | **Value Chain Management** |
| High Service Levels & Low Cost. | Interrelated Systems & Competitive Advantage |

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| **Supply Chain Management**  *“Management of Systems between Supplier and Customer”*  **---------------Coordination---------------**  SRM = Supplier Relationship Management  OM = Operations Management  WMS = Warehouse Management System  CRM = Customer Relationship Management | | | | | | | | |
|  | Supplier  SRM | **↔** | Manufacturer  OM | **↔** | Distributor  WMS | **↔** | Retailer  CRM |  |
| **-------------------------Integration-------------------------**  Logistics Management  Information Technology Management  Quality Management  Risk Management (Resiliency to Shocks) | | | | | | | | |

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| **Supply Chain Management**  *“The design, implementation, and control of systems that manage the flow of information, material, money, knowledge, and services throughout the supply chain to continually improve quality, lower cost, and increase customer satisfaction.”*  🡨 Flow of Information 🡨   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer | **↔** | Customer |   🡪 Flow of Material 🡪 |

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| ***Supply Chain Coordination & Integration*** | | | | | | | | |
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|  | Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer |  |
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|  | Sourcing |  | Production |  | Logistics |  | Demand |  |
|  | SRM |  | S&OP, ERP |  | WMS, TMS |  | CRM |  |
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|  | SRM = Supplier Relationship Management | | | | | | |  |
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|  | S&OP = Sales & Operations Planning | | | | | | |  |
|  |  |  |  |  |  |  |  |  |
|  | ERP = Enterprise Resource Planning | | | | | | |  |
|  |  |  |  |  |  |  |  |  |
|  | WMS = Warehouse Management System | | | | | | |  |
|  |  |  |  |  |  |  |  |  |
|  | TMS = Transportation Management System | | | | | | |  |
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|  | CRM = Customer Relationship Management | | | | | | |  |
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| ***Supply Chain Drivers*** | | | | | | | | |
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|  | *Supply Chain Drivers*: Analytics, Globalization, Sustainability | | | | | | |  |
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|  |  | | | | | | |  |
|  | Analytics.  Big Data: Descriptive, Predictive, Prescriptive, Advanced, Modeling, AI.  IoT, Cloud computing, Virtual reality, Augmented reality, Intelligent operations. | | | | | | |  |
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|  | Globalization.  Access and Opportunity: Transportation, Communication.  Capability and Potential: Resources, Economics, Markets. | | | | | | |  |
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|  | Sustainability.  TBL. Triple Bottom Line: Economic (Profit) Sustainability, Environmental (Planet) Sustainability, Sociopolitical (People) Sustainability.  CSR. Corporate Social Responsibility: Policy and practice of an organization based on ethical behavior. | | | | | | |  |
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| ***Supply Chain Industry*** | | | | | | |  |
|  |  | *Supply Chain Characteristics* | | | | |  |
|  |  | Lean  (Cost,Waste) | Green  (TBL,CSR) | Resilient  (Risk) | Responsive  (Agile) | Smart  (Technology) |  |
| *Supply Chain Types* | Commodity  Supply Chain |  |  |  |  |  |  |
| Global  Supply Chain |  |  |  |  |  |  |
| Service  Supply Chain |  |  |  |  |  |  |
| Reverse  Supply Chain |  |  |  |  |  |  |
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|  | *Functions* | Inventory – Logistics – Relationships – Information – Strategy | | | | |  |
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|  | *Drivers* | Analytics – Globalization – Sustainability | | | | |  |
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| ***Supply Chain Analytics*** |
| .   |  |  |  |  |  | | --- | --- | --- | --- | --- | | ***Supply Chain Functions*** | | | | | | **Inventory** | **Logistics** | **Relationships** | **Information** | **Strategy** | | Stochastic Demand  Echelon Inventory  Risk Pooling | Configurations  Transportation  Cross-Docking | Procurement  Outsourcing  Alliances | Communication  Analysis  Bullwhip Effect | PUSH-PULL  Standardization  Postponement |   .   |  |  |  |  | | --- | --- | --- | --- | | ***Supply Chain Types*** | | | | | **Commodity** | **Global** | **Service** | **Reverse** | | Agriculture  Metals  Energy | Drivers  Constraints  Strategies | Intra-Service  Inter-Service | Markets  Processes  Governance |   .   |  |  |  |  |  | | --- | --- | --- | --- | --- | | ***Supply Chain Characteristics*** | | | | | | **Lean** | **Green** | **Resilient** | **Responsive** | **Smart** | | Waste  Efficiency  Quality | Strategy  Development  Planning | Prepare  Respond  Improve | Speed  Flexibility  Adaptability | Technology  Innovation  Disruption |   .   |  |  |  | | --- | --- | --- | | ***Supply Chain Drivers*** | | | | **Analytics** | **Globalization** | **Sustainability** | | Acquisition of Information  Analysis of Data | Access & Opportunity  Capability & Potential | Triple Bottom Line (TBL)  Corporate Social Responsibility (CSR) |   .   |  | | --- | | **SCOR Model: Supply Chain Operations Reference Model** |   . |

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| ***Supply Chain Types & Characteristics*** | | | | | | | | |
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|  | Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer |  |
|  |  |  |  |  |  |  |  |  |
|  | Commodity Supply Chain | | | | | | |  |
|  | Global Supply Chain | | | | | | |  |
|  | Service Supply Chain | | | | | | |  |
|  | Reverse Supply Chain | | | | | | |  |
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|  | ***Supply Chain Types*** | | | | | | |  |
|  | Commodity Supply Chain. A supply chain that extracts and supplies commodities to satisfy downstream requirements or transforms commodities into other commodities. | | | | | | |  |
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|  | Global Supply Chain. A supply chain that spans international boundaries. | | | | | | |  |
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|  | Service Supply Chain. A supply chain that provides services to support a physical supply chain or a supply chain that provides services to meet external customer demand for services. | | | | | | |  |
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|  | Reverse Supply Chain. A supply chain where physical goods travel upstream. | | | | | | |  |
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|  | ***Supply Chain Characteristics*** | | | | | | |  |
|  | Lean Supply Chain. An efficient supply chain with a focus on reducing cost by eliminating waste throughout the supply chain. | | | | | | |  |
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|  | Green Supply Chain. A supply chain with sustainability standards throughout the supply chain based on sustainable strategy, development, and planning. | | | | | | |  |
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|  | Resilient Supply Chain. A supply chain that mitigates risks through preparation, responding, and recovering from disruptive supply chain events or threats. | | | | | | |  |
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|  | Responsive(Agile) Supply Chain. An agile supply chain that responds to changes in the marketplace through achieving and maintaining target service levels in a timely manner. | | | | | | |  |
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|  | Smart Supply Chain. A supply chain that capitalizes on the use of technology and analytics. | | | | | | |  |
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| ***Supply Chain Functions*** | | | | |
| **Inventory** | **Logistics** | **Relationships** | **Information** | **Strategy** |
| Stochastic Demand  Echelon Inventory  Risk Pooling | Configurations  Transportation  Cross-Docking | Procurement  Outsourcing  Alliances | Communication  Analysis  Bullwhip Effect | PUSH-PULL  Standardization  Postponement |

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| ***Supply Chain Functions*** |
| .   |  |  | | --- | --- | | **Inventory** | **Logistics** | | Chapter 2 | Chapter 7 | | \*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 | |  |  | | **Relationships** | **Information** | | Chapters 8,9 | Chapter 5,14 | | \*Partnerships  -3PL (Third-party Logistics)  -RSP (Retailer-supplier Partnerships)  -DI (Distributor Integration)  \*Outsourcing  -Products  -Components  -e-Markets | \*Bullwhip Effect.  \*BPS & IS & SCOR  \*SCIT  -Collect & Access  -Analyze & Collaborate  \*Components  -Network design  -Tactical planning  -Operational planning  -Operational execution | |  |  | | **Strategy** | | | **PUSH-PULL Strategies** | **Design for Logistics** | | Chapter 6. | Chapter 11. | | Integrating PUSH and PULL strategies  throughout the supply chain.  (PUSH-PULL Boundary) | Coordinating supply chain design and product development chain design to impact logistics.  (Packaging, Processing, Standardization) | |  |  | | **Customer Value** | **Customer Pricing** | | Chapter 12 | Chapter 13 | | Conforming the supply chain to product characteristics that create customer value  (Market Mediation) | Balancing Customer Loyalty  with Profit Generation  (Smart Pricing) |   . |

**Supply Chain Management (SCM): References**

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| **Inventory Management**  Website: “[www.apics.org](http://www.apics.org)” The Association for Operations Management.  (Certifications: CSCP, CPIM, CIRM)  Book: Vollmann, T.E., W.L. Berry, D.C. Whybark, F.R. Jacobs, *Manufacturing Planning and Control for Supply Chain Management*, McGraw-Hill/Irwin, New York, 2005. ISBN-13 9780072299908 |
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| **Demand Management**  Greenberg, P., *CRM at the Speed of Light, Third Edition: Essential Customer Strategies for the 21st Century*, McGraw-Hill/Irwin, New York, 2004.  ISBN-13 9780072231731 |

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| ***Other Related Websites***  \*Project Management Institute. Website: “[www.pmi.org](http://www.pmi.org)”  \*American Society for Quality. Website: “[www.asq.org](http://www.asq.org)”  \*Institute for Operations Research and the Management Sciences.  Website: “[www.informs.org](http://www.informs.org)”  \*American Statistical Association. Website: “[www.amstat.org](http://www.amstat.org)”  \*Supply Chain Council, SCOR. APICS Website: “[www.supply-chain.org](http://www.supply-chain.org)”  \*International Association for Six Sigma Certifications.  Website: “<http://www.iassc.org/>”  \*International Association of Outsourcing Professionals.  Website: “<http://www.iaop.org/content/23/193/1268/>” |