***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 ManagementOM = Operations ManagementWMS = Warehouse Management SystemCRM = Customer Relationship Management**---------------Supply Chain Model---------------** |
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|  |  | SupplierSRM | **↔** | ManufacturerOM | **↔** | DistributorWMS | **↔** | RetailerCRM |  |  |
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| **-------------------------Integration-------------------------**Logistics ManagementInformation Technology Management Quality ManagementRisk 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 🡨

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| Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer | **↔** | Customer |

🡪 Flow of Material 🡪 |

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| ***Supply Chain Industry*** |
| 🡨 Flow of Information 🡨

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| Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer | **↔** | Customer |

🡪 Flow of Material 🡪 |
|  |  | *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  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | *Functions* | Inventory – Logistics – Relationships – Information – Strategy |  |
|  |  |  |  |  |  |  |  |
|  | *Drivers* | Analytics – Globalization – Sustainability |  |
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|  | *SCOR* | SCOR Model: Supply Chain Operations Reference Model |  |
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| ***Supply Chain Analytics*** |
| 🡨 Flow of Information 🡨

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| Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer | **↔** | Customer |

🡪 Flow of Material 🡪 |
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| ***Supply Chain Types*** |
| **Commodity** | **Global** | **Service** | **Reverse** |
| AgricultureMetalsEnergy | DriversConstraintsStrategies | Intra-ServiceInter-Service | MarketsProcessesGovernance |

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| ***Supply Chain Characteristics*** |
| **Lean****(Cost,Waste)** | **Green****(TBL,CSR)** | **Resilient****(Risk)** | **Responsive****(Agile)** | **Smart****(Technology)** |
| WasteEfficiencyQuality | StrategyDevelopmentPlanning | PrepareRespondImprove | SpeedFlexibilityAdaptability | TechnologyInnovationDisruption |

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| ***Supply Chain Functions*** |
| **Inventory** | **Logistics** | **Relationships** | **Information** | **Strategy** |
| Stochastic DemandEchelon InventoryRisk Pooling | ConfigurationsTransportationCross-Docking | ProcurementOutsourcingAlliances | CommunicationAnalysisBullwhip Effect | PUSH-PULLStandardizationPostponement |

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| ***Supply Chain Drivers*** |
| **Analytics** | **Globalization** | **Sustainability** |
| Acquisition of InformationAnalysis of Data | Access & OpportunityCapability & Potential | Triple Bottom Line (TBL)Corporate Social Responsibility (CSR) |

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| **SCOR Model**: Supply Chain Operations Reference Model |

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| ***Supply Chain Types & Characteristics*** |
| 🡨 Flow of Information 🡨

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| Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer | **↔** | Customer |

🡪 Flow of Material 🡪 |
|  | ***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 Coordination & Integration*** |
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|  | Supplier | **↔** | Manufacturer | **↔** | Distributor | **↔** | Retailer |  |
|  |  |  |  |  |  |  |  |  |
|  | Sourcing |  | Production |  | Logistics |  | Demand |  |
|  | SRM |  | S&OP, ERP |  | WMS, TMS |  | CRM |  |
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|  |  |  |  |  |  |  |  |  |
|  | SRM = Supplier Relationship Management |  |
|  |  |  |  |  |  |  |  |  |
|  |  S&OP = Sales & Operations Planning |  |
|  |  |  |  |  |  |  |  |  |
|  |  ERP = Enterprise Resource Planning |  |
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|  |  WMS = Warehouse Management System |  |
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|  |  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 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 |
| **Logistics Management**Website: “[www.cscmp.org](http://www.cscmp.org)” Council of Supply Chain Management ProfessionalsBook: Bowersox, D.J., D.J. Closs, M.B. Cooper, *Supply Chain Logistics Management*, McGraw-Hill/Irwin, New York, 2007. ISBN-13 9780072947885 |
| **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/>” |