***Supply Chain Management – Information Technology***

Summary for Supply Chain Management

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| **Information**. From Simchi-Levi Text, Chapters 5,14 |
| \*Bullwhip Effect. | \*Bullwhip Effect.-The Bullwhip Effect is when the Demand Variability Increases Upstream in a Supply Chain-Results (5) Identify 5 Results of the B-E-Causes (5) Identify 3 Causes of the B-E-Approaches (5) Identify 5 Approaches of the B-E-Trade-offs (4) Identify 4 Trade-offs of the B-E-Management (3) Identify 3 Management of the B-E  |
| \*BPS & IS & SCOR\*SCIT-Collect & Access-Analyze & Collaborate\*Components-Network design-Tactical planning-Operational planning-Operational execution | \*BPS & IS & SCORBPS(Business Process Systems) & IS(Information Systems) & SCOR(Supply Chain Reference) -For Supply Chain efficiency, do not develop Information System maturityahead of Business Process maturity\*SCIT. Supply Chain Information Technology-Collect & Access part of an ERP systems Analyze & Collaborate accomplished by data analysis and analytics within DSS and APS\*Components-Network design. Strategic, long-term planning.-Tactical planning. Aggregate planning.-Operational planning. Short-term local planning.-Operational execution. Daily procedures. |

***Supply Chain Management – Information Technology***

**Business Process Systems Correlated with Information Systems**

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| Reference: Heinrich, C.D., and D. Simchi-Levi. “Do IT Investments Really Change Financial Performance?” *Supply Chain Management Review*, May 2005, pp.22-28. |

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|  | Business Process Systems (BPS)Level I. Disconnected processesLevel II. Internal integrationLevel III. Intra-company integrationLevel IV. Multi-enterprise integration. |  | Information Systems (IS)Level I. Independent, redundant systemsLevel II. Shared across systemsLevel III. Internally visible dataLevel IV. Internally/externally shared data. |  |
|  |  | 🡺 | 🡺 | 🡺 |  |  |
|  |  | SCOR Evaluation of Planning Areas 1. Strategic planning 2. Demand planning 3. Supply planning 4. Supply-demand balancing 5. Procurement planning 6. Manufacturing planning 7. Delivery planning. |  |  |
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Results of evaluations on 75 supply chains in companies with different combination of

business process systems maturity and information systems maturity.

*“Maturity is defined as immature to mature as levels proceed from I to IV.”*

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|  | Supply Chain | Information System (IS) |  |
|  | Performance | Level I | Level II | Level III | Level IV |  |
|  |  |  |  | *Immature* | *Mature* |  |
|  | Business Process System (BPS) | Level I | *Immature* | **A**Low performance | **D**Worst performance |  |
|  | Level II |  |
|  | Level III | *Mature* | **B**Better performance | **C**Best performance |  |
|  | Level IV |  |
|  |  |  |  |  |  |  |  |  |

Ordinal relationship based on efficiency and profitability

from least efficient to most efficient

is reported to be D🡪A🡪B🡪C

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| *For Supply Chain efficiency,**do not develop Information System maturity**ahead of Business Process maturity* |

***Supply Chain Management (SCM): Information Technology***

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| Supply Chain Information Technology | 🡪 | *enables* | 🡪 | Supply Chain Management |
| (SCIT) |  | 🡪 |  | (SCM) |

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| SCIT Goals: |  | Collect | 🡪 | Access | 🡪 | Analyze | 🡪 | Collaborate |  |  |
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| SCIT 🡪 |  | ERP | 🡪 | DSS | 🡪 | SCM |
|  |  | (ERPII) |  | (APS) |  |  |

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|  |  | ***DSS Structure*** |  |  |
|  |  | Data AnalysisSystem Modeling |  |  |
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| **Input** | **🡪** | **Analytical Tools** | **🡪** | **Presentation Tools** |
|  |  |  |  |  |
| ERP |  | Data Warehouses |  | Reports & Tables |
| SRM |  | OLAP |  | Data Visualization |
| CRM |  |  |  | Simulations/Animations |
| SCM |  | Data Mining |  | GIS |
|  |  | Statistics |  |  |
| Data Bases |  |  |  |  |
| OLTP |  | Operations Research |  |  |
| Data marts |  | Simulation |  |  |
|  |  | AI/ES |  |  |

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|  | **Data****Base** |  | **Data****Warehouse** |  | **Data****Mart** |  |
|  | DefinedSources |  | MultipleSources |  | FocusedSubset |  |
|  | GeneralScope |  | EnterpriseScope |  | FocusedScope |  |
|  | OLTPOnline TransactionProcessing |  | OLAPOnline AnalyticalProcessing |  | UserInterface |  |
|  | Defined processes |  | Complexqueries |  | Repeatableapplications |  |
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**Supply Chain System Components**

1. Strategic – Network design (Long-term)

2. Tactical Planning – Supply chain master planning

3. Operational Planning – Operational planning (Short-term, Local)

4. Operational Execution – Transactional (Daily Procedures)

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|  |  |  |  | **Supply Chain System Components** |  |
|  | 1. Strategic – Network design (Long-term) |  |
|  |  | 2. Tactical Planning – Supply chain master planning (Aggregate planning for PUSH-based supply chain.)

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| Production | Integrate | Production Plans / (source) |
| Transportation | Storage Requirements / (capacity) |
| Inventory | Inventory Policies / (distribution) |

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|  |  |  | 3. Operational Planning – Operational planning (Short-term, Local) (Integrate system plans with master plan. Application of CPFR.)* 1. Demand (e.g., forecasting)
	2. Inventory (e.g., inventory policy, safety stock)
	3. Transportation (e.g., mode selection, routing)
	4. Production (e.g., schedules)
	5. MRP (starting point)

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|  |  |  |  | 4. Operational Execution – Transactional (Daily Procedures) (ERP, CRM, SRM, SCM, event management.)* 1. ATP: Available to promise
	2. CTP: Capable to promise
	3. PTP: Profitable to promise

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| ERP 🡸🡺DSS |
| SCIT Implementation:  | Sole-source | “Best-of-breed” | Combination |
| SCIT Selection Factors: | 1.2.3. | 1.2.3. | 1.2.3. |

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| Sales & Operation Planning (S&OP) – Integration.(Integrate supply chain system components to satisfy supply chain strategy.) |