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

***Chapter 14***

**Business Process Systems Correlated with Information Systems**

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | 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. |  |  |
|  |  |  | 🡺 |  |  |  |

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.”*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  | 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

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

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

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

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | ***DSS Structure*** |  |  |
|  |  | Data AnalysisSystem Modeling |  |  |
|  |  |  |  |  |
| **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 |  |  |

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

**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)

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

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

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

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

. |  |
|  |  |  |  |  |  |

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

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