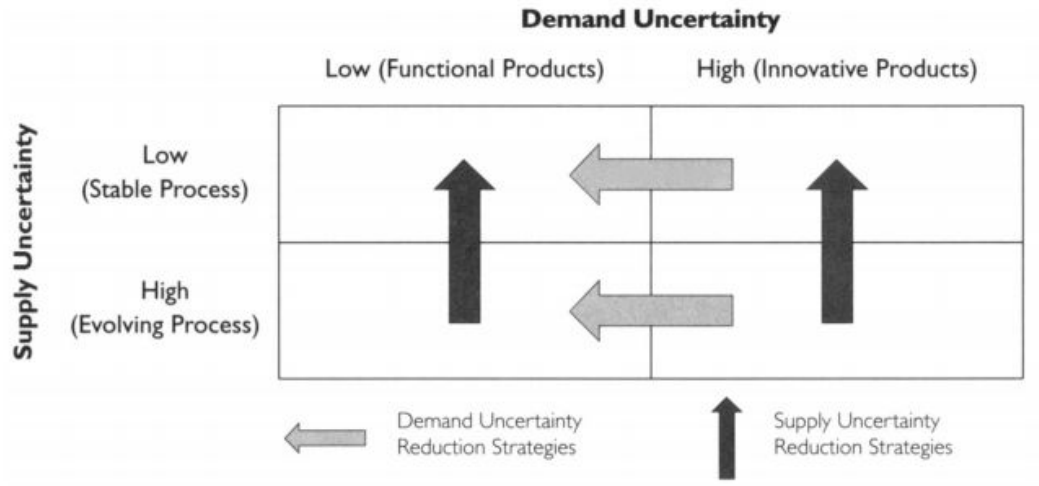
Lecture 1

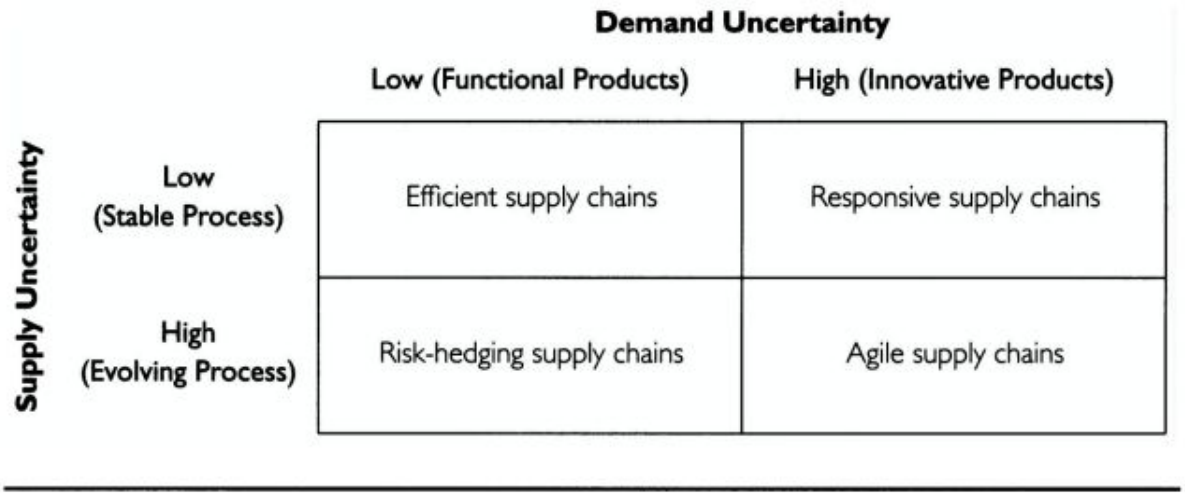
The uncertainty framework- Lee's model

FIGURE 4. The Uncertainty Reduction Strategies



- **Demand uncertainty reduction strategies**
  - In many cases, although the demand of the product at the end consumer level is stable, distortion of demand signals can occur up the supply chain. As a result, the demand patterns at the upstream portion of the supply chain could become highly erratic.
  - Only through information sharing and tight coordination can one regain control of supply chain efficiency. Sharing of demand information and synchronized planning across the supply chain are crucial for this purpose.
- **Supply uncertainty reduction strategies**
  - Free exchanges of information - starting with the product development stage and continuing with the mature and end-of-life phases of the product life cycle - have been found to be highly effective in reducing the risks of supplier failure.

FIGURE 8. Matched Strategies



- **Efficient Supply Chains** - These are supply chains that utilize strategies aimed at creating the highest cost efficiencies in the supply chain. For such efficiencies to be achieved, non-value-added activities should be eliminated, scale economies should be pursued, optimization techniques should be deployed
    - When products have both low demand and supply uncertainties
    - e.g. grocery, basic apparel, food
- **Risk-Hedging Supply Chains** - These are supply chains that utilize strategies aimed at pooling and sharing resources in a supply chain so that the risks in supply disruption can also be shared. e.g. contingency plans for supply
    - Companies with innovative products and evolving and unstable supply processes
    - e.g. hydro-electric power
- **Responsive Supply Chains** - These are supply chains that utilize strategies aimed at being responsive and flexible to the changing and diverse needs of the customers. To be responsive, companies use build-to-order and mass customization processes as a means to meet the specific requirements of customers.
    - Companies with innovative products with stable supply processes
    - e.g. fashion apparel, computers, music
- **Agile Supply Chains** - These are supply chains that utilize strategies aimed at being responsive and flexible to customer needs, while the risks of supply shortages or disruptions are hedged by pooling inventory or other capacity resources.
    - e.g. telecom, high-end computers

Integration

- Elements
    - Multi-firm relationship management
    - Shared / common resources, information, planning etc.
    - Operational linkages with customers and (ultimately) end users
    - Complementary and compatible distribution strategies

    - Coordinated logistics (flows of products and services) arrangements
- Constraints
    - Capacity
    - Information
    - Competencies
    - Capital
    - Human Resources
- Ultimate Aim
    - Value creation across the network
- **Enablers and Drivers**
    - Information Technology
    - Integrated Management
    - Responsiveness
    - Financial Sophistication
    - Globalization

Information technology - enabling technology

- **Electronic Data Interchange (EDI)**: Computer-to-computer exchange of business documents in a standard format
    - CAPABILITY - ability of supply chain members to communicate effectively
    - PRACTICE - ability of supply chain members to willingly share and effectively utilise the information exchanged
    - Applications
        - Order processing, production, inventory, accounting, transportation
    - Benefits
        - Reduced paperwork
        - Better communications
        - Reduced costs
        - Improved process flows
        - Improved traceability
        - Elimination of redundancies
    - **Limitations to Adoption**
        - Perception that EDI is expensive to implement (both in terms of initial setup and ongoing costs) – Access via VAN's
        - Long implementation cycles due to requirement for meeting strict standardised formats
        - Adoption of standards – these have tended to be (at best) industry specific (e.g. EDIFACT used by GM, ANSI ASC 12 used by Ford/Chrysler), and have also limited flexibility to meet different business needs
        - EDI has been adopted by larger organizations more readily than SME's
        - No provision for process and information exchange, data and structure only
- E-Business
- E-mail
- Internet
- Magnetic/Optical Data Capture (Bar Coding and Scanning)

    - Computer readable codes placed on items, cartons, containers etc.
    - Replaces error-prone and time consuming paper-based procedures
    - Facilitate:
        - Information collection and exchange
        - Tracking and communication of product movements
        - Access to Point of Sale (POS) data
- **RFID**
    - **RFID (Radio Frequency Identification Technology)** tags consist of an antenna and a chip that contains an electronic product code (EPC) that contains information about the product when or where it came from, where the product components came from and when it will perish.
    - These tags can be attached to individual physicals objects and allows them to be identified remotely.
    - Trials for using RFID tags with Wal- Mart's top 100 suppliers have been completed
    - Benefits
        - FMCG org can benefit in case it is forced a mass recall due to product contamination or tampering.
        - Multiple RFID tags can be read simultaneously whereas barcodes are read sequentially. This increases productivity and accuracy.
        - Can be applied to any resource within the supply chain like trucks, pallets, cages and even people and can be tracked via GPS Technology
        - Decrease in the labour requirements.
    - Concerns
        - What is the COST of this implementation?
        - Are SCM or ERP vendors more prepared to embrace these changes?
        - Privacy Issues