

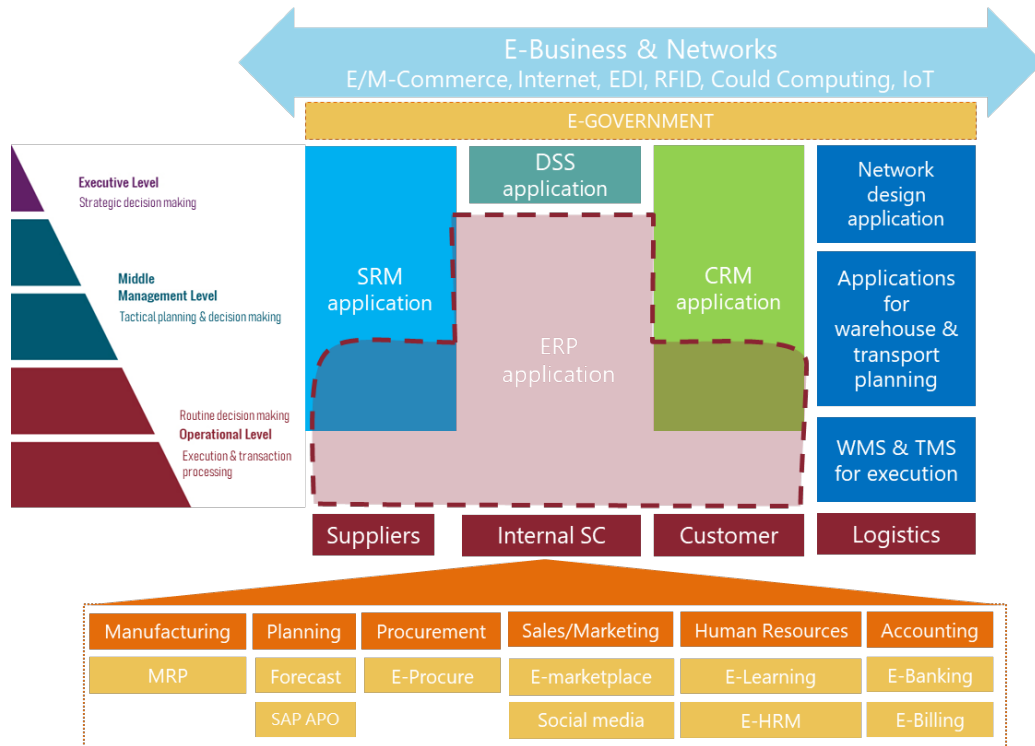
Supply Chain Informatics

ACMA4022

Introduction to supply chain information

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Recap



- There are 3 important points to define "information".
 - It needs "**Process**" to produce information.
 - Information has to be **meaningful** & create value to the recipient.
 - There must be requirement or **purpose** to use for.
- Information Technology — hardware, software, and data — adding people & process will then be considered as an **Information System**.
- To become more competitive and efficient, organisations tries to transform themselves into **digital firm**, all core business processes and relationships with related partners are now digitally enabled with best efforts to invest in information system & technology.
- Information technology is realised as the vast opportunities to develop and apply their innovative solutions into the current practices in supply chain & logistics industry.

Introduction to Logistics & Supply Chain

Session overview

1. Definitions & Key concepts of supply chain & Logistics
2. Today's challenges in managing Supply chain & Logistics
3. Information flow within supply chain network
4. Roles of Information in supply chain
5. E-supply chain & E-logistics milestones
6. Applying & managing supply chain information system

The Supply Chain

Supply chain definitions and perspectives

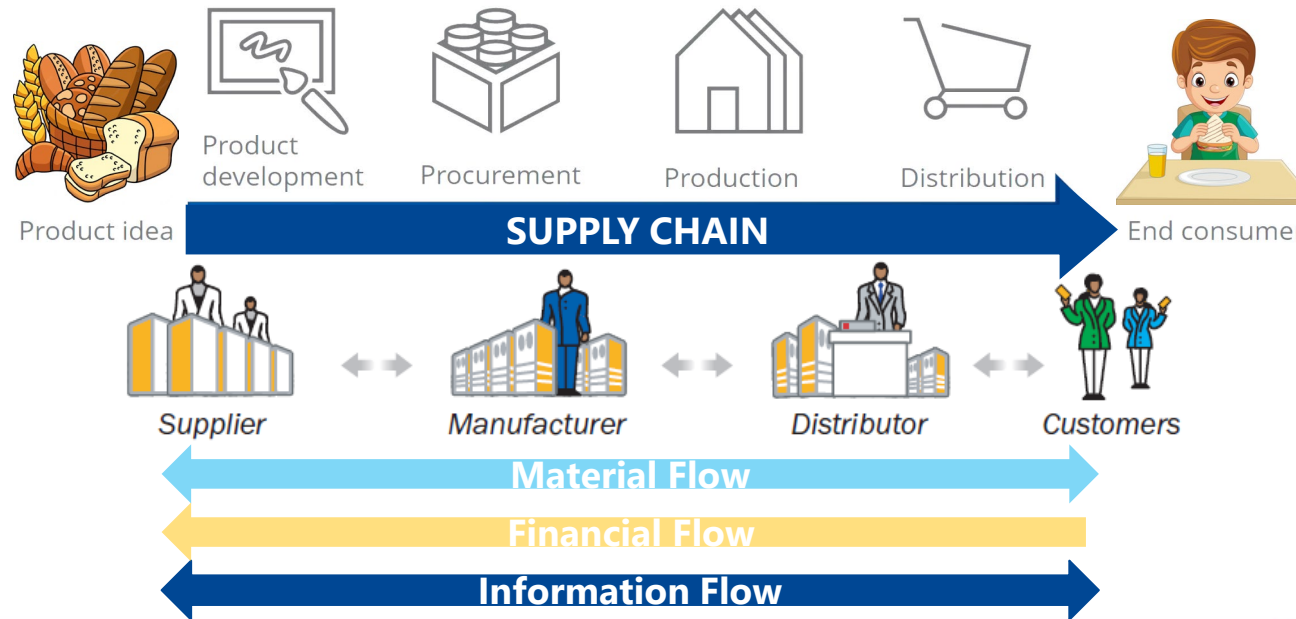
A network of organisations that are involved, through upstream and downstream linkages, in the different process and activities that produce value in the form of products delivered into the hands of the ultimate consumer.

(Mangan and Lalwani 2016)

It includes all logistics management activities and manufacturing operations, and it drives coordination of processes and activities with, and across, marketing, sales, product design, finance and IT.

(Council of Supply Chain Management Professionals 2017)

The journey of a product from its raw materials to the consumer - a 'supply chain of bread'

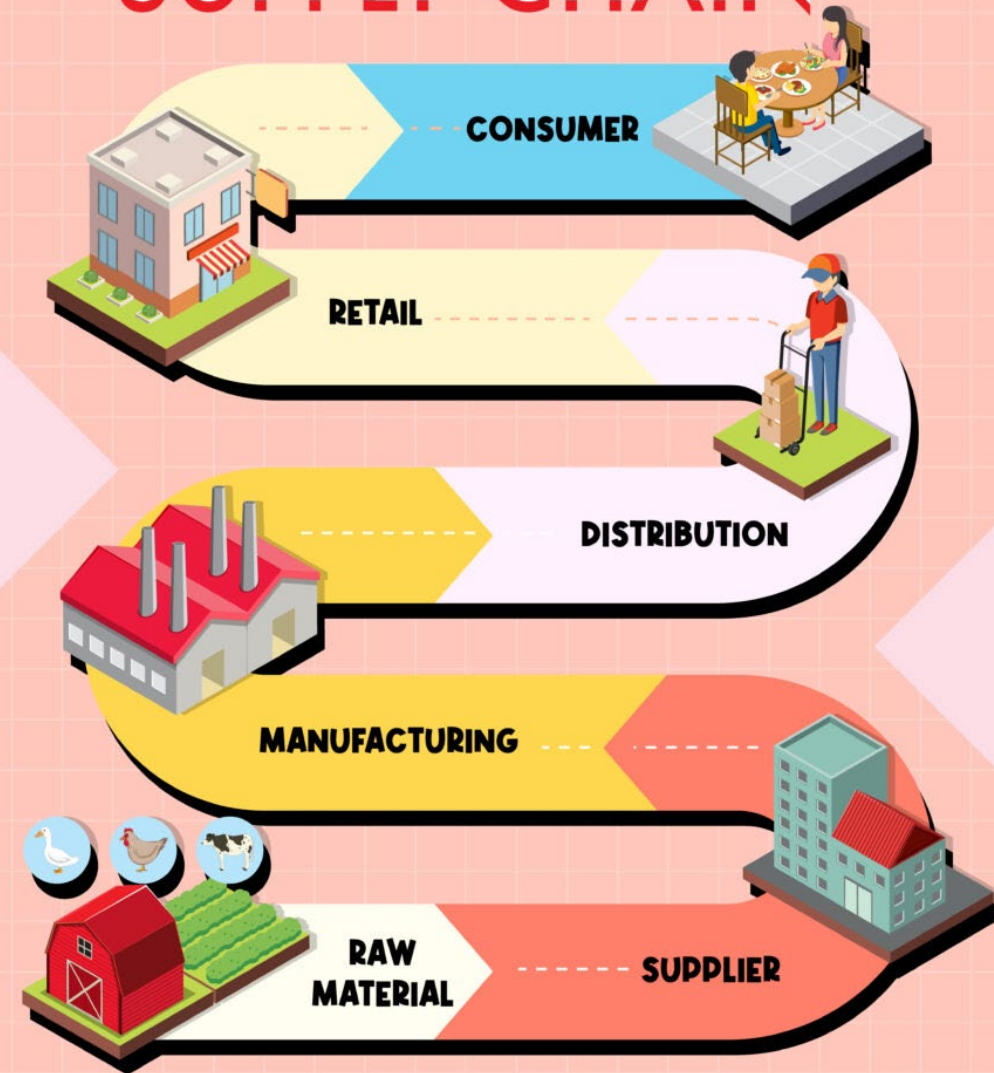


Where are you in the supply chain?

Think about your organization....

- Who are your suppliers, what they supplies?
- Who are your customers, are they considered end consumer?
- What are the main role of your organization in supply chain network?
- How would you position yourself in your supply chain?

SUPPLY CHAIN



What is logistics?

“Logistics involves planning, implementing, and controlling the flow of goods, services, and related resources & information from the point of origin to the point of consumption”

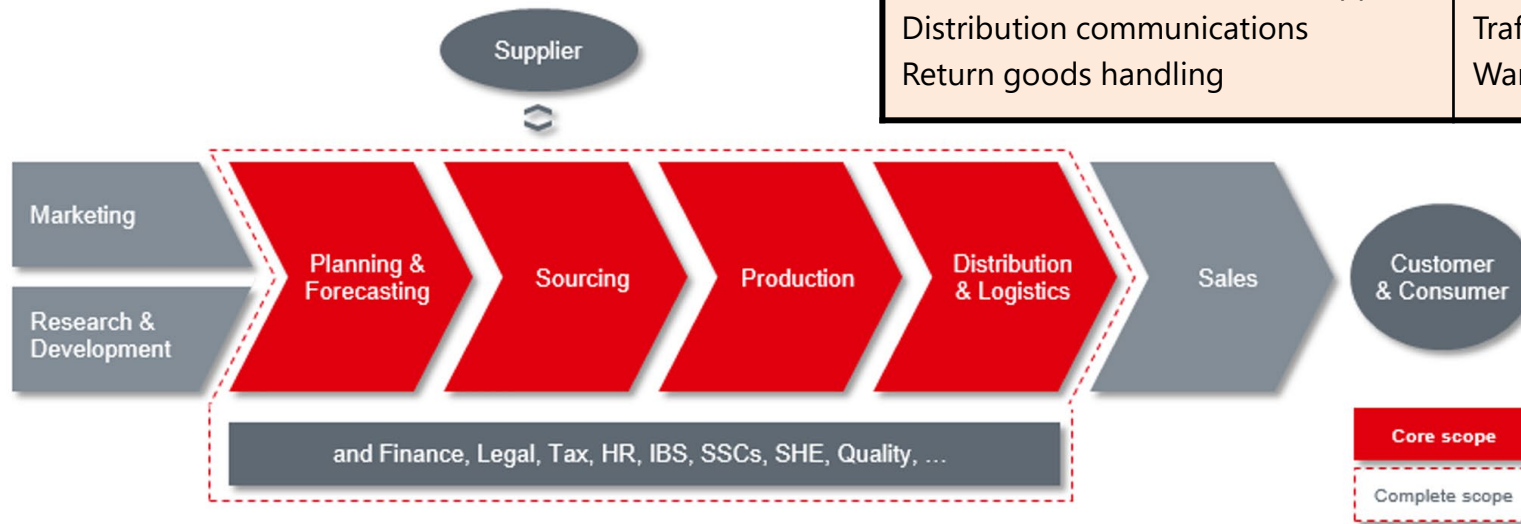


Supply Chain Management (SCM)	Logistics
Links major business processes.	Movement, storage, and flow of goods.
Planning, sourcing, producing, and delivering goods.	Focuses on transportation and warehousing.
Focuses on competitive advantage.	Focuses on meeting customer requirements.
Improve processes for efficiency.	Deliver goods efficiently and on time.
Covers a variety of tasks, including labor, inventory, and materials management	Operational movement and storage of goods.
A broader concept that includes logistics.	A subset of supply chain management.
Manage end-to-end supply flow.	Efficiently move goods to customers.

Supply Chain & Logistics relationship

Logistics may be confined to the company, whereas

Supply chain extends beyond own company.



Logistics Focus Areas

Customer service related

Packaging
Order processing
Spare parts and service support
After sales Customer service support
Distribution communications
Return goods handling

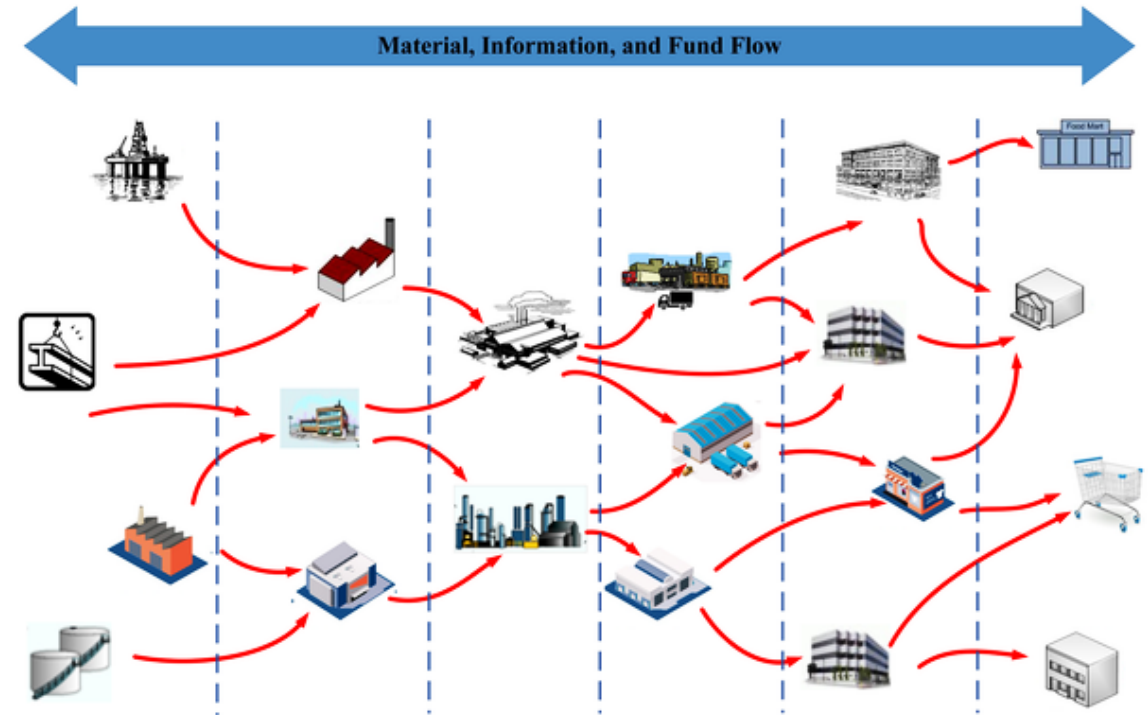
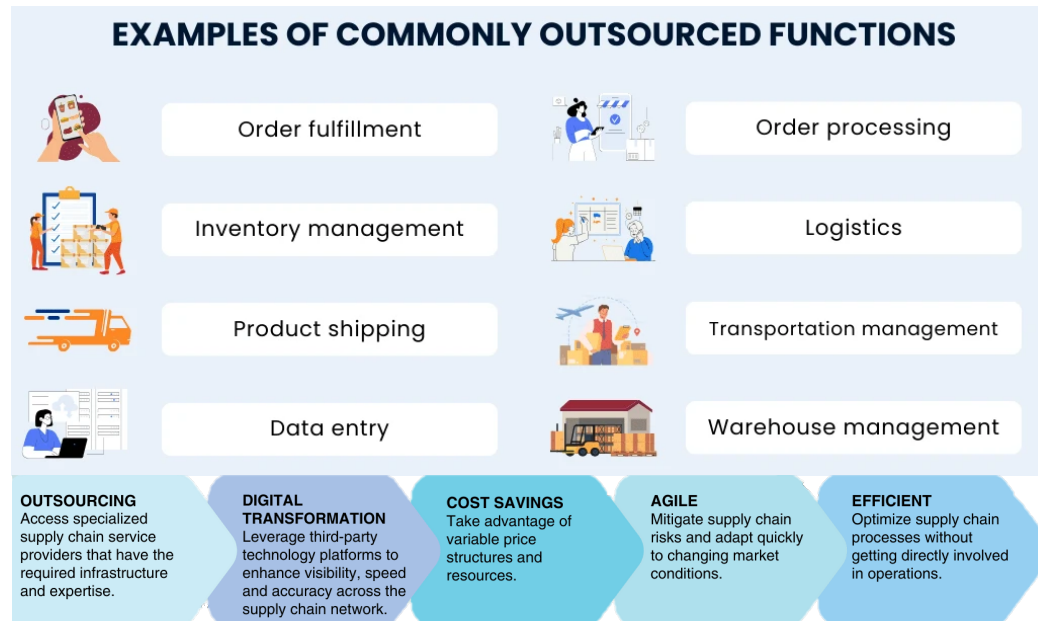
Operations related

Plant and warehouse site location
Inventory control
Materials handling
Salvage and scrap disposal
Traffic and transportation
Warehousing and storage

Outsourcing Supply Chain & Logistics

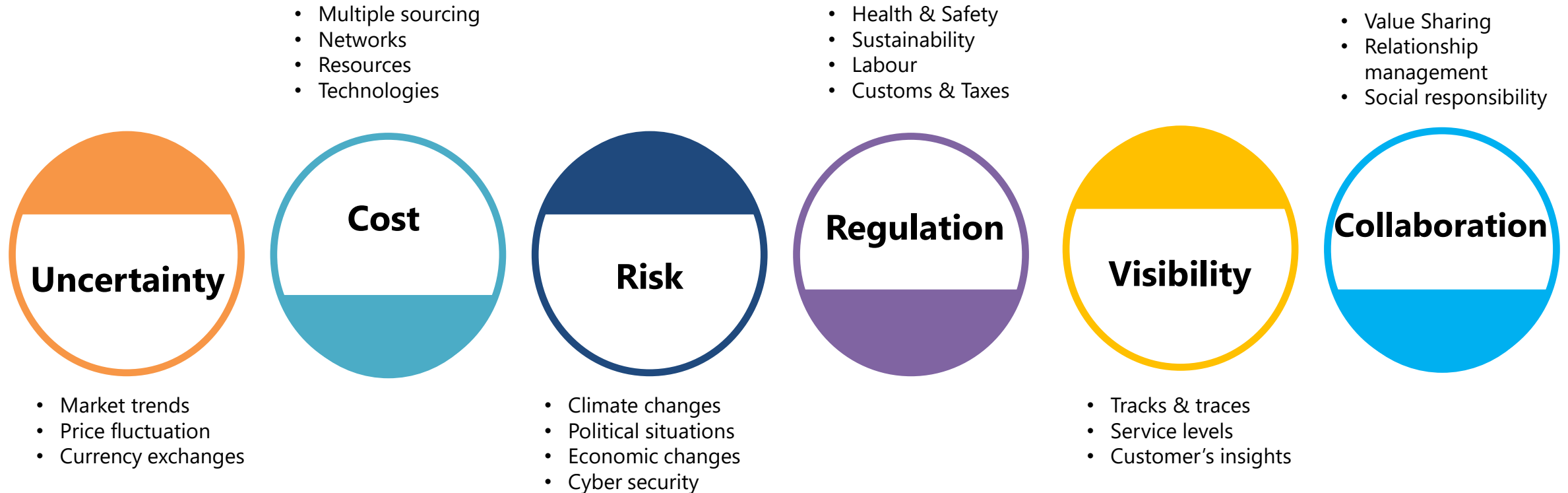
SUPPLY CHAIN MANAGEMENT OUTSOURCING

- involves delegating your company's supply chain operations to a third-party specialist.



Despite all benefits, outsourcing and offshoring add participants & complexities into supply chain network.

Key Challenges in Supply Chain Management



Why is information needed in SCM?



Decision Making & Trade-offs

Cost Effectiveness

Performance Measurement

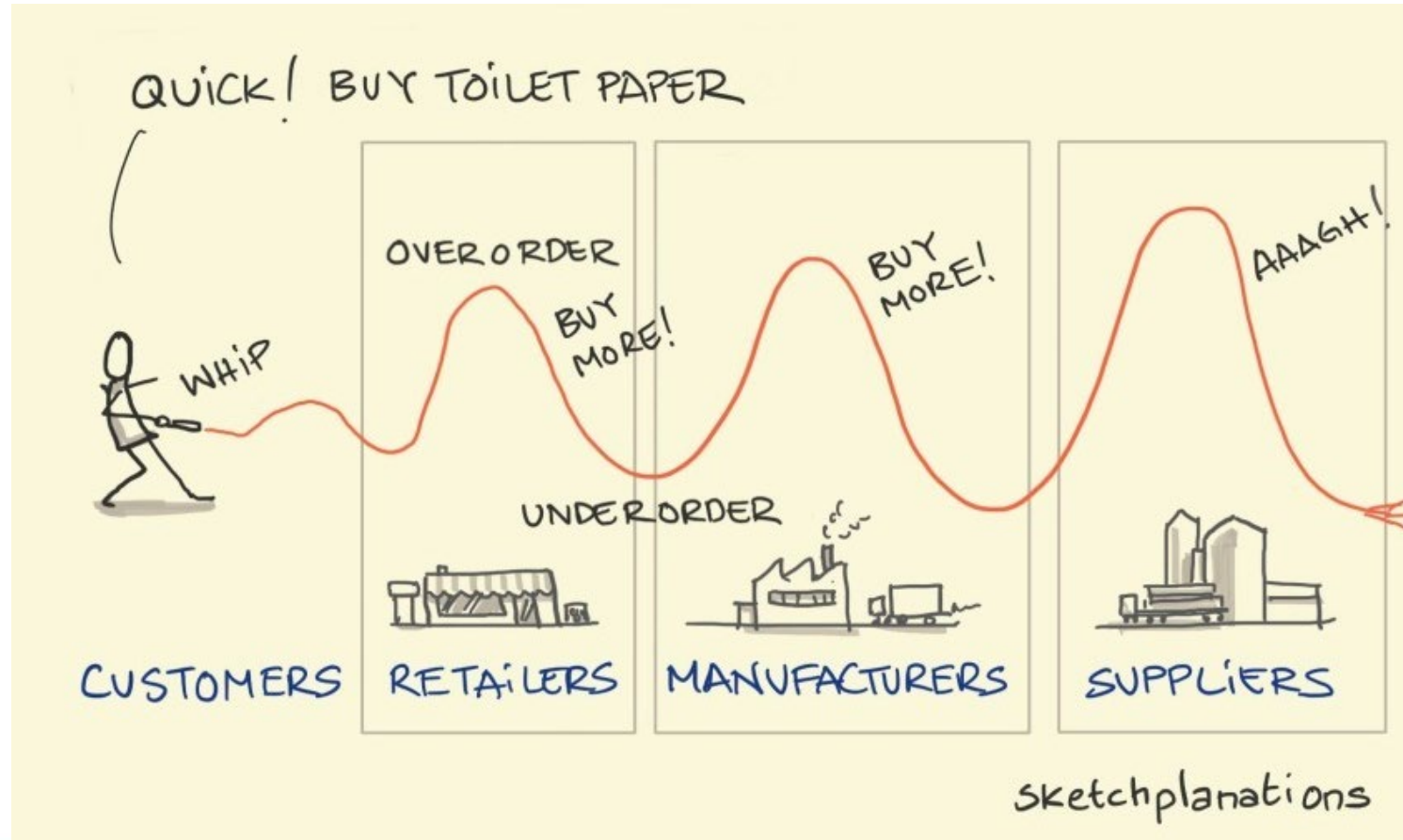
Visibility & Transparency

Customer Satisfaction

Risk Management

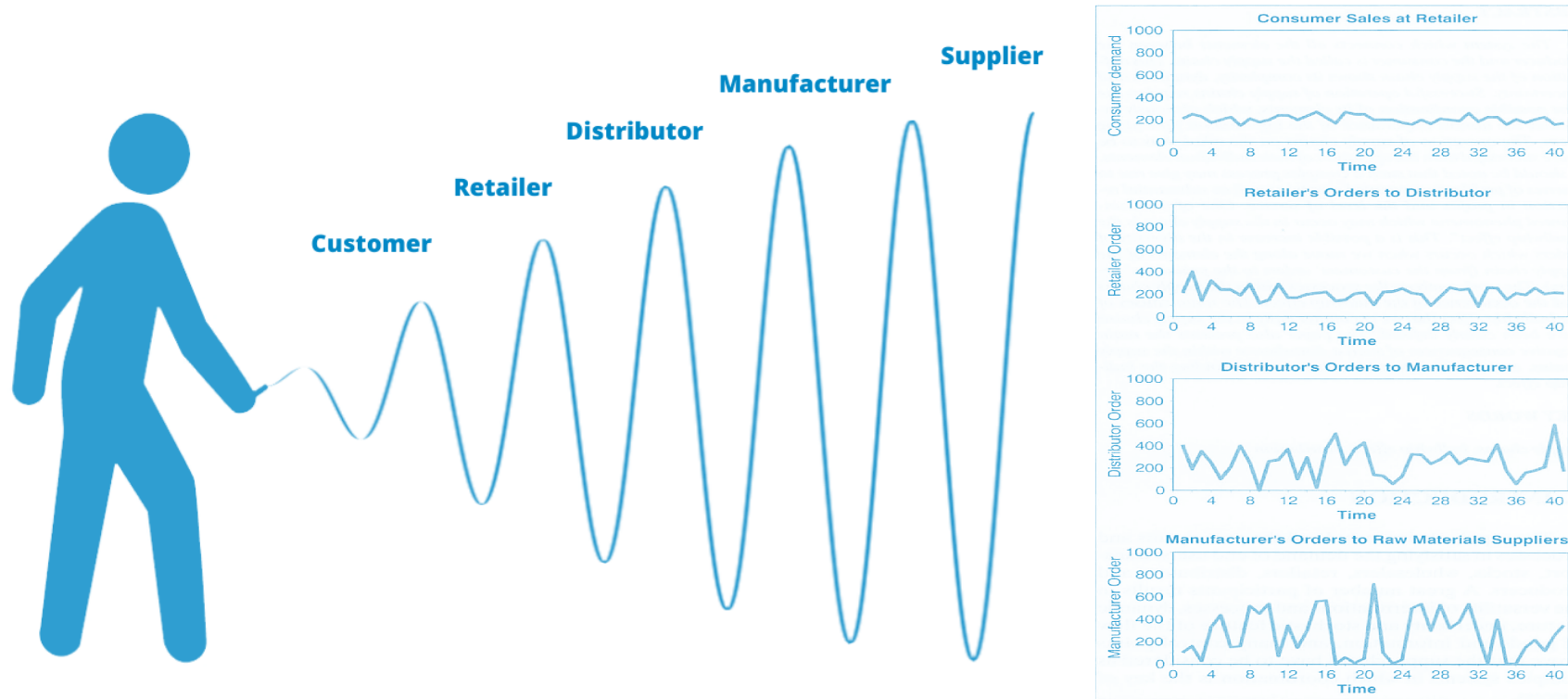
Regulatory Compliance

A nightmare of supply chain



A nightmare of supply chain : Bullwhip

The **bullwhip effect** is a supply chain phenomenon which occurs when slow-moving consumer demand or small increases in demand produce large swings in production & inventory level at the opposite end of the supply chain.

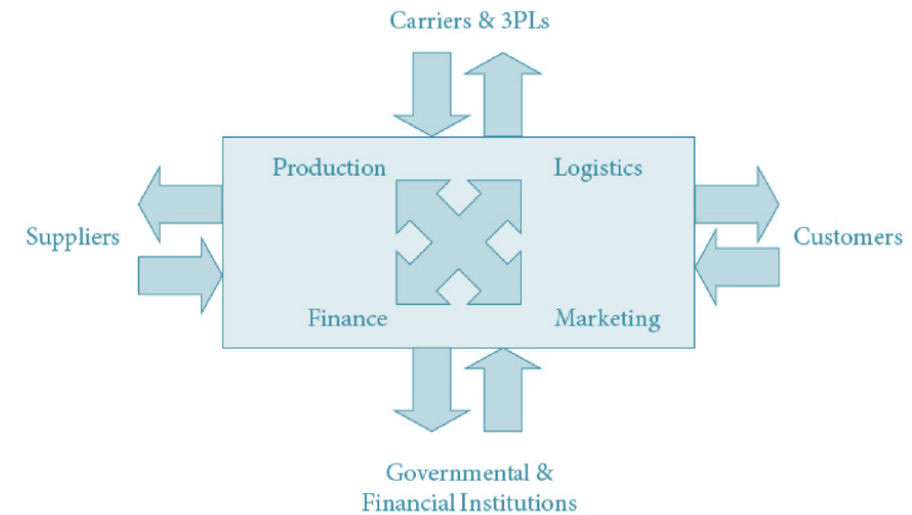


Information Sharing using IS&IT can improve demand forecasting and reduce overordering or underordering.

Information flow in Supply Chain & Logistics



Logistics make the wheel of supply chain moving, and it is the flow of information that guides the flow of physical movements of goods in global supply chain network.



Source: Brian J. Gibson, Ph.D.

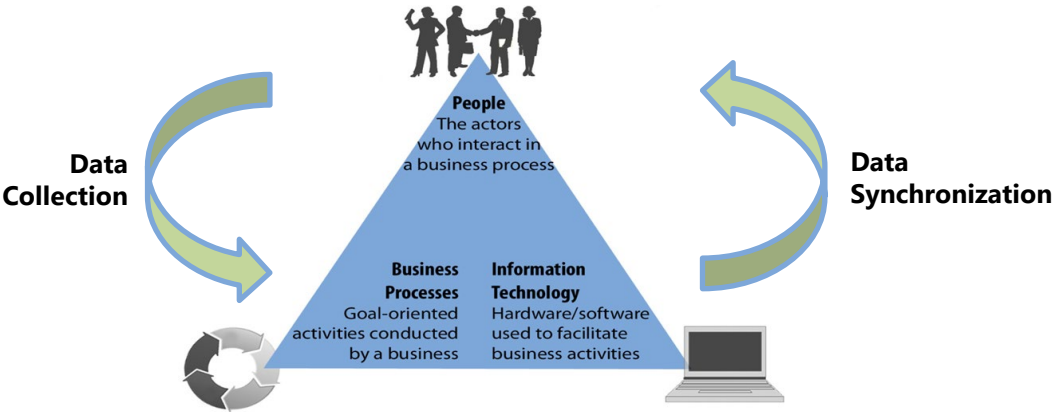
*"a chain is only as strong as its **weakest** link"*

Good flow of information and communication is key to manage the supply chain flows properly, without it, the chain could break.

E-Supply chain & E-Logistic milestones

Evolutionary stages	1970s	1980s	1990s	2000s	2010s	2020s
Typical systems	- Transport planning - MRP I	- TMS - WMS - MRP II (incl. labour & financial)	- ERP - DSS	- ERP II - CRM - SRM - ELM (e-Logistic Marketplace)	- Internet-based community systems - Mobile apps	- Industry-wide IoT platforms - Blockchain - Smart Supply Chain
Emergent IT trend	Siloed functional applications	Application portfolios	- Integrated systems - Web 1.0	- Service-oriented architecture - Web-base services	- Multi-scale ecologies - Web 2.0* - Social networking - Cloud computing	- Blockchain - Web 3.0** - IoT - AI, robotics
Integration focus	Functional	Functional	Internal integration within company	- External integration - Extended value chain	- Multi-enterprise - Collaborative network	Distributed network integration
Business Applications	Business function automation	Desktop & workgroup automation	Enterprise-wide automation	Industrial system automation	- Cross-industry automation - Flexible configuration	- Insight-drive systems - Big data analytics - Visualizations - Machine Intelligence
Supporting technology	Mainframe computers	- PC - LAN	Enterprise-wide computing	- Internet - Web platform - EDI	- Internet - Web platform - Mobile platform	- Internet - Blockchain 5G communication

Designing supply chain information system

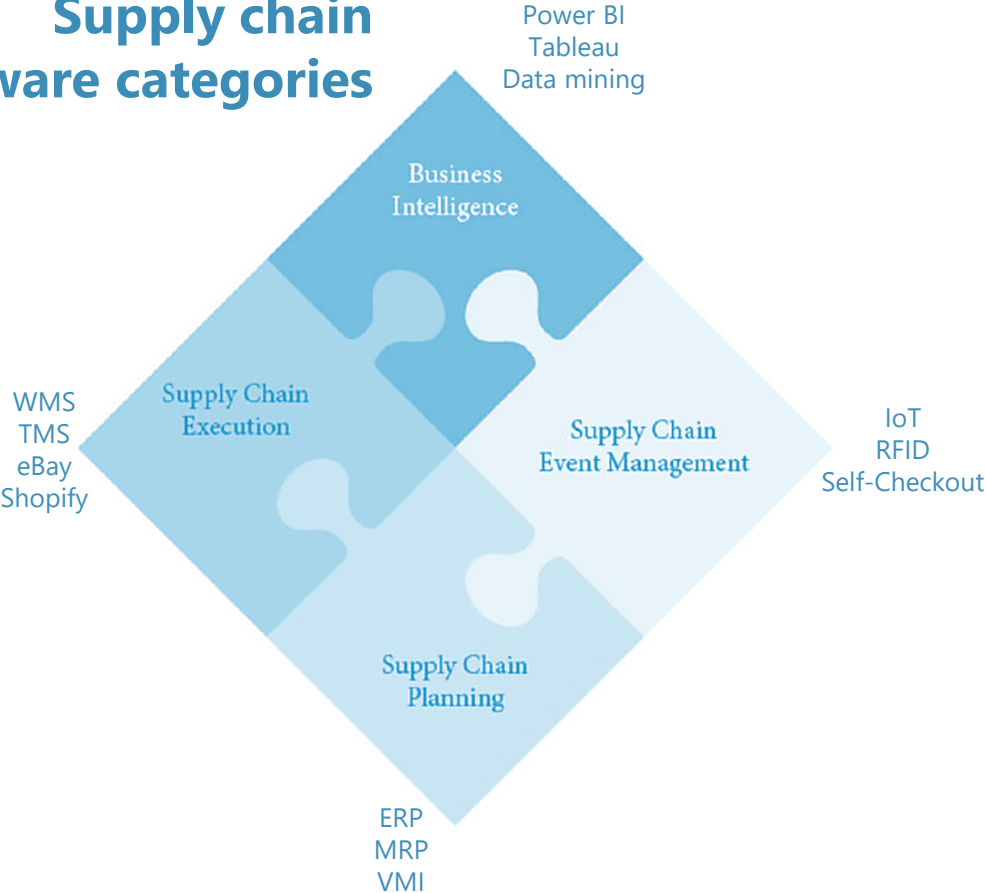


Two Approaches to Supply Chain Information Management

	TRADITIONAL APPROACH	HOLISTIC APPROACH
Processes	Data is captured into the system after the transactions are performed	Systems drive the transactions, thus capturing data in real-time as transactions are performed
Visibility	Delayed visibility of transactions and data	Real-time data visibility
Data Integrity	Certain or most data captured manually, impacting data integrity and quality	Systems driving the transactions ensure data integrity
Decision-making	Delayed access to data impedes effective decision-making	Real-time availability of data enhances decision-making
Interoperability	Tend to operate in silos	Holistic implementation ensures supply chain systems are integrated to facilitate transaction processing and troubleshooting

Source: USAID Global Health Supply Chain Program

Supply chain software categories



Adopting Supply Chain Information

Considering points for adopting information system

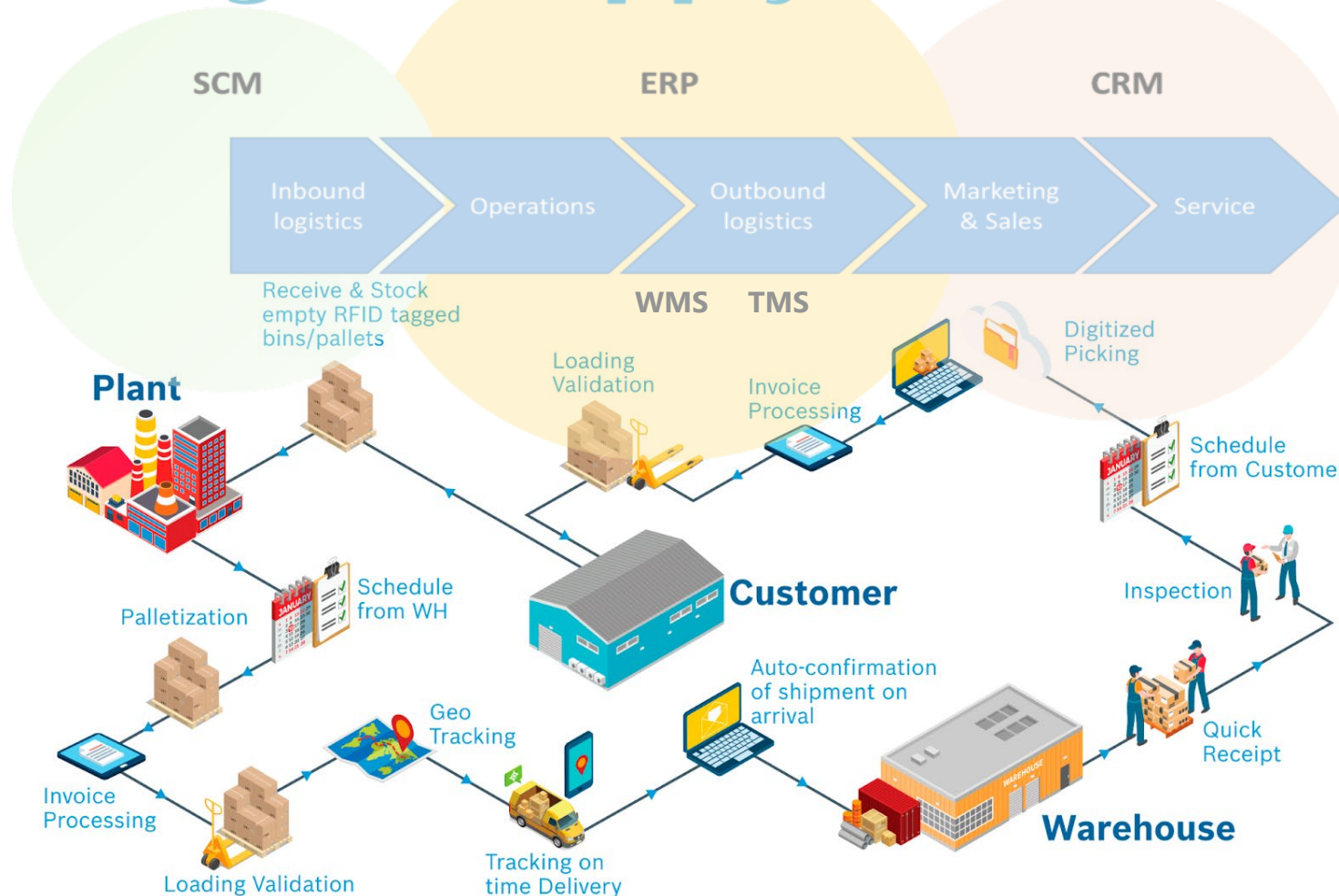
- Requirements for the system
- Offering features
- Purchase options
- Compatibility
- Technical issues
- Limitations



DRIVER	DEFINITION	ROLE OF TECHNOLOGY
Optimization	The alignment of global supply chain resources—both tangible and intangible, own or outsourced—to facilitate the success of supply chain members.	A variety of software is available to help maximize supply chain performance. Optimization tools analyze all possible options to find the best solution to a supply chain problem, such as finding the most cost-efficient delivery routes within a set of delivery requirement constraints.
Synchronization	The ability to coordinate, organize and manage end-to-end supply chain flows—products, services, information, and financials—in such a way that the supply chain functions as a single entity.	Technology facilitates real-time data availability and sharing between supply chain partners. The information provides common insight and facilitates collaborative decision making by the partners.
Adaptability	The degree to which respective supply chain members can change practices, processes and/or structures of systems and networks in response to unexpected events, their effects or impacts.	Supply chain tools generate actionable information by collecting vast amounts of data regarding demand, inventory flows, and orders; filtering the data; and presenting it in a form that can be readily used. That is, technology tools allow users to quickly adjust to changes in the supply chain.
Velocity	The speed at which end-to-end flows occur in the supply chain. It encompasses speed-to-market for new product introduction and execution when conditions are rapidly changing.	Properly implemented technologies help organizations rapidly respond to customer requirements for faster, more consistent flows of materials and information. Event management tools have the capability to address problems dynamically, provide recommendations, and automatically resolve the issue.
Profitability	The result of creating value through supply chain activities. Asset performance, working capital, returns on investment for infrastructure, technology, and people are some of the critical parts that create value in a global environment.	Technology tools help organizations manage inventory, transportation, and other key supply chain functions more effectively than could be accomplished manually. The outcomes are greater control of costs and enhanced customer service that generate stronger profits.

Source: Brian J. Gibson, Ph.D.

Today's Digital Supply chain informatics





THANK YOU