

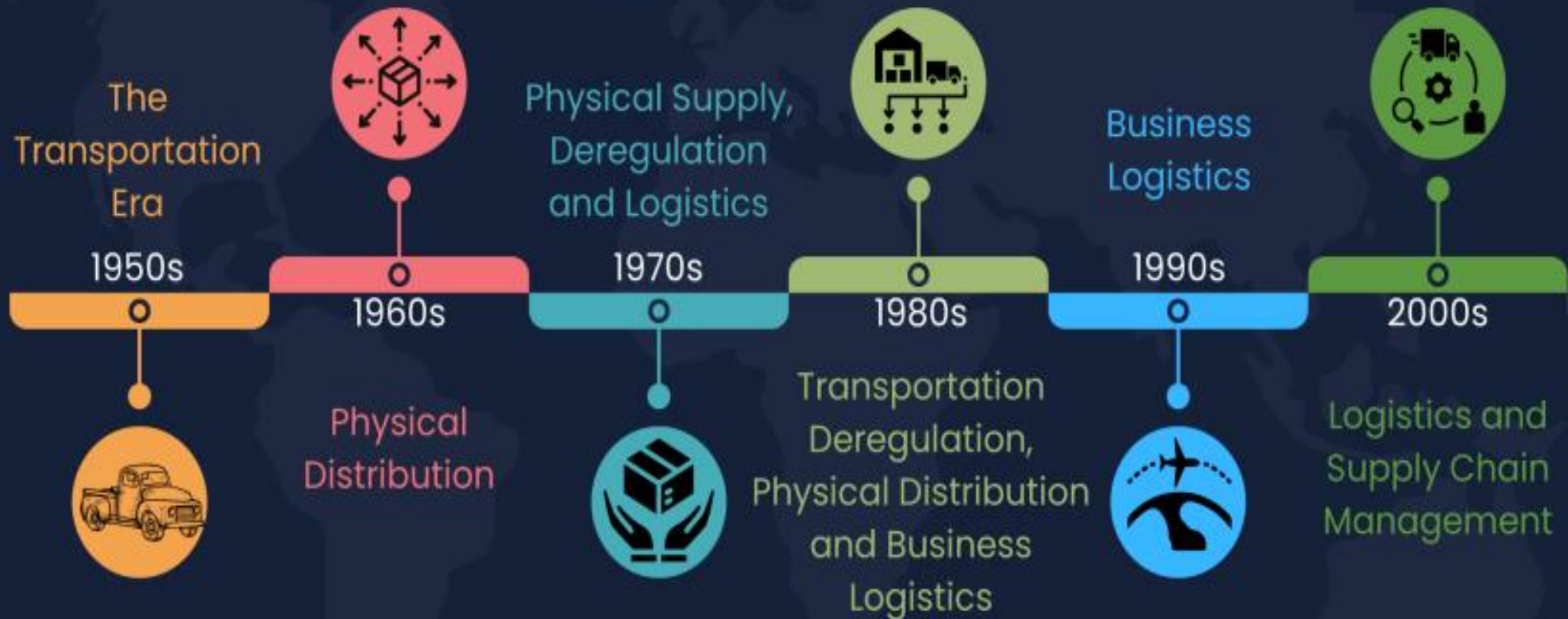
ESSENTIALS OF SUPPLY CHAIN MANAGEMENT

Evolution of the Supply Chain Concept

Over the years, most firms have focused their attention on the effectiveness and efficiency of separate business functions such as purchasing, production, marketing, financing, and logistics. The lack of connectivity among these functions, however, can lead to sub-optimal organizational goals and create inefficiency by duplicating organizational efforts and resources. To capture the synergy of inter-functional and Inter-organizational integration and coordination across the supply chain and to subsequently make better strategic decisions, a growing number of firms have begun to realize the strategic importance of planning, controlling, and designing a supply chain as a whole. In today's global marketplace, individual firms no longer compete as independent entities with unique brand names, but rather as integral parts of supply chain links. As such, the ultimate success of a firm will depend on its managerial ability to integrate and coordinate the intricate network of business relationships among supply chain partners

A supply chain is referred to as an integrated system that synchronizes a series of interrelated business processes in order to: (1) create demand for products; (2) acquire raw materials and parts; (3) transform these raw materials and parts into finished products; (4) add value to these products; (5) distribute and promote these products to either retailers or customers; (6) facilitate information exchange among various business entities (e.g., suppliers, manufacturers, distributors, third-party logistics providers, and retailers). Its main objective is to enhance the operational efficiency, profitability, and competitive position of a firm and its supply chain partners.

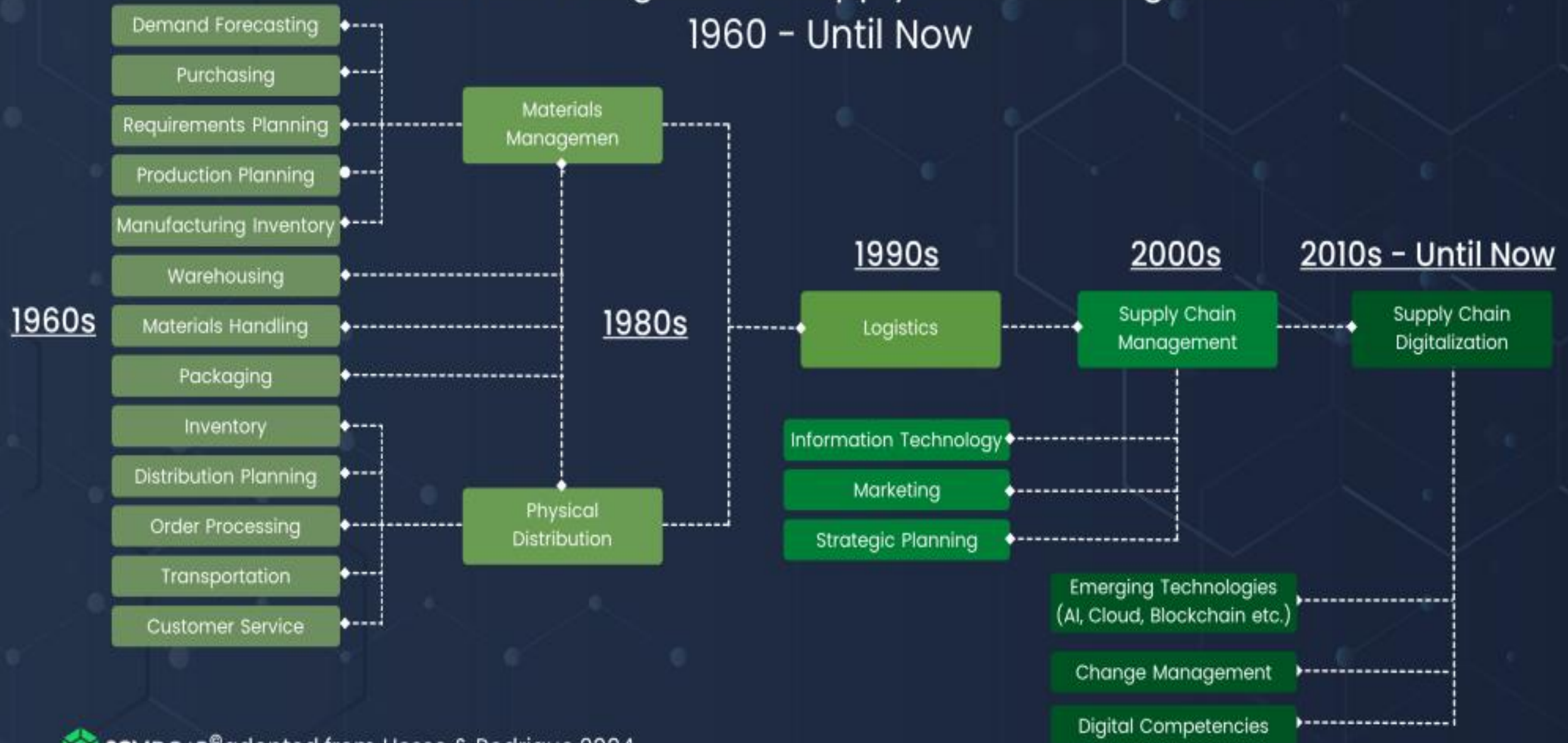
More concisely, supply chain management is defined as “the integration of key business processes from end-users through original suppliers that provide products, services, and information and add value for customers and other stakeholders”



The Chronological Evolution of Logistics & Supply Chain Concepts

Evolution of Logistics & Supply Chain Management

1960 - Until Now



Digital Supply chain

“Smart, value-driven, efficient process to generate new forms of revenue and business value for organizations and to leverage new approaches with novel technological and analytical methods”.

Digitizing the supply chain appears to be the most effective way to achieve the objective of a company with remarkable results. The entire business cycle of an industrial company (sales forecast, supply, production, storage, shipping, after-sales service, etc.) should imperatively be digitized in the current era

Supply Chain Digitization

Today vs Tomorrow

TODAY

Manual Data Gathering Across
Systems / Roles



Manual Collaboration



Manual "what-if" Scenario
Creation



Cadence-Based Planning and
Decision-Making



TOMORROW

Real-Time Connections

Digitize Collaboration
& Scenarios

Automatic Simulation

Continuous Event-Driven
Planning and Decision-Making

The advantages of digitalization are numerous including reliability, product and information traceability, automation (automatic synchronization = information flows and physical flows for example), and collection of forecast information for management, in particular sales forecasting, and inventory management according to demand using our sales forecasting software. Ultimately, supply chains that go digital are able to reduce their operating costs by 20% on average.

The foundation for building an intelligent supply chain is a digital platform with capabilities like IoT, AI, cognitive and blockchain, that can enable different aspects of a manufacturing process and also enable companies to build new disruptive capability. For example, sensor-based replenishment allows manufacturers not only to understand customer use of the product but also to drive capacity planning. In a physical supply chain, IoT sensors can provide near-real-time visibility to the movement of materials indoor or outdoor. Such tracking combined with AI enables manufacturers to better predict inventory stock addressing material availability on the factory floor.

IoT sensors are also capturing additional data including temperature, humidity, and vibration that can impact manufacturing processes and the quality of the final products. We are also seeing the application of blockchain smart contracts providing another level of traceability, authentication, and reducing counterfeit materials in the supply chain.

Industry 4.0 has enabled manufacturers to develop a foundation for smart manufacturing. That has enabled monitoring uptime of the manufacturing equipment and the quality of the production, so manufacturers can now predict supply chain issues proactively. With emerging IoT technologies, manufacturers can look into multiple factories making the same product to spot performance problems as well as track a product when the output from one factory goes into another factory.

A good example would be a sub-assembly from one factory being shipped to an OEM factory. Beyond understanding factory performance, manufacturers are also gaining insight into capacity and material availability and any associated issues with shipping and handling.

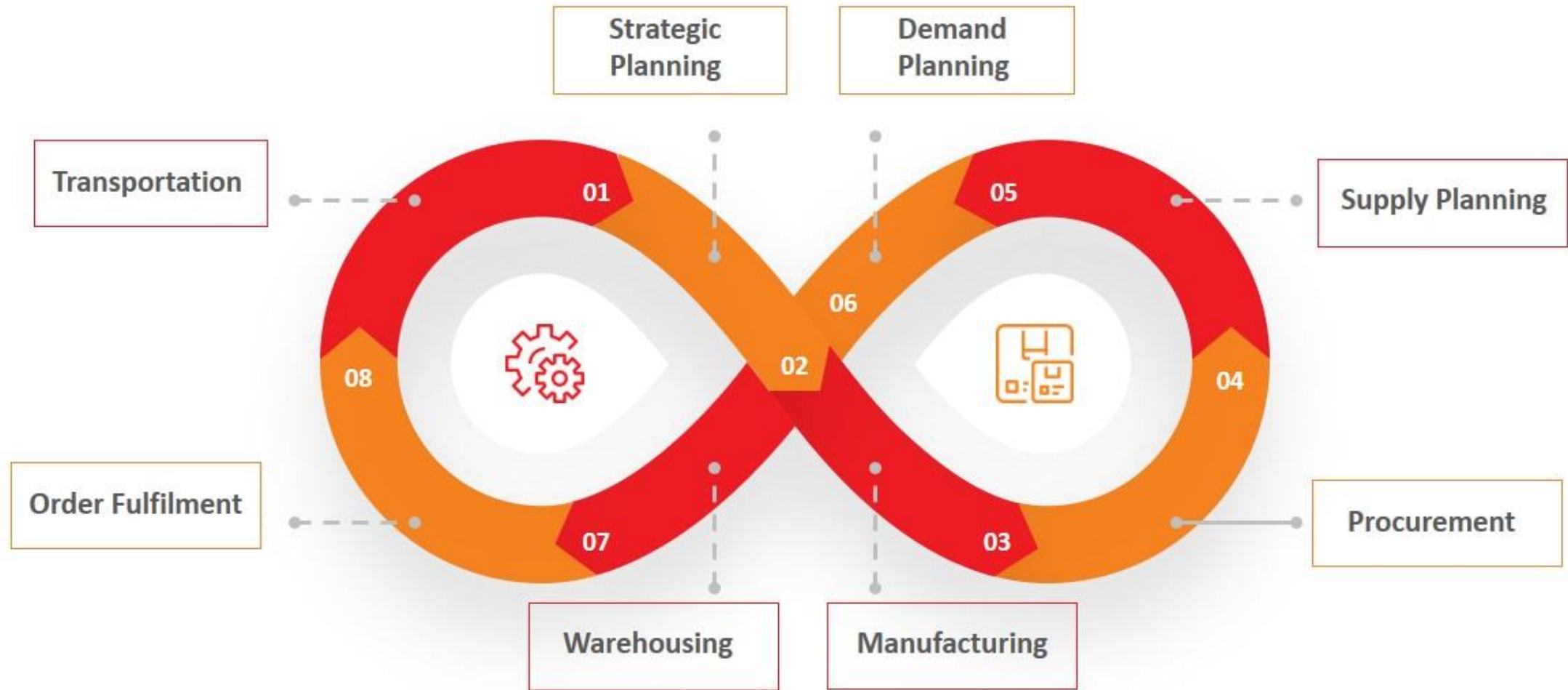
“Supply Chain Management is defined as a channel construct as the structure of inter-company units and extra-company agents and dealers, wholesale and retail, through which a commodity, product, or service is marketed”

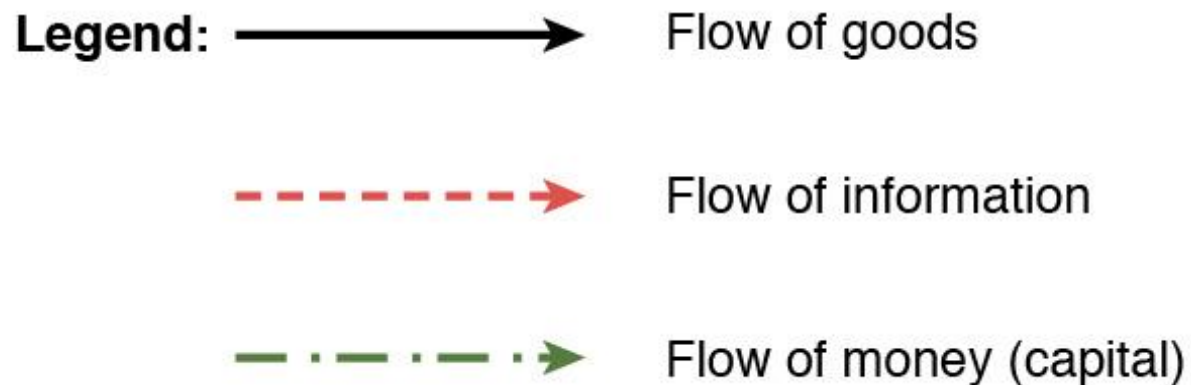
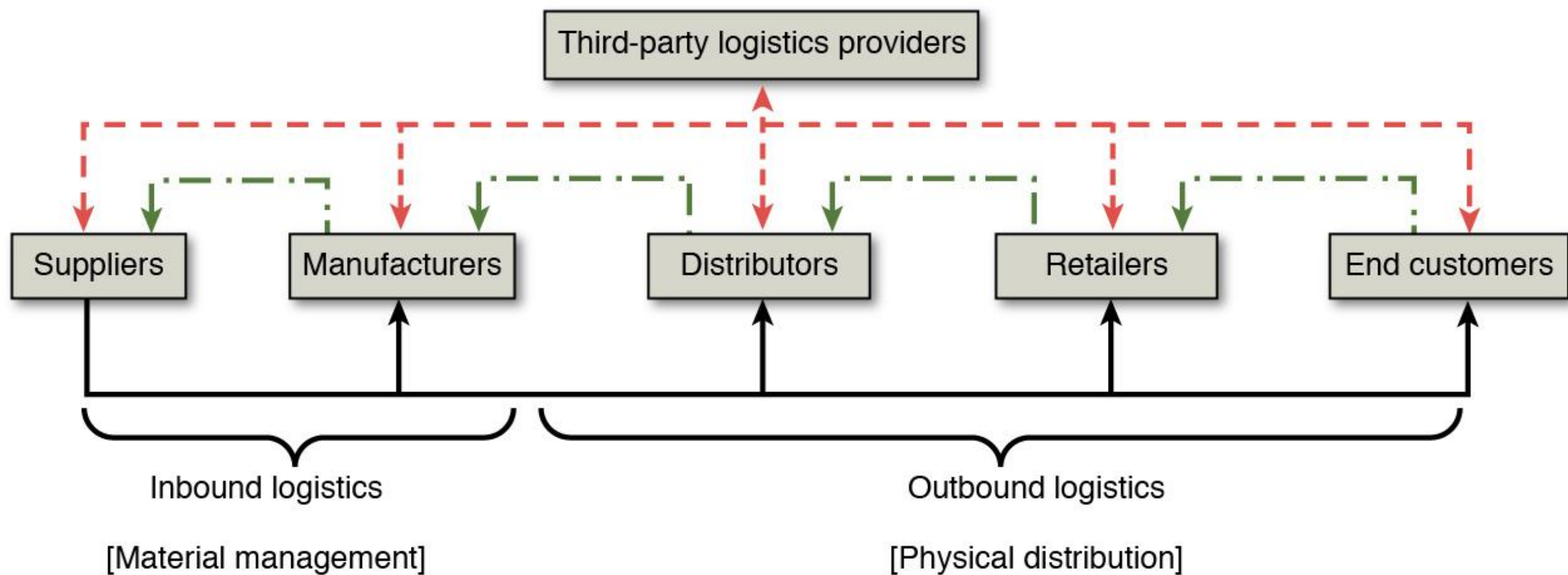


SUPPLY CHAIN **DIAGRAM**

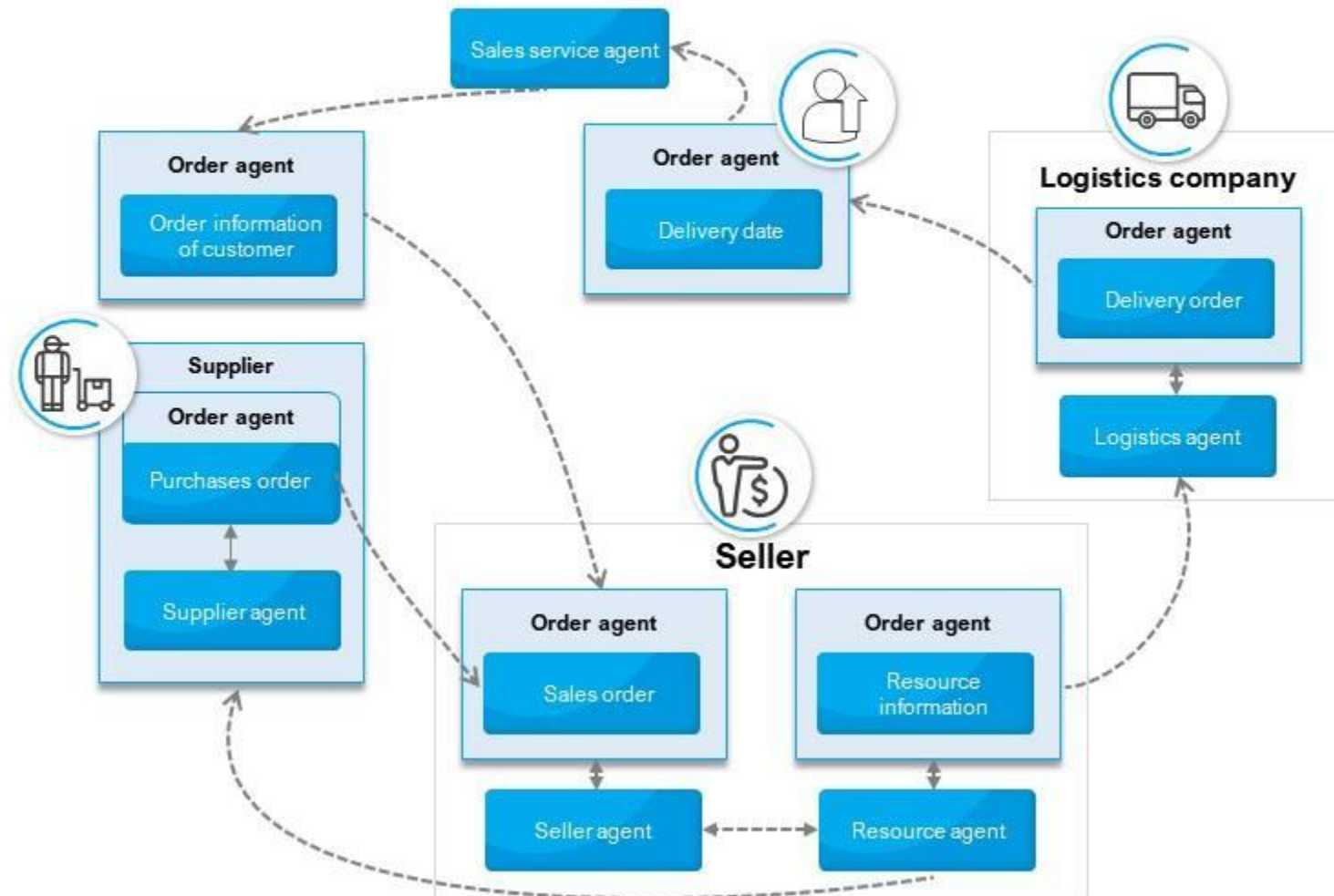


SUPPLY CHAIN **DIAGRAM**





INFORMATION FLOW IN SUPPLY CHAIN



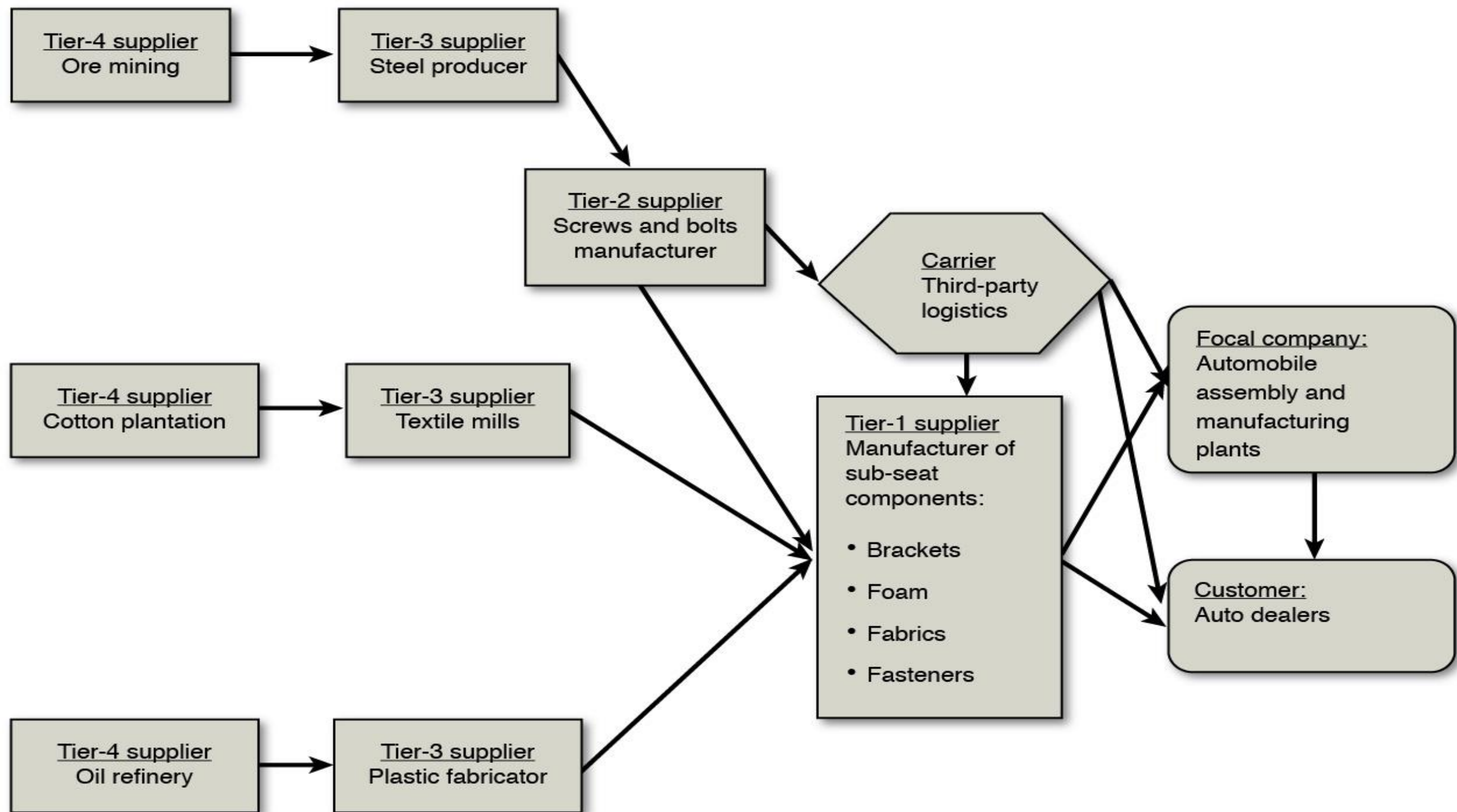
A Supply Chain is composed of two main business processes:

- ***Material management (inbound logistics)***
- ***Physical distribution (outbound logistics)***

Material management is concerned with the acquisition and storage of raw materials, parts, and supplies. To elaborate, material management supports the complete cycle of material flow—from the purchase and internal control of production materials, to the planning and control of work-in-process, to the warehousing, shipping, and distribution of finished.

On the other hand, physical distribution encompasses all outbound logistics activities related to providing customer service. These activities include order receipt and processing, inventory deployment, storage and handling, outbound transportation, consolidation, pricing, promotional support, returned product handling, and life-cycle support.

Combining the activities of material management and physical distribution, a supply chain does not merely represent a linear chain of one-on-one business relationships, but a web of multiple business networks and relationships. Along a supply chain, there may be multiple stakeholders, composed of various suppliers, manufacturers, distributors, third-party logistics providers, retailers, and customers.



For example,

a supply chain for typical automobile seats linking suppliers, manufacturers, third-party logistics providers, and customers is graphically illustrated. The supply chain begins with customers such as Ford, General Motors, and Fiat-Chrysler, who need to use automobile seats as critical parts of their manufactured cars. At the next upstream stage of the supply chain, the car manufacturer often purchases automobile seats from the original equipment manufacturer (OEM). This OEM needs to acquire the parts and components of the automobile seats, including brackets, foam, fabric, and fasteners from tier-one suppliers fabricating those parts and components. Because these parts and components are made of metals, screws, bolts, plastics, and textiles, the tier-one suppliers should acquire some simple parts and raw materials from tier-two suppliers, who should obtain such parts and materials from tier-three suppliers such as steel and yarn producers. These tier-three suppliers, in turn, obtain their sources of materials from ore mining and cotton plants at the furthest upstream of the supply chain. In case logistics activities involving the movement, handling, storage, and packaging of these materials, parts, components, and finished goods are outsourced from third-party logistics providers, the complexity of the supply chain network will be increased due to the possibility of both forward and reverse flow of products. As illustrated by this example, the typical supply chain cannot be explained by a linear linkage among the supply chain members.

The concept of supply chain management has evolved around a customer-focused corporate vision, which drives changes throughout a firm's internal and external linkages and then captures the synergy of inter-functional, Inter-organizational integration and coordination. Herein, integration does not entail merger/acquisition or equity of the ownership of other organizations. The successful integration of the entire supply chain process can bring about a number of bottom-line benefits.

- ***Improved customer service and value added***—Customer service can be improved through increased inventory availability, better on-time delivery performances, higher order fill rates, and lower post-sales costs.
- ***Enhanced fixed capital***—Fixed capacity is maximized through a strategic partnership and joint planning that can increase overall capacity and throughput.
- ***Utilized asset***—Asset utilization can be maximized by increasing inventory turns and closely aligning supply with demand.
- ***Increased sales and profitability***—The ability to assess outcomes due to price changes, promotional events, and new product development can be enhanced through increased visibility resultant from information sharing among supply chain partners.

Logistics



- Practical function of supply chain
- An internal process within a company that is sometimes outsourced to a third party such as freight forwarders
- Focuses on cost and time-efficient delivery of goods
- Includes inbound & outbound transportation, warehousing, fulfillment, customs clearance
- Strong focus on customer satisfaction

Manages the process of bringing products to the market

Supply Chain

- A strategic view of logistics, procurement and planning
- Works with many external partners such as manufacturers & supply and delivery partners
- Focuses on an innovative approach and cost-cutting at every step of the process
- Includes procurement, supply planning, manufacturing, inventory management, innovation, constant improvement, strategising and planning
- Strong focus on competitive advantage

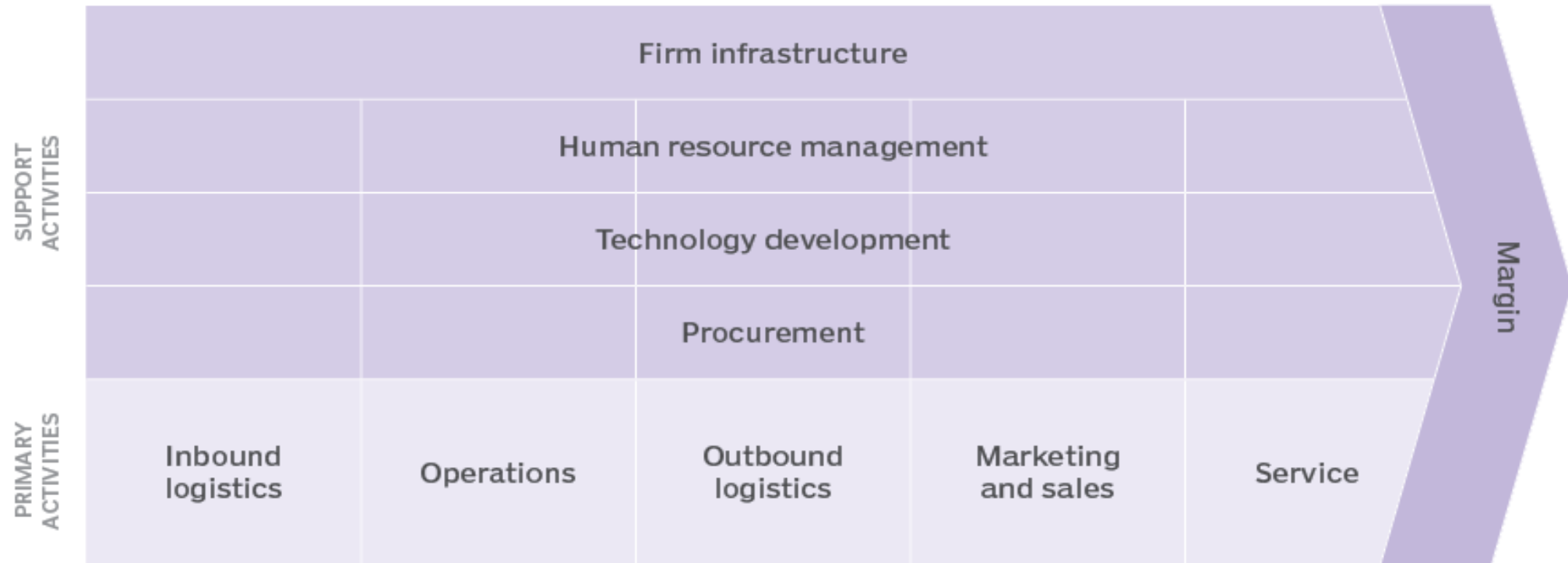
Basis For Comparison	Logistics Management	Supply Chain Management
Meaning	The process of integrating the movement and maintenance of goods in and out the organization is Logistics.	The coordination and management of the supply chain activities are known as Supply Chain Management.
Objective	Customer Satisfaction	Competitive Advantage
Evolution	The concept of Logistics has been evolved earlier.	Supply Chain Management is a modern concept.
How many organizations are involved?	Single	Multiple
One in another	Logistics Management is a fraction of Supply Chain Management.	Supply Chain Management is the new version of Logistics Management.

What is a value chain?

A value chain is a concept describing the full chain of a business's activities in the creation of a product or service -- from the initial reception of materials all the way through its delivery to market, and everything in between.

The value chain framework is made up of five primary activities -- inbound operations, operations, outbound logistics, marketing and sales, service -- and four secondary activities -- procurement and purchasing, human resource management, technological development and company infrastructure.

Value chain



How do value chains work?

The value chain framework helps organizations identify and group their own business functions into primary and secondary activities. Analyzing these value chain activities, subactivities and the relationships between them helps organizations understand them as a system of interrelated functions. Then, organizations can individually analyze each to assess whether the output of each activity or sub-activity can be improved -relative to the cost, time and effort they require.

Thus, when an organization applies the value chain concept to its own activities, it is called a value chain analysis.

Primary activities

Primary activities contribute to a product or service's physical creation, sale, maintenance and support. These activities include the following:

- Inbound operations.** *The internal handling and management of resources coming from outside sources -- such as external vendors and other supply chain sources. These outside resources flowing in are called "inputs" and may include raw materials.*
- Operations.** *Activities and processes that transform inputs into "outputs" -- the product or service being sold by the business that flow out to customers. These "outputs" are the core products that can be sold for a higher price than the cost of materials and production to create a profit.*
- Outbound logistics.** *The delivery of outputs to customers. Processes involve systems for storage, collection and distribution to customers. This includes managing a company's internal systems and external systems from customer organizations.*
- Marketing and sales.** *Activities such as advertising and brand-building, which seek to increase visibility, reach a marketing audience and communicate why a consumer should purchase a product or service.*
- Service.** *Activities such as customer service and product support, which reinforce a long-term relationship with the customers who have purchased a product or service.*

As management issues and inefficiencies are relatively easy to identify here, well-managed primary activities are often the source of a business's cost advantage. This means the business can produce a product or service at a lower cost than its competitors.

Secondary activities

The following secondary activities support the various primary activities:

- Procurement and purchasing.** *Finding new external vendors, maintaining vendor relationships, and negotiating prices and other activities related to bringing in the necessary materials and resources used to build a product or service.*

- Human resource management.** *The management of human capital. This includes functions such as hiring, training, building and maintaining an organizational culture; and maintaining positive employee relationships.*

- Technology development.** *Activities such as research and development, IT management and cybersecurity that build and maintain an organization's use of technology.*

- Company infrastructure.** *Necessary company activities such as legal, general management, administrative, accounting, finance, public relations and quality assurance.*

Benefits of value chains

The value chain framework helps organizations understand and evaluate sources of positive and negative cost efficiency. Conducting a value chain analysis can help businesses in the following ways:

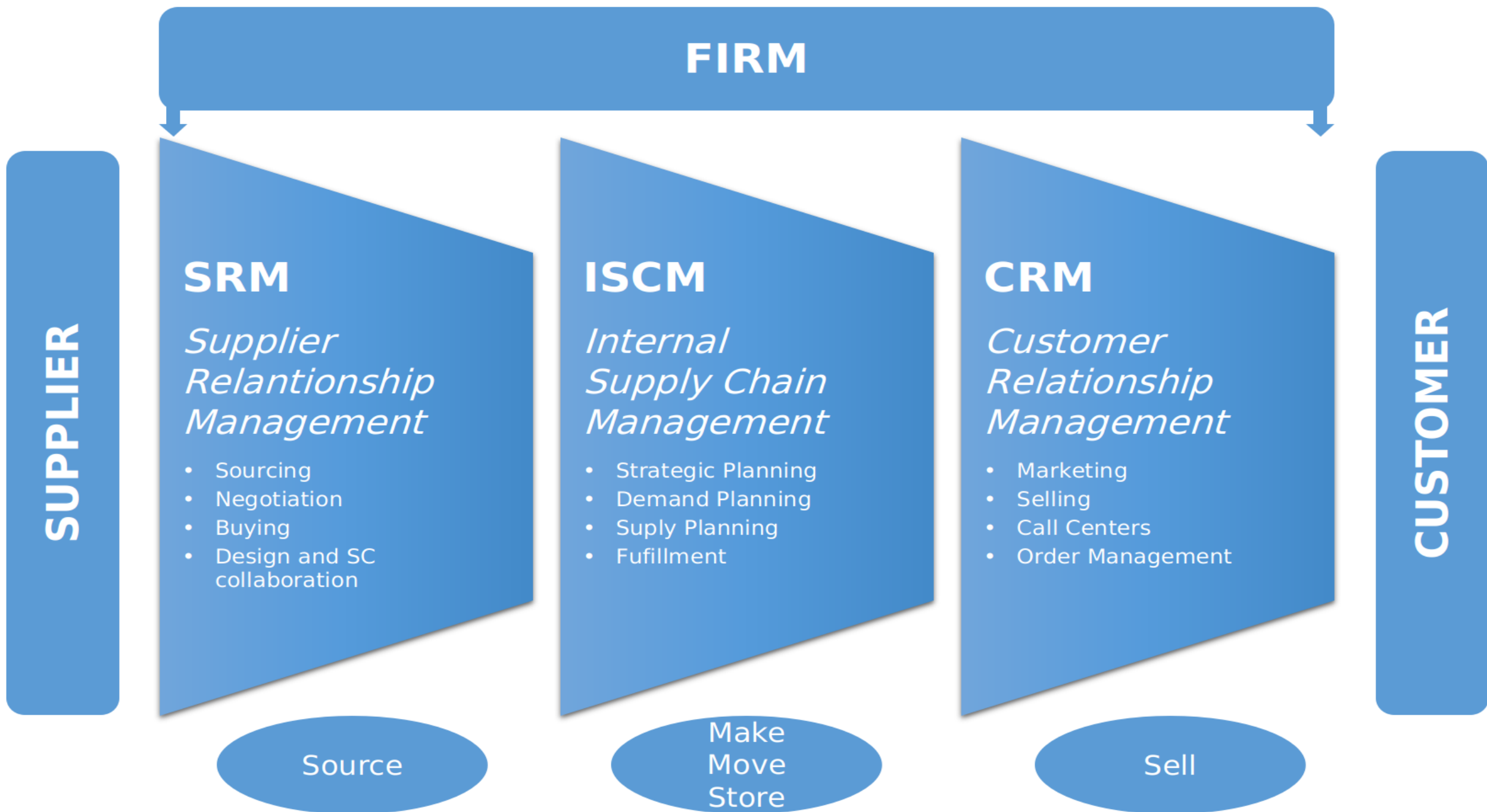
- Support decisions for various business activities.
- Diagnose points of ineffectiveness for corrective action.
- Understand linkages and dependencies between different activities and areas in the business. For example, issues in human resources management and technology can permeate nearly all business activities.
- Optimize activities to maximize output and minimize organizational expenses.
- Potentially create a cost advantage over competitors.
- Understand core competencies and areas of improvement.

Why Supply Chain Macro Processes?

As the performance of an enterprise becomes more closely related to the performance of its supply chain, firms should concentrate on these macro processes. To achieve breakthrough performance a firm needs to consider the whole supply chain, not just internal processes.

What is Macro Process?

Macro processes can be defined as **a set of processes and activities that together are essential to achieve a company's strategic objectives**. They are made of processes that occur in different sectors, involving different functions or positions.



Source: made by author

As standalone components, people, process and technology are necessary for organizational transformation and management. To successfully gain a competitive advantage, organizations need to balance and maintain good relationships among people, processes and technology in tandem.

People, process and technology

is a holistic methodology where the balance of people, process and technology drives action. This framework most often applies to organizations pursuing business intelligence (BI) through technology-enabled supply chain improvements. To fundamentally change supply chain performance, technology needs to be synchronized *with* people and processes, rather than against them. There are three ideal outcomes from any digital initiative: *increase speed, increase efficiency and meet or exceed expectations*. While technology makes it possible to achieve these outcomes, it cannot be successfully integrated without influencing the redesign of the people and processes around them.

Getting Started

Organizations need a pragmatic roadmap to drive digital transformation towards actualizing their future-state vision. People, processes and technology are so intrinsic to a transformation that one-off initiatives that neglect to address each side will ultimately underwhelm and lead back to outdated practices. From our experience, a building a future-ready supply chain begins with four steps:

- 1. Assess your organization's current state**
- 2. Build your future-state vision**
- 3. Map your pragmatic technology roadmap**
- 4. Adopt PPT framework**

While all organizations are swiftly adopting digital technologies, high-performing supply chains recognize technology is only one component of a far more holistic effort. As we continue to explore the qualities of a future-ready supply chain, your organization can realize the true potential of your people, processes and technology to unlock the power of your digital investment.