Lecture 5

E-Supply Chain Management

Supply Chain Management (SCM)

Supply Chain Management (SCM)–is the coordination of all activities of an organisation from its suppliers and partners to its customers

SCM optimises material flows & information flows associated with the organisation's operations.

Digital business applications – essential to manage these flows.

SCM unifies e-procurement & sell side e-commerce. **E-procurement** is the electronic integration of all procurement activities e.g., purchase request, authorization, ordering, delivery and payment between a buyer and supplier

SCM can be enhanced through buy side e-commerce, internal communications, relationships with partners and sell side e-commerce

Digital Business technologies – allow the flow of information to be redefined to enable sharing of information between partners, at lower cost than previously was possible.

SCM capabilities – best known for importance in delivering profitability

Zara Case Study (Page 249/250)
Some Key Points

- Produces 450 million items per year
- Small batch deliveries twice a week to all stores.
- Adapts couture designs, manufactures, distributes & retailers within 2 weeks of original design appearing on catwalk.
- It owns its supply chain
- Competes on its speed to market
- Operates 'Just in time' production process.
- Factories reserve 85% of capacity for in season adjustments.
- Relies on fabric sourcing, cutting & sewing facilities near its design HQ in Spain so turnaround times very quick.
- 50% of its clothes are designed/ manufactured middle of season
- **Zara sells 85% of its clothes at full price, compared to 60-70% for the industry average**
- **Zara can get a product from concept to store in 15 days – the industry standard is 6 months**

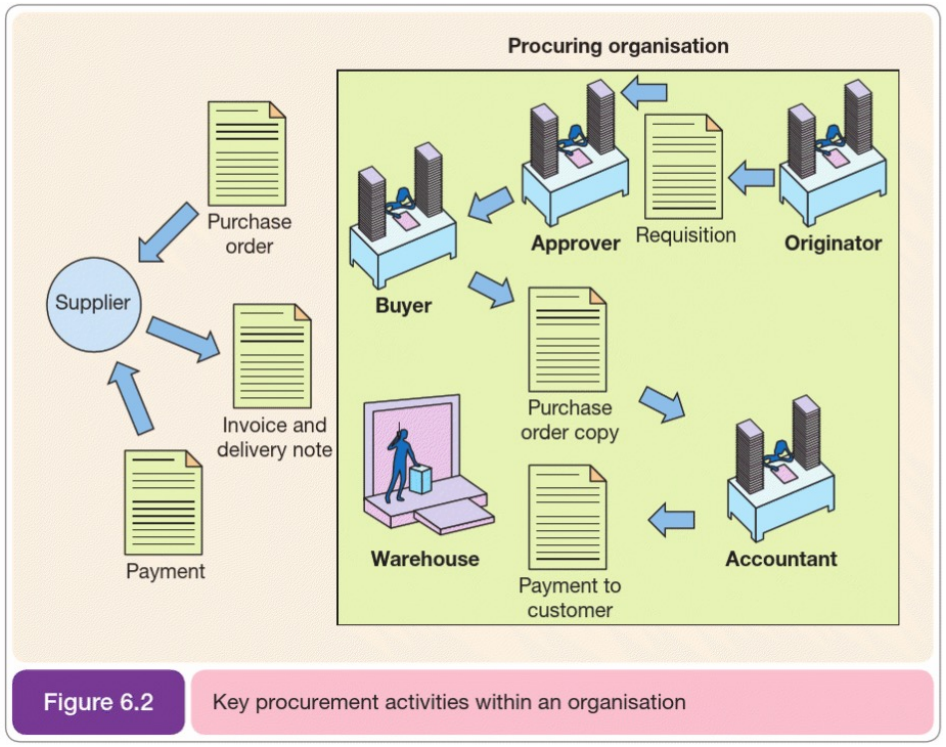

Figure 6.2 Key procurement activities within an organisation

Source: Chaffey et al (2019)

E- Procurement

Can help achieve savings and can directly impact the customer.

E-procurement should be directed at improving performance for each of the ‘five rights of purchasing’

1. At the right price
2. Delivered at the right time
3. Of the right quality
4. Of the right quantity
5. From the right source.

EPS – Electronic Procurement System – used to automate all or part of the procurement function.

Problems of Supply Chain Management & How Digital Business Technology can assist

Problems of Supply Chain Management → How Digital Technology Can Reduce Problems

1. Pressure to reduce costs of manufacturing & distributing products to remain competitive – Reduction in paperwork due to electronic transmission of orders/ invoices & delivery notes. Reduced inventory holding as better understanding of demand. Reduced time for information & component supply across the supply chain. Lower purchase & management costs through use of SaaS (online service)
2. Demand Forecasting – Sharing Customer demand with suppliers as part of ECR (Efficient Consumer Response)
3. Failure to deliver products on time consistently/ lack of items on shelf in retailer – Supplier becomes responsible for item availability through vendor managed inventory
4. Failure to deliver/ ship correct product – Human error reduced as checks/ balances built into system.
5. High Inventory Costs – Better demand forecasting & quicker restoration of inventory, reduces inventory costs.
6. Time for New Product Development – Improved information on components & suppliers from online marketplaces

Inventory Turnover – Measure of the number of times inventory is sold or used in a time period such as a year. Cost of goods sold divided by average inventory

Supply Chain – Simple View | View With Intermediaries

Upstream Supply Chain – transactions between organisation and its suppliers & intermediaries, similar to buy side e-commerce

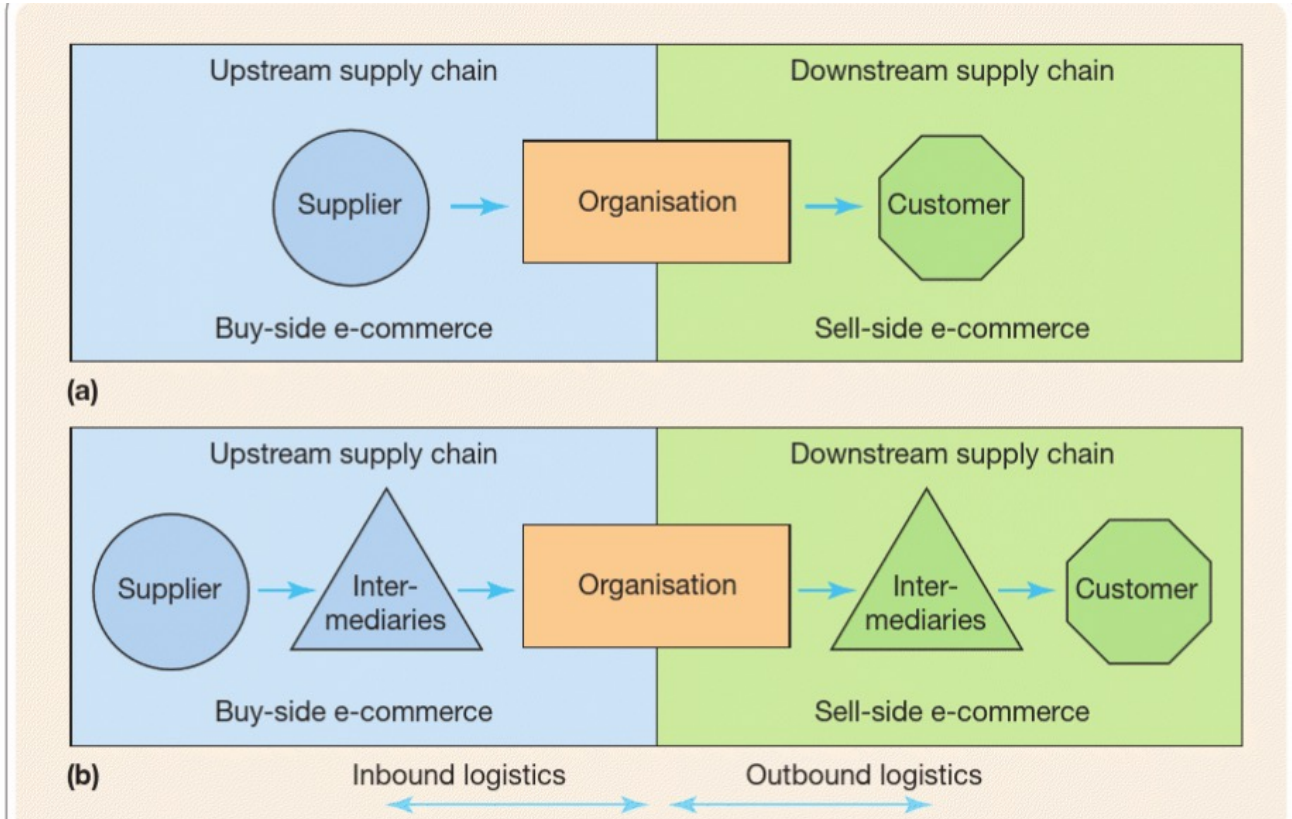

Figure 6.3 Members of the supply chain: (a) simplified view; (b) including intermediaries

Downstream Supply Chain – transactions between organisation and its customers & intermediaries, similar to sell side e-commerce

Supply Chain Network
Links between an organisation and all partners involved in multiple supply chains

Source: Chaffey et al (2019)

Institute of Grocery Distribution - 4 Pillars of Supply Chain Success

The four pillars of supply chain success

1. Customer Centric

The principle is simple: a successful supply chain must be customer centric. After all, the supply chain exists to serve customers. The best supply chains build their upstream processes to support the delivery of outstanding service for the end customer. They should directly influence the decision-making process, and an effective way of doing so is to prioritise customer-facing metrics and initiatives. This includes a focus on on-shelf availability, multichannel requirements and quality and freshness.

Keep a look out for a new set of reports in 2017: **Supply Chain Fundamentals**. These reports detail the ways businesses can improve their ability to serve customers.

2. Powered by People

The best supply chains utilise people to add value. There will always be a place for people in the supply chain, but it's clear we will need to adapt. This is evidenced by the much-talked about skills shortage impacting the food and grocery industry. Attracting, retaining and retraining are becoming increasingly important facets of supply chain management. Doing so is key to operating a successful, customer-centric supply chain.

Our **"Mind the Skills Gap"** thought leadership represented a significant shift in the insight that we produce in this area. Look out for more later this year leading up to the Supply Chain Summit.

3. Transformed by Technology

Technological innovation and adoption have helped transform how the supply chain functions. Its ability to help businesses better serve customers is well publicised, but it also presents challenges for organisations. Where to invest in automation? How to create a synchronised supply chain? How to transition to a data-driven environment? These are just a few of the challenges that today's supply chains face.

Our recent thought leadership on Supply Chain Technology – adapting after impact supplies some of the answers in this rapidly evolving area.

4. Resilient & Responsive

Disruption and interruption are on the increase. Whether it's through the adoption of technology or the impact of the political or economic landscape, recognising where risks and their impacts lie requires a plan. This is the first step to building a resilient and responsive supply chain capable of meeting the growing array of challenges.

We explored how business perceives risk and how they can better collaborate with trading partners to deal with them in our recent Increasing resilience in the food and grocery supply chain report. Keep a look out for more practical tips in the coming weeks.

Boots Case Study (Page 255)

Key Points

- 70million automated distribution centre.
- Combined 4 national distribution centres & 17 regional warehouses into one central distribution centre.
- Led to efficiency & availability of goods in the store by a value of more than 80%
- New system handles 75,000 order lines a day.
- Increased time efficiency by 65%
- Improved order traceability

Source: Institute of Grocery Distribution (2020)

Simple Model of Supply Chain Management

1

- Acquiring Resources (inputs)
- Transforming resources (process) into…
- Products & Services (outputs)

2

Moving to a digital business

Organisations can review the transformation process

To Deliver goods/services to customers with greater efficiency & lower cost

3

SCM also provides opportunities to improve product performance and deliver superior value to the customer so it can have a substantial impact on profitability

Typical Supply Chain – B2B

The Organisation

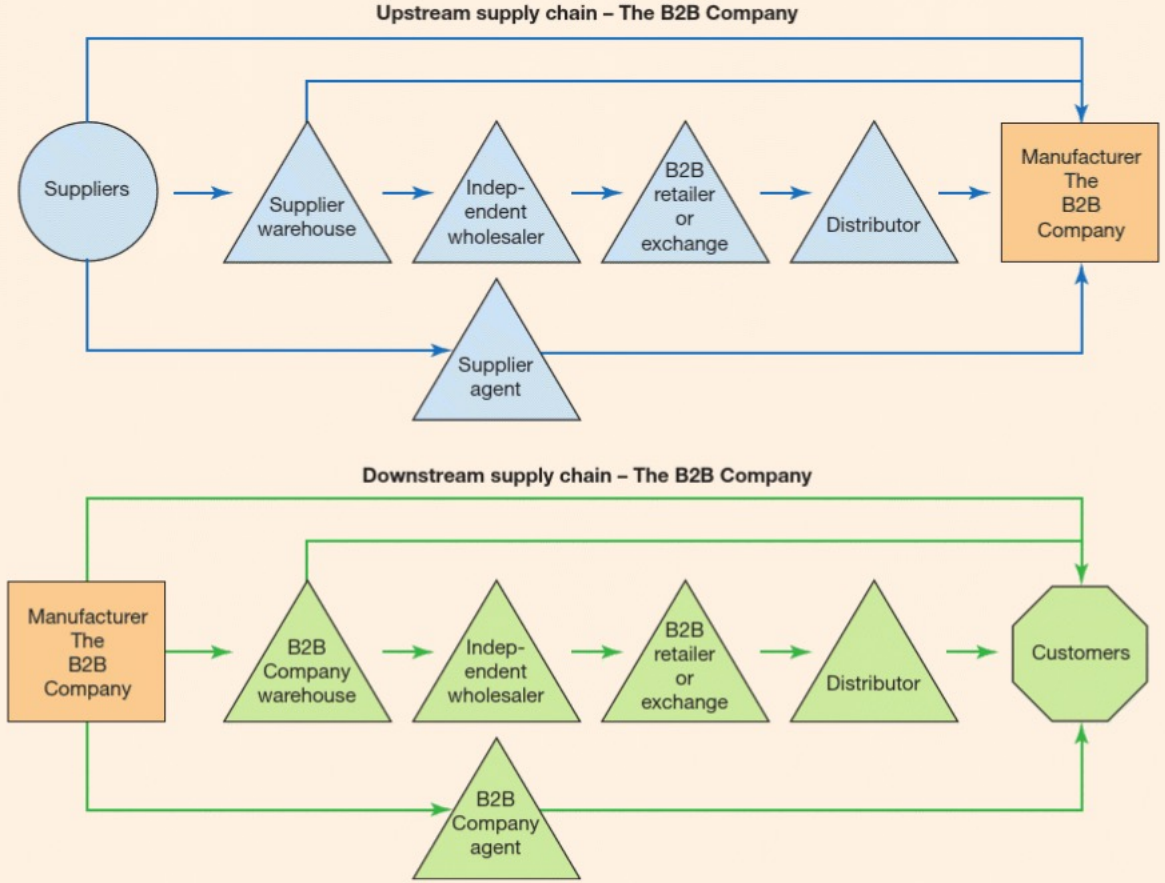

Figure 6.5 A typical supply chain for a B2B company

The Organisation

Source: Chaffey et al (2019)

ECR – Efficient Consumer Response

- ECM was developed for Food retailing business in the USA
- Now applied to other products / countries
- Developed by David Jenkins, chairman of Shaw's supermarkets to complete with e.g., Walmart

- Traditional SCM focused on efficient product replenishment
- Focus of ECR is on demand management aimed at satisfying customer demand – by optimizing product assortment strategies/ promotions & new product introductions.

Table 6.2 Objectives and strategies for effective consumer response (ECR)

Objective	Strategy
Timely, accurate, paperless information flow	Revision of organisation processes supported by information systems
Smooth, continual product flow matched to variations in consumption levels	See strategies below
Optimise productivity of retail space and inventory	Efficient store assortments
Optimise for time and cost in the ordering process	Efficient replacement
Maximise efficiency of promotions	Promotions are integrated into entire supply chain planning
Maximise effectiveness of new product development (NPD)	NPD process improved and better forward planning with other partners

Logistics

Logistics can be described as the 5 rights.

Ensuring the products/services are:

1. In the Right **Place**
2. At The Right **Time**
3. In the Right **Quantity**
4. At the Right **Quality**
5. At the Right **Price**

Source: Chartered Institute of Logistics & Transport

Inbound Logistics:
Management of material resources entering an organisation from its suppliers/ other partners

Outbound Logistics:
Management of resources supplied from an organisation to its customers & intermediaries

Logistics is the efficient management of the supply chain

Same Day Delivery

The final delivery step to the customer has become increasingly more important, calling for innovative logistics solutions e.g. Alternative pick ups for Amazon deliveries at train station lockers, universities, post offices, and parcel collection from local convenience stores.

4 Prerequisites for organisations to provide same day delivery

1. **Products Need to be locally available** – Multichannel retails will have a network of stores; online retails would have to invest in building network of urban warehouses
2. **Retailers need to have a dynamic overview of inventories** – Needed so retailers can see if goods are available for same day delivery during check out process. Needs a lot of investment in IT infrastructure.
3. **Picking & packing needs to be fast** – Investment in logistics infrastructure needed to reduce lead time.
4. **Flexibility needed to pick up/deliver orders ad hoc or multiple times in a day** - Technologies such as geo-fencing can aid rerouting to allow logistics providers to respond to new shipments

Push & Pull Supply Chain

Push Supply Chain – This is a supply chain that focuses on distribution of a product to passive customers. Manufacturer develops an innovative product, identifies a suitable target market & creates a distribution channel to push the product to market. - motivation is to optimize the production process for cost & efficiency

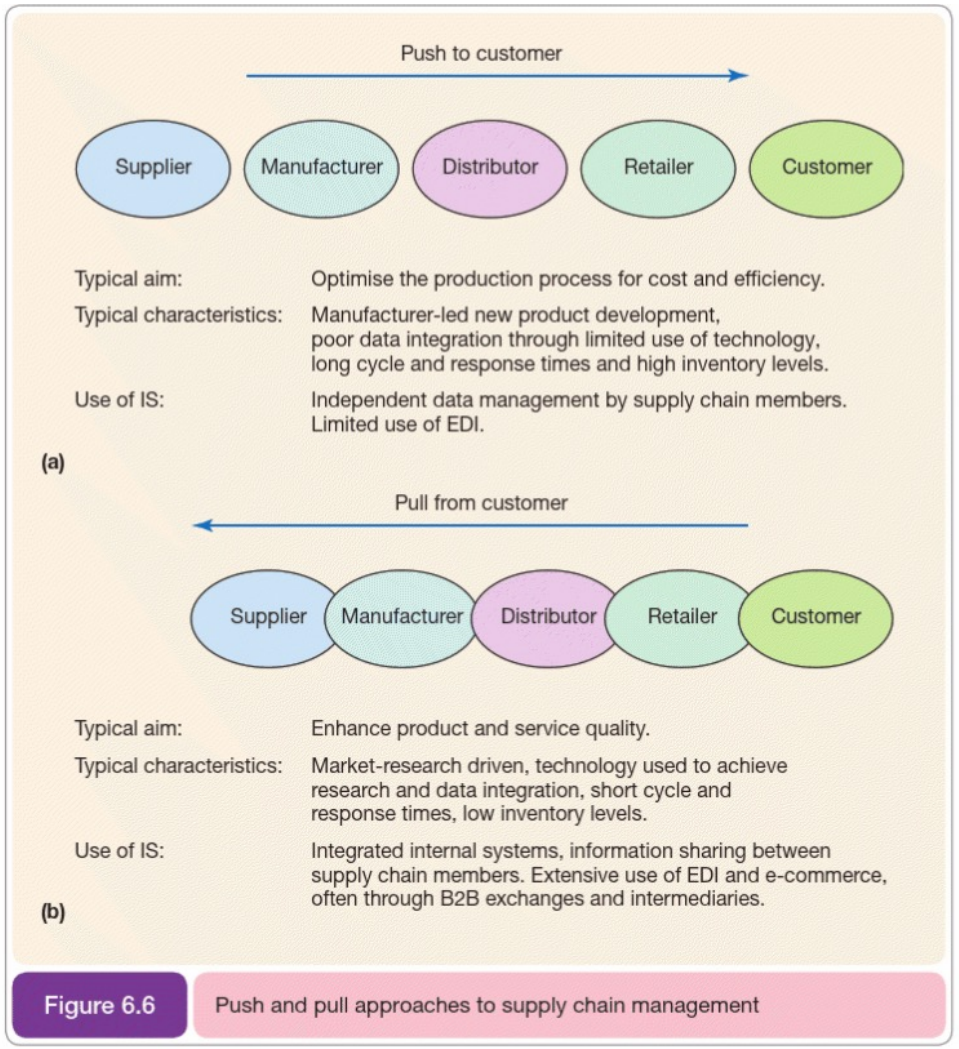

Figure 6.6 Push and pull approaches to supply chain management

Pull Supply Chain – Consistent with ECR (Efficient Customer Response – Slide 10)

Emphasises using the supply chain to deliver value to customers who are actively involved in product/ service specification.

- Focused on customer's needs
- Starts with an analysis of their requirements with market research / close cooperation with customers and suppliers in new product development
- Supply chain is constructed to deliver customer value by reducing costs and increasing service quality

Source: Chaffey et al (2019)

The Value Chain (VC)

The Value Chain (VC)

- Developed by Michael Porter (1980)
- Considers **how supply chain activities can add value to products/ services delivered to customers.**
- Model describes different **value adding activities** that **connect a company's supply side with its demand side**.
- **Internal value chain** – within the boundaries of the organisation
- **External value chain** – where activities are performed by partners.
- By analyzing the value chain, **managers can redesign internal/ external processes to improve their efficiency & effectiveness.**
- Benefits for the customer are created by **reducing cost & adding value within each element of the value chain** e.g. procurement, manufacture, sales & distribution, and at the interface between the elements of the value chain e.g. sales and distribution .

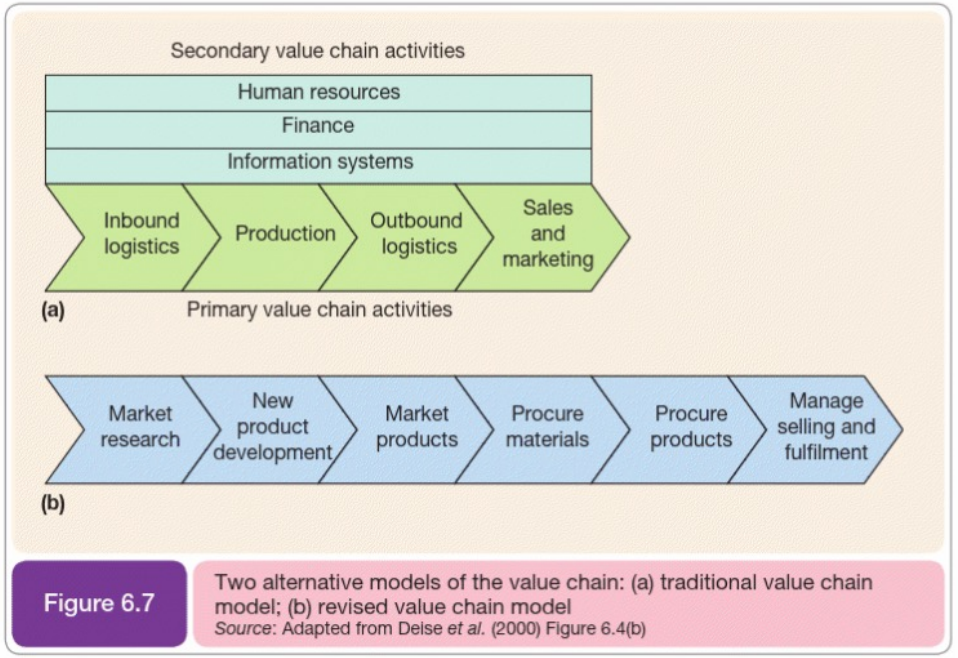

Figure 6.7 Two alternative models of the value chain: (a) traditional value chain model; (b) revised value chain model
Source: Adapted from Deise *et al.* (2000) Figure 6.4(b)

In **6.7a** there is a distinction between primary & secondary (support) activities

With the advent of digital technologies, **6.7b** shows revised model where support activities are integral to primary activities

Digital Communications can enhance the value chain
- Making procurement more efficient
- Enabling data integration between activities.
- Lower Inventory holding
- Reduce production times
- Increasing information flow to integrate activities
- **Virtual Value Chain** – refers to virtual value chain mirroring the physical value chain through ecommerce which mediates between traditional value chain activities e.g. market research, procurement, logistics, manufacture and distribution. Processing is machine base or 'virtual' rather than paper based

Criticisms of Traditional Value Chain Model
- Most applicable to manufacturing
- One way chain pushing products to customer
- The internal value chain does not emphasize value of networks

Source: Chaffey et al (2019)

The Value Stream

The Value Stream – is the combination of actions needed to deliver value to the customer as products and services

The Value Stream – closely related to the value chain.

It considers different types of tasks involved with adding value and looks at how the efficiency of these tasks can be improved.

Womack & Jones (1998) define the value stream as

'*the set of all the specific actions required to bring a specific product through the three critical management tasks of any business*'

1. Process of new production development and production launch
2. Process of order taking and scheduling delivery
3. Process of transforming raw materials to finished product delivered to customers.

This approach by Womack & Jones is aimed at adding value in each of the 3 management tasks e.g. by reducing new product development & production times & costs, organisations can increase customer value by decreasing fulfilment time or price, & / or increasing product/ service quality . **E-commerce plays a key role in decreasing time to market & production time/ costs**

Value Networks

External Value Chain/ Value Network

This refers to the links between an organisation and its strategic/ non strategic partners that form its external value chain

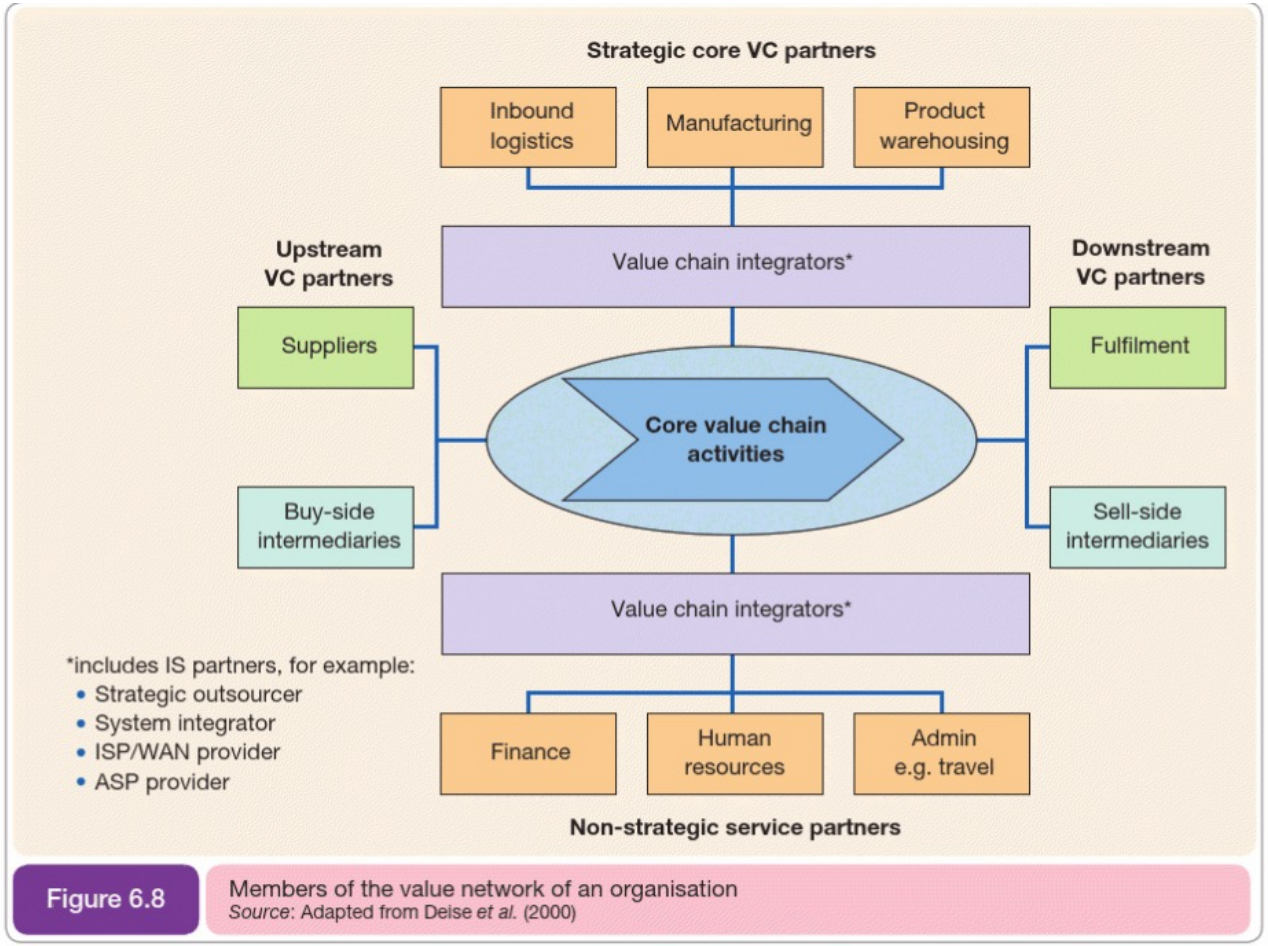

Figure 6.8 Members of the value network of an organisation
Source: Adapted from Deise *et al.* (2000)

Reduced time to market & increased customer responsiveness – not only result of reviewing efficiency of internal processes – also result through considering how partners can be involved to outsource some processes.

Porter's – Original work had the external value chain or value network

Companies are outsourcing more and more activities – so the management of these activities becomes more important.

Deise et al. (2000) – describe value network management as:

'*the process of effectively deciding what to outsource in a constraint-based, real time environment based on fluctuation*;'

Digital communication have allowed transfer or information needed to create, manage and monitor outsourcing partnerships. These links are also mediated through intermediaries, known as 'value chain integrators'

Restructuring Supply Chain for Digital Business

Vertical Integration – extent to which supply chain activities are undertaken/ controlled by organisation

Virtual Integration – majority of supply chain activities are undertaken/controlled by 3rd parties outside organisation.

Managers will have to consider how the supply chain can be changed.

Supply chain management options viewed as the continuum between internal control (vertical integration) and virtual integration (outsourced)

Intermediate situation – referred to as vertical disintegration or supply chain disaggregation.

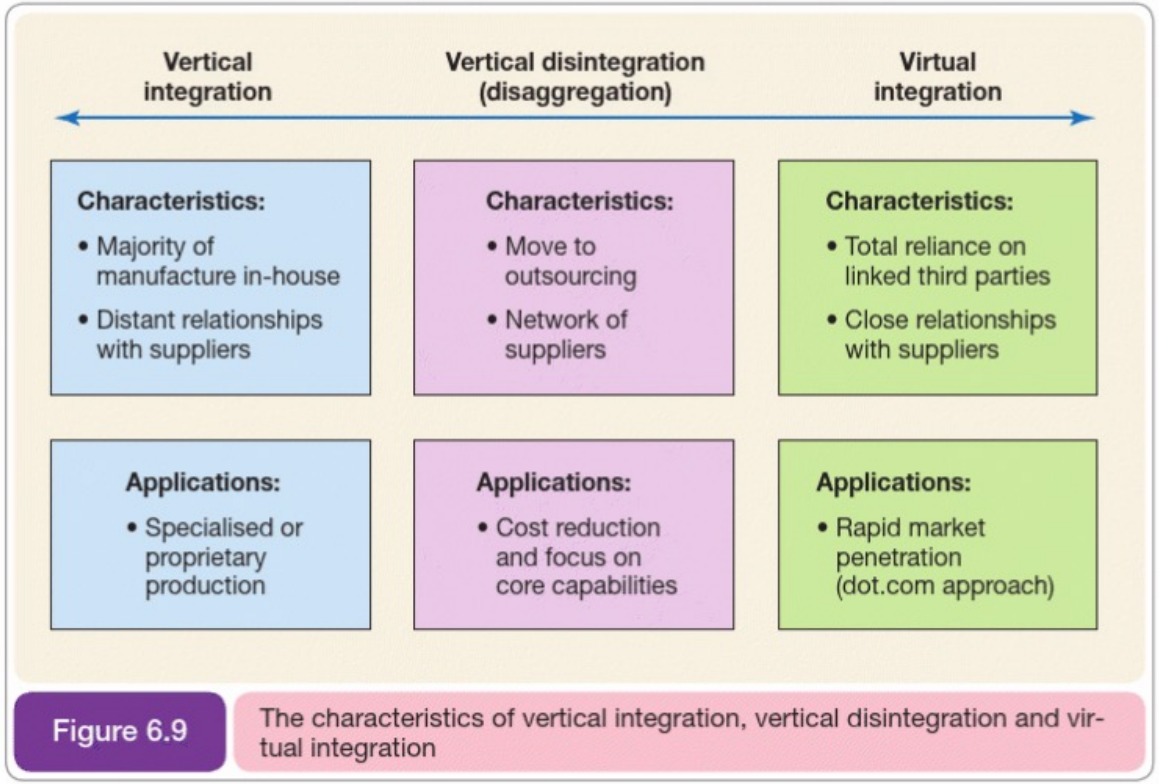

Figure 6.9 The characteristics of vertical integration, vertical disintegration and virtual integration

Using Digital Business To Restructure The Supply Chain

Information Supply Chain – this is an information focused view of the supply chain. It addresses the organizational & technical challenges of achieving technology enabled supply chain management efficiency / effectiveness

Information Symmetry – Imperfect information sharing between members of a supply chain that increases uncertainty about demand and pricing .

Benefits of e-supply chain management in B2B company

1. **Increased efficiency in individual processes – reduced cycle time and cost per order**
2. **Reduced complexity of supply chain- reduced cost of channel distribution and sale**
3. **Improved data integration between elements of the supply chain – reduced cost of paper processing**
4. **Reduced cost through outsourcing – lower costs through price competition and reduced spend on manufacturing and holding capacity**
5. **Innovation. – Better customer responsiveness**

Supply Chain Management Strategy Development- Different Approaches

Table 6.3 A SOSTAC™ approach to supply chain management

Strategy element	SCM approach of Hughes *et al.* (1998)
Situation analysis	Gather the data: • Internal assessment of current approaches to the supply chain • External analysis of marketplace trends and customer opportunities
Objective setting	Set the objectives • Definition of required target returns and release of shareholder value
Strategy	Frame the strategies: • Development of supply chain strategies to achieve these goals (actions)
Tactics	Prioritisation of operational improvement strategies and quick wins
Actions	Implement the change and challenge the thinking: • Formation of a supply chain strategy forum to assess the needs • Analysis of value-added, cost and cycle time of supply chain activities • Cascade of executive-led project groups to scrutinise key processes • Allocation of business development strategies to sponsor executives
Control	Measure the outcome: • Integration of supply chain measurement in corporation-wide reviews • Baselining to maintain pressure for performance delivery

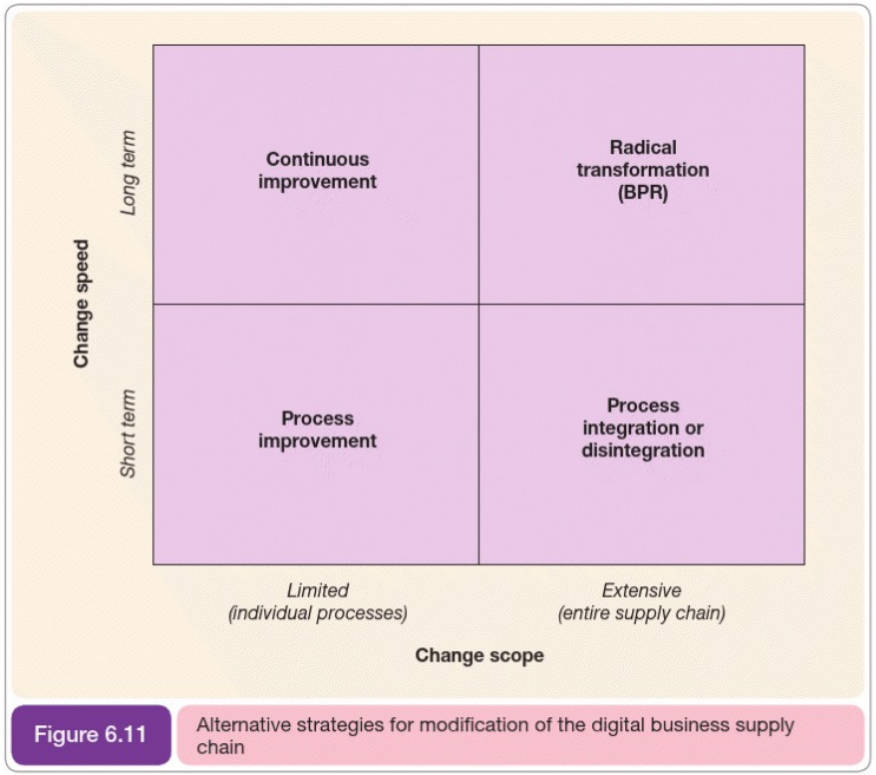

Figure 6.11 Alternative strategies for modification of the digital business supply chain

SOSTAC approach – linear approach to strategic thinking. A more iterative approach is needed when there is joint development between the organisation, the suppliers and other 3rd parties

The two strategies thought to be **limited in scope** apply to individual processes e.g. procurement & outbound logistics, thought of as delivering improvement at operational level. Short term benefits while minimizing risk of more radical change.
Where the **scope is extensive** – greater risk, but also greater potential reward e.g. re-engineering of processes or major changes to supply chain.

Goal Setting & Performance Management for e-SCM

Cost in Supply chain	Profitability	Customer Responsiveness	Flexibility	Supply Chain Partnerships	Production level metric	Delivery Performance	Customer service & satisfaction	Supply chain finance and logistic cost	Cost performance	Internal & external time performance	Quality Performance	Customer Relationship management
Total cost	ROI	Time needed to produce	Volume flexibility	Level & Degree of information sharing	Range of products & services	Delivery to request data	Flexibility	Costs associated with assets	Material cost	Time to market	Machine Reliabiliity	Supplier relationship management
Distribution cost		No. of orders delivered on time	Delivery flexibility	Buyer-Vendor cost saving initiatives	Effectiveness of scheduling techniques	Delivery to commit data	Customer query time	Total inventory costs	Labour cost	Distribution lead time	Inbound quality	
Manufacturing cost		No. of units produced	New product flexibility	Mutual Co-operation	Capacity utilization	Order fill lead time	Customer perception of service	Total cash flow time	Machine energy cost	Delivery reliability	Vendor quality rating	
Inventory cost		Fill rate	Order lead time			Total distribution cost				Supplier lead time	Customer satisfaction	
		Backorders	Customer order path			Delivery lead time						

See full list of measures – Page 278 Chaffey et al (2019)

E-Procurement

What is bought by businesses?

2 broad categories of procurement

1. **Production related** – e.g. steel for manufacturing products, equipment to help machine products.
2. **Non production related** – office supplies, furniture, information systems, services e.g. catering, travel, consultancy & training

2 methods businesses use to buy

1. **Systematic sourcing** – negotiated contracts with regular suppliers.
2. **Spot Sourcing** – fulfilment of an immediate need.

8 types of intermediary to be reviewed to understand options for changes to procurement as part of an e-procurement strategy

1. **Traditional Manufacturers** – physical goods sold to corporate customers.
2. **Direct Sales Manufactures** – Traditional manufactures that sell direct to consumer, maybe service companies
3. **Value Added Procurement Partners** – Intermediaries that sell products/ services to other business e.g. travel agents
4. **Online Hubs** – Industry specific vertical portals
5. **Knowledge Experts** – Produce information goods e.g. E-consultancy
6. **Online Information services** – provide unique information to end users
7. **Online retailers** – including start up business.
8. **Portal communities –** Aggregate different online information into an integrated customer experience e.g. personalized news stories.

Cost Savings from e-procurement

Savings = no. of requisitions x (Original cost – New cost)

Knudsen (2003) and Smart (2010) reviewed a simple classification of e-procurement

1. **E-sourcing**
2. **E-Tendering**
3. **E-informing**
4. **E-reverse auctions**
5. **E-MRO and web-based ERP**

Drivers of e-procurement – Smart (2010)

1. **Control** –improving compliance, achieving centralization, raising standards
2. **Cost** – More leverage when buying, monitoring savings targets, transactional cost reduction
3. **Process** – standardization, reduced cycle time
4. **Individual Performance** – knowledge share, productivity improvements
5. **Supplier Management** – reduced supplier numbers