

CHAPTER 4

Managing logistics internationally

Objectives

The intended objectives of this chapter are to:

- identify challenges that internationalisation presents to logistics management;
- consider the structure and management of a global logistics network.

By the end of this chapter you should be able to:

- understand the trends towards international logistics;
- understand challenges of international logistics networks;
- understand how to begin to balance these in organising for international logistics.

Introduction

The early roots of logistics are in international transport, which was a central element of many fundamental models in economic theory. In traditional location theory, for example, transport costs were optimised in relation to distance to market and production locations. The origins of internationalisation can be traced back to the expanding trade routes of early civilisations. Discoveries made in excavations from Europe, Asia, Africa and the Americas reveal artefacts made hundreds or even thousands of miles away from the site, at the edges of their respective known worlds. Developments in transport, navigation and communication have progressively expanded horizons. Measured in transport time and costs the world has shrunk to the dimensions of a 'global village'. Many take for granted the availability of products from around the world and safe, fast inter-continental travel on container carriers and aircraft. It is in this context that a clear link exists between logistics and economic development. The connectivity of all regions of the world is essential for international trade. As a result, many projects aimed at supporting regional economic development focus on the infrastructure needed to support integration into the global economy. Much of the infrastructure to support international trade and business is founded on logistics operations.

The logistics dimension of internationalisation conjures up a vision of parts flowing seamlessly from suppliers to customers located anywhere in the world, and a supply network that truly spans the entire globe. Often basic products such

- 2 **The tendency towards internationalisation:** three strategies for improving the transition to global supply chains.
- 3 **The challenges of international logistics and location:** barriers to international logistics.
- 4 **Organising for international logistics:** proposes principles by which international logistics networks should be organised, including offshoring considerations.
- 5 **Reverse logistics:** developing the 'returns' process in the SCOR model in section 3.5.
- 6 **Managing for risk readiness:** two levels of risk readiness and several specific steps to take.
- 7 **Corporate social responsibility in the supply chain:** the need to include social responsibility in supply chain design.

4.1 Drivers and logistics implications of internationalisation

Key issue: What are the trade-offs between responsiveness to local markets and economies of scale?

Despite the general trend towards internationalisation, the business approach is not taking place by means of any universal patterns. In assessing the nature of cross-border interfaces in logistics, three questions can be asked:

- Does internationalisation imply a universal global approach of the supply chain?
- Does internationalisation require a 'global' presence in every market?
- Does internationalisation distinguish between the companies that globally transfer knowledge and those that do not?

The arguments presented in this section suggest that the answer to each of these questions is 'no'.

The 'single business' concept of structuring the supply chain in the form of uniform approaches in each country is losing ground. 'McColonisation' was effectively abolished when McDonald's announced localisation of its business in such areas as marketing and local relations. In response to local crises in quality, and suffering from local competition, the corporate headquarters were down-sized to help empower the local organisation. The same applies to the Coca-Cola Company, which has abandoned 'CocaColonisation' – based on a universal product, marketing, and production and distribution model – for the same reasons. In favour of local brands and product varieties, Procter & Gamble is doing the same. In supply chains we find regional variations in the application of international principles.

This does not mean to say that localisation is the new mainstay. Unilever, a traditionally localised competitor of Procter & Gamble, has announced a decrease in the number of brands, and has rationalised operations away from strict localisation over the past decade, and probably will continue to do so for a while.

Somewhere between local and global extremes, Procter & Gamble and Unilever will meet each other in a new competitive area.

Looking at the different drivers of internationalisation, three basic global shifts in international investment and trade have been identified, with a possible fourth coming to the forefront in modern markets, as listed in Table 4.1. Such shifts of course have an impact on international trade and the flow of goods. In particular, destinations change as well as logistics requirements. The ‘fourth generation’ recognises the logistics trade-off between responsiveness to local markets and internationalisation.

At a company level, generic drivers of internationalisation include:

- a search for low factor and supply costs (land, labour, materials);
- the need to follow customers internationally in order to be able to supply locally and fast;
- a search for new geographical market areas;
- a search for new learning opportunities and exposure to knowledge (such as by locating in Silicon Valley – a ‘hot spot’ in development of international electronics, software and Internet industries).

The importance of these drivers varies by company and with time. Considering the sequence of global shifts, proximity to production factors such as labour and low material costs can be considered more basic than market- or even knowledge-related drivers. Furthermore, the importance of the respective drivers is dependent upon the internationalisation strategy of the company involved. Table 4.2, overleaf, provides examples of strategic contexts, and – in the bottom row – the logistics implications of those strategies. The multi-domestic and global strategies represent two extremes, while the integrated network strategy represents a balance between them. The consequences of this ‘balancing act’ for logistics are analysed below.

An example of a focal firm that announced its global organisation structure is provided by Cadbury Schweppes, summarised in Case study 4.1 overleaf.

4.1.1 Logistical implications of internationalisation

Internationalising logistics networks holds consequences for inventory, handling and transport policies.

Inventory

Centralising inventories across multiple countries can hold advantages in terms of inventory-holding costs and inventory levels that are especially relevant for high-value products. On the other hand, internationalisation may lead to product proliferation due to the need for localisation of products and the need to respond to specific local product/market opportunities.

Table 4.1 The fourth-generation global shift in Europe

Generation	First	Second	Third	Fourth
Period	1950s–60s	From 1960	From 1980	Emerging now
Primary drivers	Labour shortage	Labour costs and flexibility	Market entrance	Responsiveness to customer orders
Shift of labour and investment towards	European countries without labour shortage	Newly industrialised countries, low labour cost countries	Eastern Europe, China, Latin America	Western Europe
Transport routes	Still significantly continental	Increasingly intercontinental	Adding additional destination regions	Beginning to refocus on continental
Nature of international flow of goods	Physical distribution of finished products from new production locations	Shipping parts to production locations and exporting finished products	Physical distribution towards new market regions	Shipping semi-finished products to Europe, where they are finalised in response to customer orders, while within the logistics system

Handling

Logistics service practices may differ across countries as well as regulation on storage and transport. Adjusting handling practices accordingly is a prerequisite for internationalisation. Furthermore, the opportunity to implement best practice across various facilities may also be possible. Both of these practices assist the process of internationalisation.

Transport

Owing to internationalisation, logistics pipelines are extended and have to cope with differences in infrastructure across countries, while needing to realise delivery within the time-to-market. This may drive localisation. On the other hand, the opportunity for global consolidation may drive international centralisation.

Within this final, central, consideration in the globalise–localise dimension of logistics, global businesses face a challenge that can be summarised in terms of a simple trade-off between the benefits of being able to consolidate operations globally on the one hand, and the need to compete in a timely manner on the other.

especially true for products in industries with rapid technological development, such as personal computing and consumer electronics, and for fashion goods such as clothing and footwear.

Inventory-holding costs

Lead time spent in the logistics pipeline increases the holding cost of inventory. In addition to the time spent in physical transit, goods travelling internationally will incur other delays. These occur at consolidation points in the process, such as in warehouses where goods are stored until they can be consolidated into a full load, such as a container. Delay frequently occurs at the point of entry into a country while customs and excise procedures are followed.

4.1.3 Global consolidation

Global consolidation occurs as managers seek to make the best use of their assets and to secure the lowest-cost resources. This approach leads to assets such as facilities and capital equipment being used to the fullness of their capacity and economies of scale being maximised. Resources are sourced on a global scale to minimise cost by maximising purchasing leverage and again to pursue economies of scale. The types of resource acquired in this way include all inputs to the end product, such as raw materials and components, and also labour and knowledge. Familiar features of global consolidation include:

- sourcing of commodity items from low-wage economies;
- concentration at specific sites;
- bulk transportation.

Sourcing commodity items from low-wage economies

Two sourcing issues are used by internationally operating organisations:

- consolidation of purchasing of all company divisions and companies;
- sourcing in low-wage economies.

Internationally operating organisations seek to consolidate the purchasing made by all their separate divisions and operating companies. This allows them to place large orders for the whole group, which enables them to minimise costs by using their bargaining power and seeking economies of scale. At its extreme, a company may source all of its requirements from its range of a given commodity, such as a raw material or component, from a single source.

Internationally operating companies are on a constant quest to find new, cheaper sources of labour and materials. This trend led to the move of manufacturing from developed industrial regions to lower-cost economies. Examples of this are:

growing them there. In contrast, nearly 99% of the CO₂ emissions from the Kenyan roses were accounted for by the 6,000km clocked up by air freighting them to the UK. (Source: www.cranfield.ac.uk/cww/perspex)

Question

1 What are the pros and cons of sourcing commodity items in low wage economies?

Concentration at specific sites

Consolidation of purchasing applies not only to commodity goods but also to high-value or scarce resources. Research and development skills are both high value and scarce. Therefore there is an incentive to locate at certain sites to tap into specific pools of such skills. Examples of this are ‘Silicon Valley’ in California and ‘Silicon Fen’ near Cambridge as centres of excellence in IT. Companies originally located in these areas to benefit from research undertaken in the nearby universities.

Companies become more influential in directing such research and benefiting from it if they have a significant presence in these locations. This is helped if global research is consolidated onto a single site. While this may mean missing out on other sources of talent, consolidated R&D gives a company a presence that helps to attract the bright young minds that will make their mark in these industries in the future, and it allows synergies to develop between research teams.

Activity 4.1

The international logistics pipeline, shown in Figure 4.3, is made up of the same basic elements as any other pipeline. However, this pipeline has a number of special characteristics. Use Table 4.3 to make a list of the characteristics that you believe make a global logistics pipeline different from one that operates only nationally.

Table 4.3 Characteristics of the international pipeline

Elements of the pipeline	Special characteristics of the international pipeline
Research and development	
Material/component sourcing	
Inbound supply	
Assembly	
Distribution	
Marketing/retailing	

risks, they are also developing new risk management approaches based upon the realisation that decades of globalising supply chains has come at a price: a heightened and different risk profile.

Geopolitical threats

The 2003 SARS crisis and the second Gulf War were major events in and of themselves; they were also consecutive and had huge impacts on supply chain continuity and execution feasibility. Major trade routes had to be altered and global travel was limited. In addition, structurally heightened government security measures and screening are indicators of risks involved in international logistics. Logistics making the global economy a reality can never be a given and a non-issue that deserves no second thought.

Transportation breakdowns

Transportation may be a commodity, that does not mean that nothing can go wrong. A several-week strike in the US west coast ports in 2002 lasted long enough to almost cripple the US economy. With hundreds of cargo ships floating outside the ports, shipments were not arriving at US destinations. This meant that factories were shut down and stores were emptying. It also had a ripple effect on global trade overall. For example, return shipments were delayed because no ships were leaving the ports either. In addition, with so many ships and containers tied up other routes could not be served. And in fact a resulting global shortage of containers caused a slowdown of shipments in many other port regions. So shipments on other routes, in different harbours and even shipments using different modalities were affected.

Risk and security concerns are not a one-time issue but require continuous risk management. Helferich and Cook (2002) found that this is necessary because, for example:

- only about 61 per cent of US firms have disaster recovery plans;
- those that do typically cover data centres, only about 12 per cent cover total organisational recovery;
- few plans include steps to keep a supply chain operational;
- only about 28 per cent of companies have formed crisis management teams, and even fewer have supply chain security teams;
- an estimated 43 per cent of businesses that suffer a major fire or other major damage never reopen for business after the event.

According to Helferich and Cook (2002) this can partially be explained by the fact that there are competing business issues, managers might not recognise their vulnerability and might assume that the government will bail them out. Peck (2003) has published a self-assessment for supply chain risk and an operational-level tool kit.

Activity 4.2

Focused factories have an impact on the important trade-off between cost and delivery lead time. Make a list of the advantages and disadvantages of focused factories. One example of each has been entered in the table below to start you off.

	Cost	Lead time
Advantages	<i>Lower production costs through economies of scale</i>	<i>Specialised equipment may be able to manufacture quicker</i>
Disadvantages	<i>Higher transport cost</i>	<i>Longer distance from market will increase lead time</i>

4.2.2 Centralised inventories

In the same way that the consolidation of production can deliver cost benefits, so can the consolidation of inventory. Rather than have a large number of local distribution centres, bringing these together at a small number of locations can save cost. Savings can be achieved in this way by coordinating inventory management across the supply pipeline. This allows duplication to be eliminated and safety stocks to be minimised, thereby lowering logistics costs and overall distribution cycle times. Both may sound contrary to the fact that the transport pipeline will extend, owing to the longer distribution legs to customers from the central warehouse in comparison with a local warehouse. Nevertheless, through centralising inventory major savings can be achieved by lowering overall speculative inventories, very often coupled with the ability to balance peaks in demand across regional markets from one central inventory. Figure 4.5 characterises the different operating environments where centralised inventory may be a more relevant or a less relevant consideration, based upon logistics characteristics.

In product environments where inventory costs are more important than the distribution costs, centralised inventories are a relevant concern. This is typically the case for products of high value (measured in costs per volume unit). Microchips are an extreme example: these products are of such high cost per volume unit that distributing from the moon could still be profitable! Distribution costs have a marginal impact on logistics costs per product, assuming of course that transport costs are mainly a function of volume and weight. Products that require special transport, such as antiques, art, confidential documents or dangerous chemicals, may represent a different operating environment.

A second dimension that needs to be taken into consideration is that of distribution lead times. Here, we focus on physical distribution from warehouse to customer, and not on the inbound pipeline. Centralising inventory may lead to lower factory-to-warehouse distribution costs because shipments can be consolidated into full container loads. Where service windows to customers are very compressed there may not be sufficient time to ship products from a central warehouse and allow for the required transit time within the service window.

- extended lead time of supply;
- extended and unreliable transit times;
- multiple consolidation and break points;
- multiple freight modes and cost options.

Information technologies can help to circumvent these challenges in general, and the proper location of international operations in particular can help to resolve some of these challenges. Another key point is that the benefits of sourcing from low-cost locations could be lost by the operating costs and challenges of international logistics. Hence it is key to consider these prior to making decisions about global sourcing and offshoring.

4.3.1 Extended lead time of supply

In an internationally organised business most products produced in a particular factory will be sold in a number of different countries. In order to manage the interface between the production and sales teams in each territory, long lead times may be quoted. This buffers the factory, allowing it to respond to the local variations required in the different markets.

4.3.2 Extended and unreliable transit times

Owing to the length and increased uncertainty of international logistics pipelines, both planned and unplanned inventories may be higher than optimal. A comparison of the length of domestic and international product pipelines and their associated inventories is shown in Figure 4.7. Variation in the time taken for international transport will inevitably lead to increased holding of inventory with the aim of providing safety cover.

4.3.3 Multiple consolidation and break points

Consolidation is one of the key ways in which costs in pipelines can be lowered. Economies of scale are achieved when goods produced in a number of different facilities are batched together for transport to a common market.

The location of consolidation points depends on many factors that are not really appropriate to consider in a simple assignment such as this. That said, here is one solution. Products manufactured in India should be consolidated at the site on the east coast (near Madras) for shipping to Singapore. Here they are combined with the output from the Thai and Singapore factories and shipped to Hong Kong. Products are consolidated at a Chinese port, possibly Shanghai, and transported by rail or sea to Hong Kong. All the other manufacturing sites deliver direct to Hong Kong, where products from all the various facilities are consolidated and shipped to Los Angeles.

The typical four-phase decision-making process can be structured using the following steps:

- 1 Deciding upon the appropriate level of centralisation–decentralisation using, for example, Figures 4.5 and 4.9.
- 2 Selecting relevant location criteria.
- 3 Selecting criteria weightings.
- 4 An economic trade-off analysis of structures and relevant locations.

Table 4.5 displays a representative trade-off table for two locations by relevant weighted criteria.

Table 4.5 Trade-offs between two locations

Location criteria	Weight	Score region A	Score region B
Railways	1	4	1
Water connections	1	4	1
Road connections	2	2	4
Site availability	2	2	3
Central location	3	1	2
...	...		
Total		19	22

Key: Score on a five-point scale ranging from poor to excellent

4.4 Organising for international logistics

Key issue: How can supply chains be better organised to meet the challenges of international logistics?

There are at least three elements in organising for international logistics. These are:

- layering and tiering;
- the evolving role of plants;
- reconfiguration processes.

These will be outlined in the following subsections.

4.4.1 Layering and tiering

Internationalisation is often looked at from the point of view of asset centralisation and localisation. However, the wider organisational setting needs to be taken into account as well.

A commonly used maxim is *global coordination and local operation*, which relates to laying out the flow of information and coordination differently from the map

of the physical operations. For example, Hewlett-Packard (HP) operates a globally consistent and coordinated structure of product finalisation and distribution in contrast to its continental operations. The company runs a final manufacturing and central distribution operation in Europe, the United States and Asia for each continent. The operations are structured and run exactly the same, with the only difference being the regions and customers. Furthermore, including tiers of players in the supply chain, these operations are largely outsourced. Facilities are often owned and operated on a dedicated basis by a contract manufacturer and third parties. Hewlett-Packard only brings in some management to assure global coordination. Thus, although HP operates in a globalised way, its products are tuned to local markets by means of local logistics operations. Therefore developments in ICT do not eliminate the need for such local operations.

Another example can be found in the automotive industry. In this industry, major original equipment manufacturers (OEMs) structure their plant networks globally, while making suppliers build their plants in the immediate vicinity of the OEM plant. The distance or broadcasting horizon between the two plants is defined by the time between the electronic ordering of a specifically finalised single module on the on-line system and the expected time of delivery in sequence along the assembly line. Time horizons for order preparation, finalisation, shipment and delivery tend to be in the area of an hour and a half or less. This causes localisation of the supplier or co-location, while the OEM plant services a continental or even global market.

4.4.2 The evolving role of individual plants

Ferdows (1989) projects the theories by Bartlett and Ghoshal (1989) onto the role of individual plants/factories in achieving the targeted international capabilities of global efficiency, local responsiveness and worldwide learning, or a combination of the three. Using the same type of approach, with location considerations on the horizontal axis and performed activities on the vertical axis, van Hoek (1998) adjusted the model for distribution centres. The model indicates the way in which the growth of performed activities changes the demands placed on the capabilities of the plant and changes the location requirements. Location is concerned with the response of governments to globalisation: adjusting local taxes, incentives and infrastructure to favour selection of their territory.

In Figure 4.10 a traditional warehouse is projected to possibly develop into a semi-manufacturing operation with product finalisation among its responsibilities and added value. This also contributes to the creation of a flexible facility for responding to local markets. The model also indicates a possible downgrading of the plant, with its two-way arrows showing development paths. These developments could be driven by poor location conditions, an inability to reach supply chain objectives, or the ability to reach the supply chain objectives more easily at other plants in the company's network. This suggests that the role of individual plants could be seen as an internal competitive issue for plant management. Most relevant, the evolutionary roles and functions of individual plants within the evolving supply chain are specific issues of concern for the realisation of global objectives.

- *Pace*. Was it an overnight change or the result of a gradually changing process?
- *Authority*. Was it directed from a global base (top down) or built up region by region (bottom up)?

The differences can be explained through differences in the supply chain characteristics of companies, among which are:

- *Starting point*: Is the base structure localised or globalised?
- *Tradition*: Does the company have a long preceding history with the baseline in the market, or can it be built up from scratch, in supply chain terms (brown-field or greenfield)?

Table 4.6 summarises the differences found in companies implementing postponed manufacturing as an example of a reconfiguration process. The same argument could be applied to the difference between a central European warehouse and a country-based, localised distribution network.

Figures 4.11 and 4.12 represent the reconfiguration process from local distribution through logistics centralisation to postponed manufacturing (final manufacturing in the warehouse). The differences in the implementation path are based upon the different starting points. The path with a localised starting point goes through centralisation within Europe starting from autonomous, duplicated local structures. The path with a global starting point builds a small European presence and then migrates through the increase of European presence centrally (representing a further location into Europe, rather than a further centralisation from within Europe).

Table 4.6 Differences in reconfiguration processes for companies depending upon starting point (global or local)

Starting point	Global structure	Localised structure
Heritage in market	Little, greenfield approach	Extensive, brownfield approach
Supply chain scope	Narrow, involving inventory and final manufacturing	Broad, involving inventory, manufacturing, and sourcing
Focus	Decentralising final manufacturing and inventory into market	Centralising inventory and final manufacturing at continental level and globalising manufacturing and sourcing
Tendency	Single, placing activities into market	Multiple, relocating within market and moving outside market
Timetable	Short (1–10 months)	Long (number of years)
Authority	Global, top-down directions	Local, bottom-up iterative process

Case study 4.4 explores issues and trade-offs found in developing competitive solutions when organising for international logistics.

CASE STUDY 4.4

Time v. Cost in global supply chains: lessons from the apparel industry

Vertical integration v. outsourcing

The enormous success of vertical retailers like H&M, Zara, Gap and Next in the apparel industry in the last 10 years has forced manufacturers of brand labels like Esprit and Levi, and department stores like El Corte Ingles and Marks & Spencer, to speed up their supply chains. Partly, this has been achieved by integrating their processes and systems upstream (towards their suppliers) and downstream (towards their end-customers) in the supply chain.

The competitive environment in the apparel industry is increasingly tough. Retail prices are under pressure; competition is extending from products that were traditionally limited to upper, middle or lower segments of the market – and increasingly from the sports industry; gross margins are shrinking; retail store costs and personnel costs are going up. Those who do not manage their assortment planning and inventories well are continuously under pressure to mark down their merchandise. Vertical retailers have found an answer to this hostile environment by:

- increasing the probability of designing a bestseller product by dramatically shortening its time to market (see Chapter 5);
- piloting products in the stores and then replenishing the best-sellers within 14 days by new types of make-to-order processes;
- driving the inventory sales productivity (as measured by stock turn, sales per square metre and markdown percentage) by keen assortment and delivery planning;
- integrating the IT systems from point of sale back into garment production factories and from there towards fabric suppliers;
- focusing on quality of workmanship through fitting and process quality.

Brand label manufacturers traditionally do not own their retail stores, and department stores do not have their own factories. This easily leads to competitive disadvantage in comparison with the vertical retailers, who have their own retail stores and have tight control over their manufacturers. To survive in today's marketplace against the vertical retailers, brand labels and department stores need to integrate their processes and systems from point of sale back into the factory. How can this be done?

Core competencies and time-to-market

Companies like Esprit have initiated strategies to become vertical retailers themselves. Elements of this strategy are to focus on core competencies and to offload all non-core activities to specialists who can perform such activities better and at a lower price. Another element of the strategy is to increase the number of collections from 4 to between 6 and 12 per year. This enables them to be closer to the market and thus to forecast and fulfil product demand more accurately. Of course, closeness to market increases the pressure on faster, timely product development and product delivery. The product life cycles of the individual collections are shorter, which leads to enhanced requirements for responsiveness on all supply chain partners. There can be no buffers, and deliveries have to be on time and in full. As a result of this, each partner in the chain has increased needs

4.5 Reverse logistics

Key issue: factoring in the return flow of goods when designing international networks

Reverse logistics deals with the flow of goods that go back up the supply chain for a number of reasons, including: product returns, repairs, maintenance and end-of-life returns for recycling or dismantling. Reverse logistics has both a service (repair, recalls, etc.) and an environmental component. Corporate social responsibility considerations will be covered in more detail in section 4.7. Meanwhile, Table 4.7 – from the Reverse Logistics Executive Council – compares reverse logistics with forward logistics.

Table 4.7 Comparing forward and reverse logistics

Forward logistics	Reverse logistics
Forecasting relatively straightforward	Forecasting more difficult
One to many distribution points	Many to one distribution points
Product quality uniform	Product quality not uniform
Product packaging uniform	Product packaging often damaged
Destination/routing clear	Destination/routing unclear
Pricing relatively uniform	Pricing dependent on many factors
Importance of speed recognised	Speed often not considered a priority
Forward distribution costs easily visible	Reverse costs less directly visible
Inventory management consistent	Inventory management not consistent
Product life cycle manageable	Product lifecycle issues more complex
Negotiation between parties straightforward	Negotiations complicated by several factors
Marketing methods well known	Marketing complicated by several factors
Visibility of process more transparent	Visibility of process less transparent

(Source: Reverse Logistics Executive Council www.rlec.org)

Reasons why reverse logistics is often only partially incorporated into international network design include:

- no infrastructure: companies often try to use the same outbound distribution system to handle returns without considering if it is fit for purpose;
- reverse logistics is often a ‘corner-of-the-desk concern’, and does not receive sufficient resources;
- much attention on the subject is driven by legislation, not yet by recognised business value;
- focal firms see reverse logistics as a cost of doing business;
- the subject is intuitively not popular: it means something has gone wrong, so people are tempted to ignore it or hide it;
- it is hard to forecast the reverse flow and composition – what is going to come back.

Opinions indicate that there are operational shortcomings such as using the same infrastructure for the return flow, and the difficulty of forecasting reverse flow. These might be explained by lack of management attention, and by lack of

appreciation of the full costs of reverse logistics. On the other hand, potential downsides of a reactive approach include image risks, service shortfalls and being a nuisance to customers. Suggested ways forward include considering the full impact of reverse logistics and approaching it as a business:

- consider reverse logistics for its full cost and negative potential market impact;
- seek green as a business ('green is green');
- design for disassembly and recycling;
- outsource reversed operations to a specialist third party logistics service provider (3PL);
- create dedicated (parts of) operations.

GE now thinks of 'green' as 'green' – meaning the colour of money. This will create the right platforms for developing capable infrastructure, or for investing in an outsourcing arrangement with a specialist company. Obviously, design for disassembly is one of the ways to ensure that – once parts are returned – costs are kept low, and likelihood of returns being profitable (through resale of parts) is increased.

4.6 Managing for risk readiness

Key issue: developing appropriate responses to risk in both the short- and long-term.

Supply chain disruptions such as transportation breakdowns and geopolitical risks can have many impacts: empty distribution channels, stores and goods stuck upstream leading to lost sales, revenue and customers. And they can be the result of plant shutdowns due to supplier discontinuity or collapse, bottlenecks in the transportation system or many other events in the supply chain. There are at least two levels at which companies are responding to risk in international logistics; preparing for immediate response to risks and structurally preparing for risk in international supply chains.

4.6.1 Immediate risk readiness

Recent events have shown that immediate responses to risks can include four things:

- raised inventory levels to assure a cushion for supply disruptions of key parts and supplies;
- redrawing transportation scenarios in the light of the possible logistics melt-down of global trade routes;
- supplier hedges are put into place; and
- global sourcing and supplier rationalisation efforts are being reconsidered actively.

Inventory policies to reflect volatility levels

Shortly before the second Gulf War, GM and Toyota asked their just-in-time suppliers to raise inventory levels in order to avoid early and extensive plant shut-downs. It added short-term costs but as a hedge against supply disruptions it can be a real money saver down the line while assuring service to the customer that competitors might not be able to offer. LaCrosse Footwear raised its safety stock sixfold for certain products in order to ensure the ability to ship to customers on short notice.

Re-do transportation network redesign

Based upon possible risks or a real situation, scenarios for transportation routes at risk can be developed together with contingency plans on a route-by-route and plant-to-plant basis. Airlines altered services to the Middle East before the Gulf War, for example. Here are three other examples:

- Hewlett-Packard maintains the ability to shift production between assembly facilities in Europe, North America, South America and Asia as part of a formal continuity plan to be implemented in a crisis.
- Chrysler quickly shifted component shipment from air to express truck service in response to transportation bottlenecks after 9/11.
- Continental Tyres' crisis team put together a list of all customers, parts, and suppliers outstanding, identified critical shipments by the afternoon of 9/11, and expedited those critical parts by land transport and through contingency relationships with transport firms.

Reconsider sole and global sourcing arrangements

Despite the benefits of supplier rationalisation and focused factories, risk management does imply there is real rationale for lining up alternative suppliers in different locations and for manufacturers to develop a thorough understanding of their suppliers' capabilities and vulnerabilities. Companies are responding in two ways: consider alternative and back-up sources and proactively audit the supply base for financial and operational sustainability in these tough times. Hewlett-Packard, for example, has secondary suppliers for all critical components as part of its continuity plan.

4.6.2 Structural risk readiness

Because risk needs to be an ongoing focus, companies are increasingly devoting dedicated teams to risk management in the supply chain. These teams can do several things:

- develop contingency plans and risk protocols;
- auditing preparedness;

- training plant management and staff;
- report to senior management on risk profiles and preparedness.

Most important, however, is not to leave risk management in the supply chain solely the responsibility of a team, but to use the team to create an ongoing organisation-wide focus and effort. Most often teams *help* plant management and various functions in the organisation, instead of telling them what to do. Henkel, the German consumer goods company for example, has appointed risk teams to work with various departments in assessing risk. It raises fundamental awareness across the organisation, and is the basis for developing contingency plans proactively.

4.7 Corporate social responsibility in the supply chain

Key issue: Companies operating international or global supply chains need to incorporate social responsibility into their supply chain design

Broadly defined, corporate social responsibility (CSR) in the supply chain deals with the social and environmental consequences of supply chain operations. Making a global supply chain environmentally sustainable and socially considerate is harder than just doing so for a focal firm. This is due to global reach and the fact that multiple companies are involved. As a result, it is harder to assess and improve operating policies across the entire supply chain. Yet this is a key opportunity to bring CSR to life.

Two examples illustrate the challenge:

- In 2006 the ship *Probo Koala* was redirected from Amsterdam to the Côte d'Ivoire where it dumped its waste, leading to the death of several people in the shore area. Consequently, questions were asked in Europe about the lack of responsibility taken and the approach of turning a blind eye locally.
- Nike came under heavy scrutiny from customers in the 1990s for its use of low-cost labour, predominantly in Asia. There were suspicions of use of child labour, and other unethical labour practices among Nike suppliers. Nike launched a comprehensive CSR effort – including the appointment of a Vice President for CSR – and now is considered to be a leader for improving supplier practices and for responsible behaviour along the supply chain.

CSR has caught both public and political attention, and companies are developing approaches that span the spectrum displayed in Figure 4.15 overleaf. Worst practice in CSR is for companies to publish a CSR report and to engage in PR efforts to make the company look responsible, yet hide behind the approach:

I can't see everything in my supply chain that happens on the other side of the globe in another company, so I can't manage that.

So not much changes in day-to-day operations – other than telling suppliers that they 'need to be responsible for their actions'.

Activity 4.5

List possible CSR concerns in the supply chain and the possible impact on the focal firm making and selling the end product if they go wrong and if they go right

Summary

Why international logistics?

- A major driver of the internationalisation of business has been labour shortages and costs in established markets, and the availability of low-cost production in newly industrialised regions. A further driver has been the need to follow customers into new local markets, and to create new learning opportunities.
- This has created phases in internationalisation of operations, and hence of the logistics pipelines that are associated with them. Logistics pipelines differ from market to market and from company to company over time.
- Global sourcing can create economies of scale for transportation through multiple consolidation as organisations orchestrate their global networks, and focus key areas such as manufacturing and R&D.

What are the logistics implications of internationalisation?

- Despite the obvious benefits of global sourcing, focal firms should not ignore the logistical complexities and operational costs associated with sourcing globally (including longer shipment times and higher shipping costs) when deciding their internationalisation strategies. Increased complexities and costs are often ignored or only partially recognised in the rush to obtain lower piece part prices.

How do we organise for international logistics?

- New solutions for layering and tiering the supply network are being tried out, such as co-location of suppliers with OEM plants in the auto industry. Meanwhile, the role of individual plants may be modified to allow more flexible response to local markets, for example by carrying out final assembly in local distribution centres.
- The key to success of internationalisation strategies is the rationalisation of sourcing, production and distribution. At the same time, the organisation needs to be sensitive to local markets and preferences. Crucial also is to ensure risk preparedness in international supply chains and to factor in corporate social responsibility policies proactively.

Discussion questions

- 1 What are the benefits and limitations of international logistics? Illustrate your response by referring to the sourcing of standard shirts and fashion blouses (shown in Table 1.1 in Chapter 1) from manufacturers in the Far East.
- 2 Tiering of the supply network is referred to in section 4.4.1 above, and also in Chapter 1, section 1.1, and in the Global Lighting case study at the end of Chapter 2. Describe the advantages of tiering in terms of globalisation, touching on areas such as out-sourcing and the focused factory.
- 3 Identify six potential sources and causes of risk in global supply chains. Use the reference to Peck (2003) below to propose counter measures.

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