Secondary Course

258 - LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Book-1

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A Word with You

Dear Learners,

It gives me immense happiness to hand over a relevant course like "Logistics and Supply Chain Management" as per need and requirement in the present scenario of the global efficient communication networks of the business world.

The National Institute of Open Schooling (NIOS) has taken a path-breaking initiative by introducing a formal mainstream course on **"Logistics and Supply Chain Management"** for learners at the secondary level. Certainly the course will ensure that the idea of education and learning is not bereft of practical and professional exposure and experiences. The course structure will maintain a diversified mix of concepts, theories, and practical exercises to equip learners with useful skills.

The outbreak of the Pandemic has made it imperative to imbibe learners 'potential in managing skills to establish coordination between manpower and materials with changing dimensional and directional technical advancement in the 21st century. I must assure you that the course which consists of 5 Modules and 24 Chapters will serve as a platform to apply your acquired professional skills and efficiencies in the development of the 'Logistics & Supply Chain Management' network in the competitive global era of consumerism.

This course has five modules, namely Introduction to Logistics, Basics of Logistics Concepts-Its Sub- Sectors, Introduction -Supply Chain Management, Physical Supply. Each lesson has been designed keeping in view the requirements of self-motivated learners like you through Open and Distance Mode. It has a text written in simple language, supplemented by pictures/ figures to make it clear at a glance. All these will include In text Questions which will appear after every section of the lesson. They will normally be very short answer type questions consisting of objective type,true and false, fill in the blanks and Multiple Choice Questions which will help you to understand the extent to which you have learnt the section. You will find the key to these questions at the end of the lesson. If you are able to answer the questions, you can proceed further. Otherwise, you should learn the section again.

I hope you will find the lessons interesting and will be able to apply your knowledge in real-life situations. So, read all these lessons carefully and prepare well for the examinations. You ultimately have to enter the field of Internship and work and your success at the place of work will depend on how skillfully you have performed your assigned job. It is expected that project work will help you in developing the skills to understand the various aspects of Logistics and Supply Chain Management and make it a meaningful experience in your life.

To Sum up, I would like to suggest you avail the progressive opportunities provided by NIOS(An Autonomous Body of the Ministry of Education) at school-level education which will give you to give direction to pursue higher education and be a specialized professional. Nowadays the school education system is passing through a phase of transition. With the introduction of the National Education Policy 2020, to meet the expectations of a global economic era in the present context, The policy has envisaged nurturing a paradigm shift by inculcating skill-based learning materials in school education.

Any comments and suggestions will be welcome. I wish you success in your studies, career and life. Supply Chain Management and External Drivers of Change

NIOS Course Team

How to use the Study Material

Congratulations! You have accepted the challenge to be a self-learner. It means, you have to organize your study, learn regularly, keep up your motivation and achieve your goal. Here it is solely you, who is responsible for your learning. NIOS is with you at every step. It has developed the material in Logistics and Supply Chain Management keeping only you in mind. A format supporting independent learning has been followed. You can take the best out of this material if you follow the instructions given below.

Title: The title of the lesson will give a clear indication of the contents within. Do read it.

Introduction: This will introduce you to the lesson and also link it to the previous one.

Objectives: These are statements of outcomes of learning expected from you after studying the lesson. You are expected to achieve them. Do read them and check if you have achieved the same.

Content: Total content has been divided into sections and sub-sections. A section leads you from one content element to another and a sub-section helps you in comprehension of the concepts in the content element. The text in bold, Italics or boxes is important and must be given attention.

Intext Questions: Objective types self-check questions are asked after every section, the answers to which are given at the end of the lesson. These will help you to check your progress. Do solve them. Successful completion will allow you to decide whether to proceed further or go back and learn the unit again.

Notes: Each page carries empty space on the outer margins for you to write important points or make notes.

What You Have Learnt: It is the summary of the main points of the lesson. It will help in recapitulation and revision. You are welcome to add your own points to it also.

Terminal Questions: These are questions answered that provide you an opportunity to practice for better understanding of the whole topic.

Answers to Intext Questions: These will help you to know how correctly you have answered the Intext questions.

Activity: Activities, if done by you, will help you to understand the concept clearly.

Key Terms: The important terms used in the lesson are highlighted in this section. Do remember these terms.

Do and Learn: In this section certain activities have been suggested for better understanding of the concept.

QR Code: A quick response (QR) code is given in every lesson which is a type of barcode that stores information and can be read by a digital device, such as a cell phone.

Audio: For understanding difficult or abstract concepts, audio programmes are available on certain content areas. You may listen to these on Mukt Vidya Vani, Community Radio FM-91.2 or on YouTube channel "niosradiovahini".

Video: Video programmes on certain elements related to your subject have been made to clarify certain concepts.

You may watch these at NIOS live YouTube channel and also see live programs on PM e-vidya.

Overview of The Learning Material

Module Lesson Name of the Lesson Mode of Assignment No. TMA	Lesson No.	Name of the Lesson	Mode of Assignment TMA/PE	
Module 1 :	1	Logistics Management : An Introduction	TMA	
Introduction to Logistics	2	Logistics Functions		PE
	3	Importance of Logistics	TMA	
	4	Logistics—A System & Concept of Business		PE
	5	Technology in Logistics Management		PE
Module 2 :	6	Logistics Management - Its Sub-Sector		PE
Basics of	7	Logistics—Efficient Transportation System	TMA	
Logistics Concepts-	8	Logistics—Courier / Express Services		PE
Its Sub-Sectors	9	Logistics—E-Commerce: Business Expansion	TMA	
	10	EXIM-Freight Forwarding, Custom Clearance and Cold Chain		PE
	11	Liquid Logistics and Rail Logistics		PE
Module 3 :	12	Supply Chain Management : An Introduction	TMA	
Introduction-	13	Importance of Supply Chain Management		PE
Supply Chain Management	14	Activities of Supply Chain Management	TMA	
	15	Barriers to Supply Chain Management		PE
Module 4	16	Supply Chain Business Process		PE
Physical Supply	17	Distribution and Planning Strategy		PE
	18	Warehousing Operation Management	TMA	
	19	Transportation Management		PE
	20	Inventory Management	TMA	
Module 5	21	Components of Supply Chain Management		PE
Supply Chain Management	22	Distribution Strategy	TMA	
and	23	Choice of Market	TMA	
External Drivers of Change	24	Consignment Note		PE

Bifurcation of Syllabus in Logistics & Supply Chain Management for Secondary Class

S. No. Of Modules	Total No. Lessons - 24	
	TMA (40%) (No. of Lessons 10)	Public Examination (60%) (No. of Lessons 14)
Module 1 : Introduction to Logistics	L-1 Logistics : An Introduction L-3 Importance of Logistics	L- 2 Logistics Functions L- 4 Logistics - A System & Concept of Business L- 5 Technology in Logistics Management
Module 2 : Basics of Logistics Concepts- Its Sub-Sectors	L- 7 Logistics - Efficient transportation system L- 9 Logistics—E-Commerce in Business Expansion	L- 6 Logistic Management - Its Sub – Sector L-8 Logistics-Courier / Express Services L- 10 EXIM- Freight Forwarding, Custom Clearance and Cold Chain L- 11 Liquid Logistics and Rail Logistics
Module 3 : Introduction - Supply Chain Management	L- 12 Supply Chain Management : An Introduction l-14 Activities of Supply Chain Management	L- 13 Importance of Supply Chain Management L- 15 Barriers to Supply Chain Management
Module 4: Physical Supply	L-18 Warehousing Operation Management L- 20 Inventory Management	L-16 Supply Chain : Business Process L-17 Distribution and Planning Strategy L-19 Transportation Management
Module 5 Supply Chain Management and External Drivers of Change	L- 22 Distribution Strategy L- 24 Consignment Note	L- 21 Components of Supply Chain Management L-23 Choice of Market

Contents

1

LOGISTICS MANAGEMENT : AN INTRODUCTION

Logistics is the management of the movement of goods, resources and information between the point of source and the point of consumption.

Fig.1.1: Introduction to Logistics

This business concept evolved during the 1950s as a result of the increasing the complexity of supplying businesses with materials and transporting goods in an increasingly globalization supply chain.

OUTCOMES

After completing this lesson, the learner-

- summarizes the definition and concept of logistics;
- illustrates the logistics network operations applicable in the supply chain management;
- relates to the advantages of logistics network in supply chain management
- analyzes the interrelationship, logistics and supply chain management:
- analyzes various objectives of logistics in day to day examples of different logistic company;
- compares the differences between logistics networks and supply chain management.

Note

1.1 MAIN LOGISTICS TARGET

Logistics is one of the key functions in a company. The most important targets of logistics can be divided into cost-related and performance-related targets. A few examples are high due date reliability, low inventory level, short delivery times, and high utilization of capacity. When decisions are made, there is a trade-off between targets.

Logistics Viewpoints

Inbound logistics is one of the important processes of logistics, focusing on purchasing and Organizing the inbound movement of parts, materials, and/or finished inventory from suppliers to assembly or manufacturing plants, warehouses, or retail stores.

Outbound logistics is the procedure related to the storage and movement of the final product and the associated information flows from the end of the production line to the end user.

Logistics Fields

Given the services performed by logisticians, the key fields of logistics can be broken down as follows:

- Procurement logistics
- Production logistics
- Distribution logistics
- After sales logistics
- Disposal logistics
- Reverse logistics
- Global logistics
- Domestics logistics

Procurement Logistics

It comprises activities such as market research, requirements planning, supplier management, make-or-buy decisions, ordering, and order controlling. The targets in procurement logistics could be contradictory: maximizing efficiency by focusing on core competencies, outsourcing while maintaining the autonomy of the company, or reducing procurement costs while extending security within the supply process.

Note

Production Logistics

It links procurement to distribution logistics. Its primary function is to use available production capacities to produce the products needed in distribution logistics. Production logistics activities are associated with organizational concepts, layout planning, production planning, and control.

Distribution Logistics

It has, as major tasks, the delivery of the finished products to the end user. It involves order processing, warehousing, and transportation. Distribution logistics is necessary because the place, time, and quantity of production differ with the place, time, and quantity of consumption.

Disposal Logistics

Its primary function is to reduce logistics cost and enhance service related to the removal of waste produced during the business operation.

Reverse Logistics

It implies all those operations related to the reuse of materials and products. The reverse logistics process includes the management and the sale of surpluses, as well as products being returned to vendors from buyers.

Military Logistics

In military science, maintaining one's supply lines while disrupting those of the enemy is a vital, some would say the most critical element of military strategy, since an armed force without transportation and resources is defenseless.

Business Logistics

A forklift stacking a logistics provider's warehouse of goods on pallets.

One definition of business logistics speaks of "getting the right thing in the right quantity at the right time at the right place in the right price in the right condition to the right customer". As the science of process, business logistics integrates all industry sectors. Logistics work intends to manage the fulfilment of supply chain, project life cycles, and resultant efficiencies.

Production Logistics

The term production logistics illustrates logistic processes within an industry. Production logistics intends to ensure that every machine and workstation receives the right product in the right quality and quantity at the right time.

Note

Logistics Management

Logistics is that segment of the supply chain that plans, executes, and controls the efficient, effective forward and reverse flow and storage of goods, services, and associated information between the origin point and the consumption point in order to meet customer and legal requirements.

Warehouse Management Systems and Warehouse Control Systems

Although there is some similarity in functionality, warehouse management systems can differ considerably from warehouse control systems. A WMS plans a weekly activity forecast based on such factors as trends and statistics, however a WCS acts like a floor supervisor, working in real time to get the job done by the most effective means.

Logistics Automation

Logistics automation is the application of computer software or automated machinery to increase the efficiency of logistics operations. Usually, this refers to operations within a distribution centre or warehouse, with larger tasks undertaken by supply chain management systems and enterprise resource planning systems.

Logistics Outsourcing

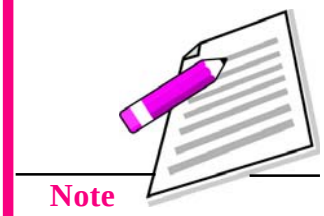
Logistics outsourcing includes a relationship between a company and logistic service provider, which, compared with basic logistics services, has more customised offerings, includes a broad number of service activities, is categorised by a long-term orientation, and hence has a strategic nature.

Third-party Logistics

Third-party logistics - 3PL involves using external organisations to execute logistics activities that have usually been performed within an organisation itself. According to this definition, 3PL includes any form of outsourcing of logistics activities earlier performed in house. For example, if a firm with its own warehousing resources decides to employ external transportation, this would be an example of 3PL. Logistics is a promising business area in many countries.

Fourth-party Logistics

The model of a fourth-party logistics (4PL) provider was first defined by Andersen Consulting (now Accenture) as an integrator that connects the capabilities, resources and technology of its own company and other companies to design, build, and run complete supply chain solutions. However a third-party logistics (3PL) service provider focuses on a single function, a 4PL targets management of the complete process. Some have termed a 4PL as a general contractor that manages other truckers, 3PLs, forwarders, custom house agents, and others, largely taking responsibility of a whole process for the customer.



Note

Emergency Logistics

Emergency logistics is a term used by the supply chain, logistics, and manufacturing industries to indicate specific time-critical modes of transport used to move objects or goods rapidly in the event of an emergency. The purpose for enlisting emergency logistics facilities could be a delay in production or anticipated delay in production, or an urgent need for specialised equipment to avoid events such as aircraft being grounded, telecommunications failure or ships being delayed. Emergency logistics services are usually sourced from a specialist provider.

INTEXT QUESTION 1.1

1. Logistics business concept evolved during the _____.

   A) 1950s

   B) 1960s

   C) 1970s

   D) 1980s

2. _____ comprises activities such as market research, requirements planning, supplier management, make-or-buy decisions, ordering, and order controlling.

   A) Production logistics

   B) Reverse logistics

   C) Disposal logistics

   D) Procurement logistics

3. _____ has, as major tasks, the delivery of the finished products to the end user.

   A) Production logistics

   B) Reverse logistics

   C) Disposal logistics

   D) Distribution logistics

4. _____ links procurement to distribution logistics.

   A) Production logistics

   B) Reverse logistics

Note

C) Disposal logistics

E) Procurement logistics

5. _____ includes any form of outsourcing of logistics activities earlier performed in house.

A) 2PL

B) 3PL

C) 4PL

D) 5PL

1.2 SUPPLY CHAIN MANAGEMENT-ADVANTAGES

In this globalisation era where businesses compete to deliver the best quality products to the consumers and satisfy all their needs, supply chain management plays a very significant role. All the firms are highly dependent on efficient supply chain processes.

Let's look at the key advantages of the supply chain.

- Creates better customer relationships and service.
- Establishes better delivery mechanisms for goods and services in demand without delay.
- Improvises business functions and productivity.
- Reduces transportation and warehouse costs.
- Reduces indirect and direct costs.

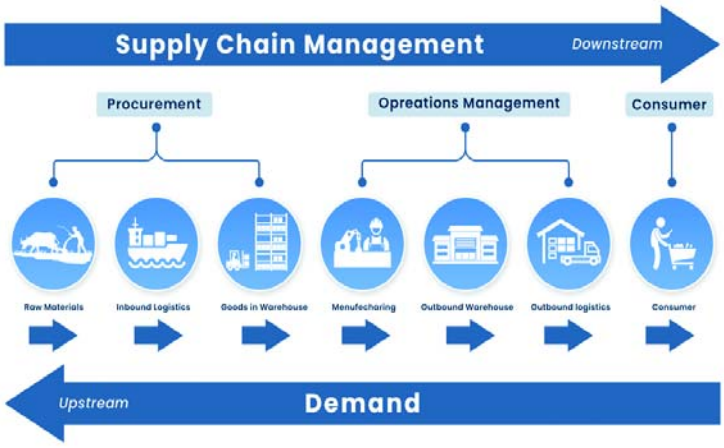
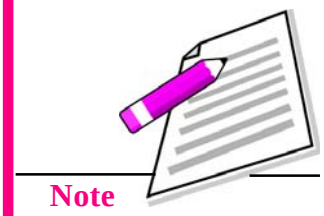


Fig.1.2: Supply Chain Management - Advantages



Note

- Supports in accomplishing shipping of the right products to the right place at the right time.
- Improves inventory management, supporting the successful implementation of just-in-time stock models.
- Helps companies in reducing waste, driving out costs, and accomplishing efficiencies throughout the supply chain process.

INTEXT QUESTIONS 1.2

1. _____ establishes better delivery mechanisms for goods and services in demand without delay.
2. _____ improvises business functions and productivity.
3. Supply Chain improves inventory management, supporting the successful implementation of _____ stock models.
4. Supply Chain creates better _____ relationship and service.
5. _____ supports in accomplishing shipping of the right products to the right place at the right time.

1.3 SUPPLY CHAIN MANAGEMENT-GOALS

Every company strives to match supply with demand in a timely manner with the most effective use of resources.

The important goals of supply chain management are given below:

- Supply chain partners perform collaboratively at various levels to capitalize on resource productivity, build standardised processes, eliminate duplicate efforts, and reduce inventory levels.
- Minimising supply chain expenses is very important, specifically when there are financial uncertainties in firms concerning their wish to conserve capital.
- Cheap and cost-efficient products are necessary, but supply chain managers have to focus on value creation for their consumers.
- Exceeding the consumers' expectations on a consistent basis is the finest way to satisfy them.
- To meet customer expectations, traders need to leverage inventory as a combined resource and utilise the dispersed order management technology to carry out orders from the best node in the supply chain.

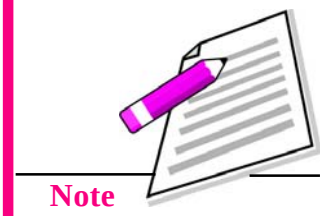
Note

Supply chain management focuses on contributing to the economic success of an organisation. It aims at leading companies using the supply chain to enhance differentiation, improve sales, and penetrate other markets. The purpose is to make competitive benefits and stakeholder value.

Logistics is all about: getting things from A-point to B-point. Logistics is so important, it affects our routine life. Almost all aspects of modern-day life rely on the world's talented logisticians.

For every link in the supply chain that's anything we use or consume, and that you don't make or grow for our self – logistics plays a significant role.

- **Breakfast, Lunch & Dinner :** From fresh fruits to favourite cereal or brand of pasta, logistics moves these items from their country of origin to grocery store shelves.
- **Electronics :** Favourite video game console, noise-cancelling headphones, and laptop – all electronics are made up of small parts produced in factories around the globe. Logistics gets each memory card, microchip, and console part from its site of production to the factory where it all gets put together. Finally logistics moves the final product to your local electronics store.
- **Healthcare :** Without logistics, we cannot get vaccines, medicine and other life-saving goods where they need to go, on time and in appropriate condition. Logistics makes the world a better place.
- **Sports :** For every Super bowl, World Cup or Olympic Games, there are millions of logistical details to handle. Without logistics, no rings for Super Bowl champions, there would be no soccer balls at the World Cup, and no hurdles at the Olympic track.
- **Mail (the old-fashioned kind) :** Every time you order a Smartphone, video game, or book, logistics bridges the gap from finding your purchase in the warehouse, to getting it packed and shipped, and ultimately delivering it to your front doorstep.
- **Entertainment :** From constructing concert stages to filming music videos and TV shows, the entertainment industry relies on the logistics of transportation, supply and delivery.
- **Sustainability :** Logistics plays a vital role in protecting the environment. Logisticians are charged with developing better, efficient and sustainable ways of doing business, so that we can enjoy the world economy with the lowest possible environmental impact.



Note

INTEXT QUESTIONS 1.3

1. Every company strives to match _____ with demand in a timely manner with the most effective use of resources.
2. Supply chain management focuses on contributing to the _____ success of an organisation .
3. Almost all aspects of modern-day life rely on the world's talent _____.

1.4 GLOBAL LOGISTICS

Global logistics links essential components of the supply chain from merchandise's origin point to its consumption point to ensure efficient and timely distribution of products from manufacturers to customers.

Global logistics is the procedure largely an art but also science of managing the goods flow through the supply chain, from the place where they are produced to the place where they are used.

Fig.1.3: Global Logistics

Progress in global logistics is powered by 3 fundamental trends: rising e-commerce, increasing consumption, and ongoing reconfiguration of the supply chain to move commodities more swiftly and effectively. The prevailing strength of these trends across the globe is a signal that global logistics will play a crucial role in the world economy.

INTEXT QUESTIONS 1.4

1. _____ links essential components of the supply chain from a merchandiser's origin point to its consumption point.

Note

2. Global logistics is _____.

   A) Art

   B) Science

   C) Both Arts and Science

3. Global logistics will play a crucial role in the world _____.

1.5 GLOBAL SUPPLY CHAIN

Global supply chains are systems that cross several continents and countries for the purpose of supplying and sourcing the goods and services.

Ply chain uses low-cost country sourcing and refers to the buying of products and services from countries with lower labour rates and decreased production costs than that of the home country.

Fig.1.4: Global Supply Chain

A global supply chain will typically flow from organisations in the home country as a buyer across your supplier tiers; it is these suppliers who are in other locations of the globe.

INTEXT QUESTIONS 1.5

1. Global supply chains are systems that cross several continents and countries for the purpose of _____ the goods and services.

   A) Supplying

   B) Sourcing

   C) Both Supplying and Sourcing

2. A global supply chain uses _____ country sourcing.

Note

1.6 MEANING OF LOGISTICS

Logistics can be defined as "having the right thing in the right place, in the right quantity, at the right time, in the right condition and at the right price for the right customer".

Logistics Management is merely the movement of items in between the point of source and final consumption point.

It is a term related to the devising of plans, management, and implementation of activities associated with the movement and storage of goods.

Logistics management is a process that deliberately monitors the acquiring, storing, and moving of tangible items such as equipment, material, food, final goods, and consumable items, etc. Logistics management is an effective tool broadly used by businesses these days which deal with all issues related to the purchasing of materials, their handling and movement all along the supply chain.

Fig.1.5: Global Logistic Management

The process of logistics starts right from the moment when raw materials are purchased by the company and continues to the final point of delivery of the product to the end-user.

The logistics management process aims at reducing the expenses of the organisation and enhancing service to customers by offering the right goods at the right time.

Fundamentally there are two different forms of logistics. One improves a steady flow of materials across a network of transport links and storage areas, while the other manages an effective order of resources to carry out a project.

Work in logistics includes the integration of transportation, information, inventory, material handling, warehousing, packaging, human resources and at times security. The objective is to achieve the life cycle of a project from beginning to end.

Note

INTEXT QUESTIONS 1.6

1. Logistics can be defined as "having the right _____ in the right _____, in the right _____, at the right _____, in the right _____ and at the right _____ for the right _____".

2. _____ is an effective tool broadly used by businesses these days which deal with all issues related to the purchasing of materials, their handling and movement all along the supply chain.

3. Logistics Management is merely the movement of items in between the point of _____ and final _____ point.

4. The process of logistics starts right from the moment when _____ are purchased by the company.

1.7 ROLE OF LOGISTICS IN SUPPLY CHAIN MANAGEMENT

Having the right supply chain management tools can help reduce the cost of obtaining raw materials, storing, transporting, and selling goods/services to end users while maintaining a high level of customer service.

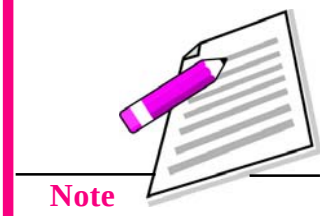
Fig.1.6: Role of logistics in supply chain

Logistics, therefore, is a function of supply chain management that carries the following values:

Ensuring the Smooth Operation of all Parts of the Supply Chain

Fig. 1.7: Supply Chain Management

Continuity of workflow is a powerful tool in helping companies reduce expenses and improve customer satisfaction. This is often accomplished through careful planning and the creation of a fault-tolerant scheme for interactivity between the various components of the supply chain.



Note

Release of Labour Resorces

Another aspect of fault tolerance is the elimination of redundant elements (intermediaries) whose participation incurs additional costs. In this sense, it is very important to find a balance in which the reduction in labour resources doesn't lead to forced downtime when implementing supply chains.

Fig. 1.8: Labour Resources

Coverage of a New Target Audience

The increase in overall customer satisfaction will help popularise the brand by word of mouth in a quick way. Such advertising (which is one of the most effective methods) will also cost nothing.

Fig. 1.9: New Target Audience

Net Cost Reduction

By removing many intermediary links in the supply chain, we can reduce the net cost of a service or product and thus increase its accessibility to the end-user.

Fig.1.10: Net Cost Reduction

INTEXT QUESTIONS 1.7

1. Continuity of workflow is a powerful tool in helping companies reduce _____ and improve _____ satisfaction.
2. The increase in overall customer satisfaction will help popularise the brand by _____ in a quick way.
3. By removing many intermediary links in the supply chain, we can reduce the net cost of a _____ and thus increase its accessibility to the end-user.

1.8 ROLE OF LOGISTICS

Once the company realises the significance of logistics it is necessary that the company make efficient and full use of logistics. The primary step is to create

Note

a buyer value for the consumer and a strategic value for the company.

Fig.1.11: Role of Logistics

The consumer is the most valuable asset for a company. He drives the whole supply chain including marketing, manufacturing, and logistics. Therefore, it is important for a company to have a strong understanding of what the consumer demands and to keep up to the expectations of consumers. Once a company has a strong understanding of its consumer's needs it must frame a strategy on how to achieve it by using logistics. This means that the company must have a clear assessment or understanding of the company's strategic direction.

Now let's see the steps involved in a logistics strategy planning and development process.

Visioning

This comprises the methodical development of an organisational consensus concerning the main inputs to the logistics process planning as well as identification of the possible alternative logistics approaches. This is a vital step for the below mentioned reasons:

- Supports to outline a strategic direction to the business and also to get a strong understanding of the logistics role in it.
- Get a strong idea of the needs of the several segments of consumers.
- Look at the several factors that would affect the company's strategy.
- Define alternate strategies and likewise the possibility of the planning effort.

Strategic Analysis

This includes taking a look at the several components involved in the procedure and choosing the finest logistics process amidst the alternatives. These components, which are to be swatted, are exposed during the primary step. This

Note

includes revamping the whole process to evaluate how a single component can be used more efficiently.

Planning

This includes the assembling of a strategy that summarises the goal and mission for the logistics function and the activities and programs to attain these goals. Logistics planning is an iterative process. The plans must be redefined each year to enhance the performance quality.

Managing Change

This entails efficient management to execute improved ways of managing business. The management must keep changing the strategies in accord with the change in the market and prepare the organisation to efficiently adopt this change.

INTEXT QUESTIONS 1.8

1. _____ is the most valuable asset for a company.

   A) Supplier

   B) Dealer

   C) Consumer

   D) Investor

2. It is important for a company to have a strong understanding of what the _____ demands and to keep up to the expectations of _____.

3. The company must have a clear assessment or understanding of company's _____ direction.

4. The management must keep changing the strategies in accord with the change in the _____.

1.9 CURRENT LOGISITICS RELATED CHALLANGES

There are numerous factors that affect logistics. These problems need to be predicted. Companies must be prepared for and take advantage of being successful in the market. The current issues are

Internal

- Third party networks
- Changes in management and organisation style

Note

- Customer service and quality
- Supply chain management

External

- Technology
- Globalisation
- Challenging nature of the workforce
- Environmental concerns

Some of the steps that can be followed to solve the above-mentioned issues:

Fig.1.12: Current Challenges

System Structure

- Good relationship with customers, vendors, and third parties to effectively manage the supply chain
- Enhance relationship across and within the organisation

Performance

- Improved productivity
- Better service for consumers
- Assess just in time and quick response needs

Technology Integration:

- Good information systems that link functions and organisations
- Bring together information and material handling systems for improved efficiency and effectiveness.

INTEXT QUESTIONS 1.9

1. hich of the following is not an internal issue?

   A) Third party networks

   B) Changes in management and organisation style

   C) Customer service and quality

   D) Technology

2. Which of the following is not an external issue?

   A) Technology

   B) Customer service and quality

   C) Challenging nature of the workforce

   D) Environmental concerns

1.10 OBJECTIVES OF LOGISTICS

Increased Efficiency

Aim of Logistics management is to increase the overall efficiency of an organisation. It fastens inbound and outbound logistics operations to complete the project within the specified time. Finest quality materials are purchased at lowest probable cost and utilise proficiently with least wastage. Logistic managers oversee all operations and avoid any expenses which enhance the total efficiency.

Fig 1.13: Increased Efficiency

Reliable and Consistent Delivery Performance

Fig.1.14: Reliable and Consistent Delivery Performance

Process of logistics management emphases on providing on-time delivery to consumers for building their level of confidence. Mode of transport is selected through appropriate planning and required materials are transported quickly to the manufacturing plant for completing the project on time. Quicker delivery of things at the right place to customers will improve their satisfaction.

Note

Minimum Product Damage

Damaged products increase the logistics expenses and have adverse effects on profitability. Logistic managers assure products are appropriately encased in apt packages which impart them safety, correctly handled and use of load unitization. Proper organising of all product movements by managers will minimise damages in products.

Fig.1.15: Minimum Product Damage

Reduce Transportation Cost

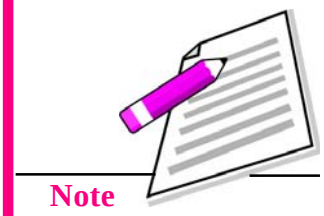
Fig.1.16: Reduce Transportation Cost:

Logistic management process aims at reducing the freight charges which cuts down the logistical cost. Managers attempt to reduce the transportation expenses by choosing efficient transportation sources, shortest route planning, and load unitizing and freight consolidation.

Quick Response

It mirrors the capability of companies to serve its consumers on time in a proper manner. There must be a solid communication process which allows consumers to easily place their orders and report their problems. Companies by applying the latest technology in information processing systems can improve their capability in decision making. It will make them flexible to fulfil their customer needs in proper time in great volumes.

Fig. 1.17: Quick Response:



Note

Inventory Reduction

Maintaining optimal inventory is mandatory for smooth functioning of business. Logistics managers aim at reducing the level of inventory by rapidly processing all orders. Excess level of inventory leads to blockage of company's capital. Efforts are made to cut down the level of inventory to minimum probable level by making frequent supplies, acquiring materials and manufacturing products in an adequate volume.

Fig. 1.18: Inventory Reduction

INTEXT QUESTIONS 1.10

1. Aim of Logistics management is to increase the overall _____ of organisation .
2. Process of logistics management emphases on providing on-time delivery to _____ for building their level of confidence.
3. Damaged products increase the logistics expenses and have adverse effects on _____.
4. Companies by applying the latest technology in information processing systems can improve their capability in _____.
5. Maintaining optimal inventory is mandatory for smooth functioning of _____.

1.11 DIFFERENCE BETWEEN LOGISTICS SUPPLY CHAIN

Supply chain and Logistics must not be confused. Logistics is a rather narrow focused concept, which basically means globalisation of resource management — from every local unit to the whole network of production points.

Supply chain management is a complex category. Supply chain management includes logistics and thus achieves end-to-end optimization - that is, not only inside the enterprise but also when operating with counterparties.

Note

LOGISTICS

One is a Subset of Another

Possibly the utmost significant difference that will help us grasp the concept of Supply chain management and logistics is that logistics is a portion of supply chain management. Supply chain management includes several tasks such as inventory planning, production, materials management, and delivery. Logistics is only about appropriate and improved goods delivery and transportation, comprising tasks like warehousing, stock management, and packaging.

Different Goals

Logistics is a portion of supply chain management involved with meeting consumer needs and delivering products and services in the most accessible and efficient way. The supply chain aims on the larger picture and strives to improve the business processes to generate competitive advantages for a firm.

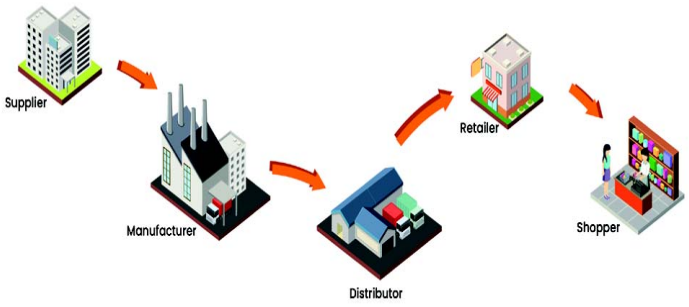


Fig. 1.19: 5 Difference between Logistics and Supply Chain

Complexity

Lastly, seeing logistics as a part of supply chain management allows us to know the difference in complexity of both terms. Logistics has been for centuries and supports activities related with transportation management in the supply chain. Supply chain management came into the modern world as the complexity of business processes and connections became too high.

INTEXT QUESTIONS 1.11

1. Supply chain management includes _____ and thus achieves end-to-end optimization.

Note

2. Put in order

   Manufacturer – Supplier – Shopper – Retailer – Distributor

WHAT YOU HAVE LEARNT

- You have learnt
- Logistic
- Different forms of Logistics
- Supply Chain
- Logistics in Supply Chain

KEYWORDS- Supply Chain, Logistics, Procurement, Warehouse, Distribution.

TERMINAL EXERCISE

1. Define Logistics. List out different forms of logistics.
2. "Supply chain management plays a very significant role in delivering quality products to customers". Explain the advantages of SCM in the light of the statement.
3. "Goals of supply chain management contribute to attain economic success of an organization". How?
4. What is meant by global logistics and global supply chain.?
5. "Role of logistics is an essential aspect of the entire functioning of supply chain management of an organization". Justify the statement".
6. Distinguish between inbound and outbound logistics.
7. List out steps involved in a logistics to analyse strategy planning and development process?
8. Enumerate internal and external issues which creates challenges in the way of proper functioning of logistics.
9. Distinguish between supply chain and logistics?
10. On what basis you can say that logistic is the subset of scm

Note

11. List out the various Objectives of Logistics?

12. Explain all the areas do the Logistic Manager consider reducing the cost of operation?

ANSWERS TO INTEXT QUESTIONS

1.1

1. A) 1950s
2. D) Procurement logistics
3. D) Distribution logistics
4. A) Production logistics
5. B) 3PL

1.2

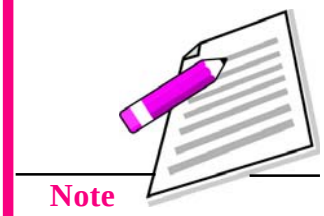
1. Supply Chain Management
2. Supply Chain
3. Just-in-Time
4. Customer
5. Supply Chain

1.3

1. Supply
2. Economic
3. Logisticians

1.4

1. Global Logistics
2. C) Both Arts and Science
3. Economy



Note

1.5

1. C) both Supplying and Sourcing
2. Low-cost

1.6

1. thing, place, quantity, time, condition, price, customer
2. Logistics Management
3. source, consumption
4. Raw Materials

1.7

1. expenses, customer
2. word of mouth
3. service or product

1.8

1. Consumer
2. Consumer, Consumers
3. Strategic
4. Market

1.9

1. D) Technology
2. B) Customer service and quality

1.10

1. efficiency
2. consumers
3. profitability
4. decision making
5. business

1.11

1. logistics
2. Supplier – Manufacturer – Distributor – Retailer – Shopper

Note

ACTIVITY

- Imagine you are a Logistics Manager, How do you plan the logistics activities? Give a detailed activity plan.

2

LOGISTICS FUNCTIONS

Fig.2.1: Logistic Function

Logistics is a process of passage of goods through the supply chain of a firm. However, this process involves several functions that must be appropriately managed to bring effectiveness and efficiency to the supply chain of the company.

The role of every element of logistics often defines the logistics activities within a supply chain.

OUTCOMES

After completing this lesson, the learner-

- examines the various elements which help to determine logistic functions of business enterprises;
- evaluates the importance and legality of the document of order processing;
- assesses various activities and importance of inventory control management;
- determines role of warehousing and transportation in regulating logistic functions properly;

Note

- assesses the process of material handling and storage system;
- analyzes logistics packaging as the most important component of the logistics function.

2.1 ROLE OF LOGISTIC FUNCTIONS

The elements of logistics help to explain what logistics processes and activities are being undertaken in a supply chain.

There are 5 elements are undertaken to determine the role of logistic functions -

The role of storage, material handling and warehouses in logistics

It is to enable a stable stream of products to be supplied by manufacturers. Manufacturers need to operate at highest efficiency, but customers tend not to demand goods at the same rate as a manufacturer supplies them.

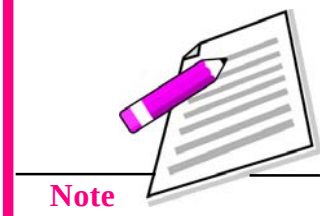
There tends to be an imbalance between supply, which is steady, and demand, which can be unpredictable. The answer is to store the surplus goods produced by a manufacturer until they are demanded by consumers. To attain this, warehouse buildings are required. These require specialist storage equipment such as racks or shelving and material handling equipment to move them around the warehouse and to unload and load delivery vehicles.

The Role of Packaging and Unitisation

Packaging is a crucial part. Unitisation is important as this assists transportation and storage. The simplest product to store and move is a cube, so packaging and unitisation attempts to take all different shapes and sizes of product and pack them as near as possible into a cuboid shape.

The Role of Inventory

Inventory is a logistics element that is related closely to storage and warehousing. It is connected with what stock to hold, where the stock is located and how much stock to hold. In effect, inventory is controlling the flows of goods going into and out of a warehouse. This is achieved by looking at sales data of past orders and using several mathematical and statistical tools to try to predict how much goods will be demanded by customers. Inventory management is not an exact science, but depending on how variable demand can be, it is a useful tool to help manage the flows of goods through the supply chain.



Note

The Role of Transport

A most important element of logistics that most will recognize is transport. This comprises all modes of transport including freight trains, road vehicles, air transport and cargo shipping. Without transport, goods would be unable to move from one stage to another within a supply chain. Few goods with short supply chains, such as foodstuffs, do not travel far. Other more complex products consist of several components that can be transported from all over the world.

The Role of Information and Control

The element of information and control is required by all the elements to act as triggers to several operational procedures. Information and control's role is to assist design information systems that can control operational procedures.

INTEXT QUESTIONS 2.1

1. _____ is a process of passage of goods through the supply chain of a firm.

2. Which of the following is not an element of logistics?

   A) Packaging

   B) Inventory

   C) Financing

   D) Transport

3. _____ is important as it assists transportation and storage.

4. The simplest product to store and move is a _____.

5. A most important element of logistics that most will recognize is _____.

2.2 ORDER PROCESSING

It is a vital task in the functions of logistics operations. The purchase order given by a buyer to a supplier is an important legal document of the dealings between the two parties.

Fig.2.2: Order processing

This document includes the explanation and technical details of the product to supply, delivery period, price, taxes, payment terms, and other commercial terms as agreed.

The processing of this document is very important as it has a direct association with the performance cycle time or the order, which specifies the time when the order is received and when the products are received by the consumer. The order processing activity involves of the following steps:

- Order checking for any deviations in agreed upon or negotiated terms
- Prices, delivery, and payment terms.
- Checking the stock availability of materials.
- Material and Production scheduling for shortages.
- Acknowledging the order indicating deviations if any.

INTEXT QUESTIONS 2.2

1. _____ given by a buyer to a supplier is an important legal document of the dealings between the two parties.
2. Purchase Order includes the explanation and _____ details of the product to supply, delivery period, price, taxes, payment terms, and other commercial terms as agreed.

2.3 INVENTORY CONTROL

Inventory management is to keep sufficient inventories to meet consumer requirements, and at the same time its carrying cost must be lowest.

It is fundamentally an exercise in a balance between the customer service for not missing

Fig. 2.3: Inventory Control

the market opportunity and the cost to meet the same.

The inventory is the utmost problem in the overall supply chain of a company because of its higher carrying cost, which indirectly affects the profits. It involves the cost of financing the insurance, inventory, losses, storage, pilferage, and damages.

INTEXT QUESTIONS 2.3

1. Inventory management is to keep sufficient inventories to meet consumer requirements, and at the same time its carrying cost must be _____.
2. Inventory management is fundamentally an exercise of a balance between the _____ service for not missing the market opportunity and the cost to meet the same.
3. The inventory is the utmost problem in the overall supply chain of a company because of its higher carrying cost, which indirectly affects the _____.

2.4 WAREHOUSING AND TRANSPORTATION

Warehousing

Fig. 2.4: Warehousing and Transportation

Warehousing is the storing of goods up until they are sold. It plays an important role in logistics operations of a company. The effectiveness of a company's marketing depends on the suitable decision on warehousing.

In today's situation, warehousing is considered as a switching facility rather than storage of inappropriate warehousing management. Warehousing is the vital decision area in logistics.

The major decisions in warehousing are:

- Size of the warehouse
- Location of warehousing facilities
- Number of warehouses
- Design of the building

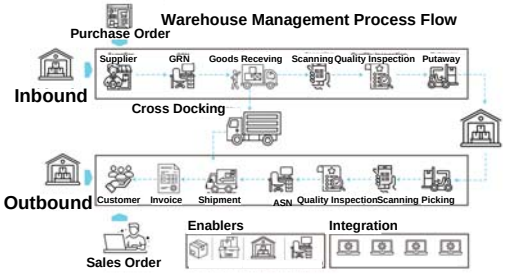


Fig.2.5: Warehousing Management Process Flow

Note

- Warehouse layout
- Ownership of the warehouse

INTEXT QUESTIONS 2.4

1. _____ is the storing of goods up until they are sold.
2. The effectiveness of a company's marketing depends on the suitable decision on _____.
3. Warehousing is the vital decision area in _____.
4. Which of the below is not a major decision in warehousing?

   A) Size of Warehouse

   B) Design of the building

   C) Warehouse layout

   D) Reverse logistics

2.5 TRANSPORTATION

Fig. 2.6: Transportation

For the movement of materials from the supplier to the buyer, transportation is the most essential and important component of logistics.

While an order is placed, the deal is not completed until the goods are physically moved to the consumer's place. The physical movement of products is through several transportation modes.

In logistics costs, its share differs from 65 to 70 % in the case of mass-consumed, very low unit-priced products.

Companies choose the transportation mode depending on the infrastructure of transportation in the region or country. Cost is the most significant consideration in the choice of a particular transport mode.

Still, sometimes the urgency of the products at the consumer end overrides the cost consideration because products are sent through the faster mode, which is a costly alternative.

INTEXT QUESTIONS 2.5

1. For the movement of materials from the supplier to the buyer, _____ is the most essential and important component of logistics.
2. While an order is placed, the deal is not completed until the goods are physically moved to the _____ place.
3. Companies choose the transportation mode depending on the _____ of transportation in the region or country.
4. Cost is the most significant consideration in the choice of a particular _____ mode.
5. Sometimes the urgency of the products at the _____ end overrides the cost consideration.

Note

2.6 MATERIAL HANDLING AND STORAGE SYSTEM

Fig. 2.7: Material handling and storage system

The speediness of the inventory movement through the supply chain depends on the methods of material handling. An inappropriate method of material handling will result in the product damages and delivery delays and incidental overheads.

Automation and mechanisation in material handling improves the logistics system productivity.

Other considerations for choice of a material handling system are the capacities to be handled, the required speed for material movement and the service level to be offered to the consumer.

The storage system is vital for maximum space utilisation (cubic and floor) in the given size of a warehouse.

The material handling system should support the storage system for speedy movement (storage and retrieval) of goods in and out of the warehouse.

Note

INTEXT QUESTIONS 2.6

1. The speediness of the inventory movement through the supply chain depends on the methods of _____.
2. An inappropriate method of material handling will result in the product _____ and delivery _____ and incidental overheads.
3. _____ and _____ in material handling improves the logistics system productivity.
4. The storage system is vital for maximum _____ in the given size of a warehouse.
5. The material handling system should support the storage system for speedy movement of goods in and out of the _____.

2.7 LOGISTICAL PACKAGING AND INFORMATION

Logistics Packaging

Fig 2.8: Logistical Packaging and Information

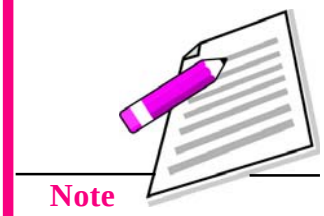
Logistical packaging is an important element in the physical distribution of goods, which influences the effectiveness of the logistical system. It varies from product packaging, which is based on objectives of marketing.

However, logistical packaging plays a vital role in material handling, in damage protection, and storage space economy. The load utilisation has a major bearing on logistical packaging regarding cost of packaging.

Information

Logistics is fundamentally an information-based activity of inventory movement through a supply chain. Therefore, an information system plays an important role in delivering a greater service to the consumers.

Usage of Information Technology tools for information access, identification, analysis, storage, retrieval, and decision support which is vital amongst the functions of logistics is helping companies to improve their competitiveness.



Note

INTEXT QUESTIONS 2.7

1. _____ is an important element in the physical distribution of goods, which influences the effectiveness of the logistical system.
2. _____ plays a vital role in material handling, in damage protection, and storage space economy.
3. The load utilisation has a major bearing on logistical packaging regarding cost of _____.
4. Logistics is fundamentally an information-based activity of _____movement through a supply chain.
5. _____ system plays an important role in delivering a greater service to the consumers.

WHAT YOU HAVE LEARNT

- Logistics
- Importance of Order Processing
- Importance of Inventory Control
- Material Handling, Warehousing and Transportation
- Logistics packaging

KEYWORDS- Logistics, Order Processing, Inventory Control, Warehousing, Transportation, Material Handling, Storage System, Logistics Packaging.

TERMINAL EXERCISE

1. “Logistic functions play a pivotal role in the process of supply chain management”. Do you agree? Justify.
2. List out various activities performed for order processing in the logistic operation.
3. Inventory control provides the basis of availing market opportunity. How? Explain with suitable illustration.
4. Explain inbound and outbound management process flow of warehouse.

Note

5. Explain the process of material handling and storage system of logistics operation function .

6. On what basis can you say that packaging is information based activity ?

7. Mention modes of transport and its various steps in logistic operation.

ANSWERS TO INTEXT QUESTIONS

2.1

1. Logistics
2. C) Financing
3. Unitisation
4. Cube
5. Transport

2.2

1. Purchase Order
2. technical

2.3

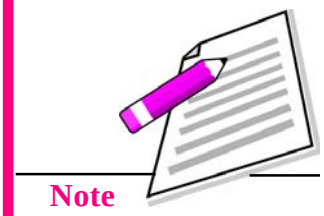
1. lowest
2. customer
3. profits

2.4

1. Warehousing
2. warehousing
3. logistics
4. D) Reverse logistics

2.5

1. transportation
2. consumers'



Note

3. infrastructure
4. transport
5. consumer

2.6

1. material handling
2. damages, delays
3. Automation, mechanisation
4. space utilisation
5. warehouse

2.7

1. Logistical packaging
2. Logistical packaging
3. packaging
4. inventory
5. Information

ACTIVITY

- How do you process the Order? Give a detailed activity plan for Inventory control.

Note

3

IMPORTANCE OF LOGISTICS

Logistics is a vital element of an effective supply chain that supports increasing the sales and profits of businesses that deal with production, shipment, warehousing and delivery of goods. Additionally, a consistent logistics service can enhance a business' value and support in retaining a positive public image.

Satisfied customers are important and help define a business' real success. Excellent logistics management creates consistent strategies that support in providing excellent services to meet customer demand. Furthermore, a business may be able to get repeated orders through the creation of goodwill for the supplier every time a better and timely delivery is met.

OUTCOMES

After completing this lesson, the learner-

- lists out the various importance of logistics network for economic development;
- determines the steps of providing better logistic services to customers;
- identifies the various components and benefits of ensuring seamless delivery;
- explains the concept of being cost effectiveness for ensuring profits;
- analyzes the step-wise process of order management to meet needs and requirements of customers;
- summarizes scope of logistics & supply chain transparency.

3.1 IMPORTANCE OF LOGISTICS

In the army, the term 'logistics' indicates the process of moving and delivering equipment and supplies to troops. Since increasing complexity of delivering

businesses with materials and shipping out products by the 1950s, logistics has evolved as a business concept. Now, this term is defined by the business sector as the effective flow and storage of commodities from origin point to the consumption point.

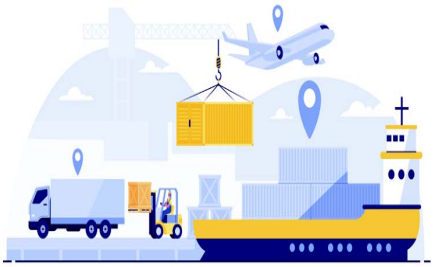


Fig. 3.1: Importance of Logistics

Now logistics have become an essential part of supply chain management that is applied for planning, implementing, and controlling the flow and storage of goods and services to meet consumer's requirements.

Like to know the reasons why logistics management is crucial in keeping pace with consumer demands and overtaking competitors?

Generating visibility into a firm's supply chain can further enhance production efficiency. Business management can make use of the analysed data and tracked passages of goods in and out of a business from a transportation management system for process optimization and preventing potential disruptions.

Logistics management is useful in effectively delivering your products in the right place and at the right time. Furthermore, professionally organised logistics ensures safe and fast shipping, warehousing and delivery of goods to consumers by selecting an experienced team of professionals.

Logistics did not simply bring a Smartphone in your hand. Here are a few of the other things that logistics makes possible:

Fig. 3.2: Breakfast, Lunch & Dinner

Breakfast, Lunch & Dinner

From refreshing fruits to your preferred cornflakes or brand of pizza, logistics brings these items from their origin country to your grocery store shelves.

Electronics

Your favourite video game, your laptop, your headphones, - the entire electronics are made up of tiny parts manufactured in factories around the world. Logistics gets each memory card, microchip, and console part from its production

Fig. 3.3: Electronics

Note

site to the factory where it is all assembled. Then, logistics ships the final product to your local electronics store.

Healthcare

Without logistics, there will be no way to get medicine, vaccines, and life-saving goods where they ought to go, on time and in appropriate condition. In all ways, logistics makes the world a better place.

Fig. 3.4: Healthcare

Sports

For every Super Bowl, World Cup, and Olympic Games, there are lots of logistical details to handle. Without logistics, there are no rings for Super bowl champions, no soccer balls at the World Cup, and no hurdles at the Olympic track.

Fig. 3.5: Sports

Mail (the old-fashioned kind)

Every time you order a Smartphone accessory, video game, or book, logistics bridges the gap from discovering your purchase in the warehouse, to making it packed and shipped, and ultimately delivering it to your doorstep.

Fig. 3.6: Mail (the old-fashioned kind)

Entertainment

From constructing concert stages to filming music videos and Television shows, the entertainment industry depends on the logistics of supply, transportation, and delivery.

Fig. 3.7: Entertainment

Sustainability

Logistics plays a massive role in protecting the environment. Logisticians are charged with creating better, more effective and more viable ways of performing business, so that we can experience the world economy with the lowest possible environmental impact.

Fig. 3.8: Sustainability

INTEXT QUESTIONS 3.1

1. Generating visibility into a firm's supply chain can enhance _____ efficiency.
2. Logistics management is useful in effectively delivering your products in the right _____ and at right _____.
3. A consistent logistics service can enhance a business' value and support in retaining a positive _____ image.
4. Logistics plays a massive role in protecting the _____.

3.2 PROVIDE BETTER SERVICE

Fig. 3.9 : Better Services

Efficient logistic management aids in improving overall satisfaction level of consumers. Logisticians Frame effective strategies and execute them to ensure that quality products are delivered timely by company. Right management of logistics will aid companies in fulfilling their consumer needs by offering them what they want. Various ways to ensure better services are as follows-

3.3 ENSURE SEAMLESS DELIVERY

Logisticians frame effective strategies and execute them to ensure that quality products are delivered timely by company. It oversees all inbound and outbound movement of products by choosing a team of professional members. Products are rapidly and safely shipped to the right manner, at the right time and in the right place.

Fig. 3.10: Ensure seamless Delivery

Note

Here Are 7 Ways That Enables Seamless Delivery:

Rigorous Use of IoT

The IoT is likely to play a key role in transforming the future of the logistics industry.

It will help in improving the speed of work and by the same time decrease the costs involved and the waste.

IoT is mainly used for machine-to-machine communication and to improve efficiency.

IoT will help to communicate with technologies like RFID, AIDC etc.

Bluetooth is Trending

Bluetooth technology has grown to be a huge need of time. It is believed that in future, we will be able to notice Bluetooth-enabled devices mounted on docks, loaders, and at other stages of tracking shipment tracking and confirm logistics accuracy.

The introduction of high-end Bluetooth technology can certainly ensure quality control and accountability over the whole process.

Using Robots

Amazon has taken the step in this stream. They have fixed robots to carry shelves to the human resources and are planning to automate their business internationally.

Autonomous Vehicle Will be a Game Changer

These can be called as one system of robotics. In a new headline, Volvo gained the attention by publicising that they will be soon coming with a self-driving version of FMX trucks.

They are not the only ones to enter the market. Another competitor is Uber's Otto, which made its first delivery.

Electronic Logging Devices

Electronic Logging Devices help perfectly in enhancing the productivity and growth of any business.

Logistics business being mainly dependent on the rapid movement of vehicles, it is expected that many logistic companies will be using electronic logging devices to their vehicles for improved results.

Efficient Inventory Management

Inventories are the pillar of any logistics business. It can break or make any business.

The owners should have the leadership skill to manage their inventory, streamline their operations and importantly the relationship with the consumers.

We can rethink and revamp our inventory practices by asking the below questions.

1) Who manages the inventory?

2) Do we have quality control as a priority?

3) Is our existing support scalable for future growth?

Ordering all our tasks along with the inventory management enables our business to grow incessantly and eliminate waste.

Automation of Communication Technologies

Automating utmost operations and particularly communications can play a key role in reducing our overall operational costs.

Additionally, with automation we can get rid of manual entries and reports.

Automation successfully decreases the time required to fetch the information to the consumer and hence increases productivity.

3.4 COST EFFICIENCY

Fig. 3.11: Cost Efficiency

Enhancing the overall efficiency of entire activities is another significant role played by logistic management. Logistician oversees all ongoing operations to confirm that all activities are working as per framed policies. Deviations are identified and remedial measures are taken to reach optimum results. It is assessed whether all resources are proficiently used and overhead costs are minimised which bring down the overall expenditures.

Ways of Reducing Logistics and Supply Chain Costs

Consolidated Shipments

A Superior way to reduce logistics costs is by consolidating shipments. This comprises a combination of several smaller shipments from various suppliers sharing the same destination into one consolidated shipment.

Note

Logistics providers often importing less than a full load from a specific country can partner up with another related importer and combine their shipments as a superior cost-effective solution.

Cargo Insurance

Logistics planning and cost saving approaches will not work well if we don't insure our cargo appropriately. The insurance must fully cover the value of products to avoid unpleasant surprises.

Using a Single, Integrated Platform

Supply chain operations must always be integrated into a single platform, accessible to all concerned parties. This way, we can avoid duplication of activities across operations. Such duplicated efforts impair our efficiency, are time consuming, and leave room for error.

Outsourcing

A portion of supply chain operations, mainly transportation and storage are outsourced. The reasons behind outsourcing mainly include increased efficiency, cost reduction and the convenience of entrusting essential aspects of our work to more efficient and skilled professionals.

To avoid confusion and excessive costs, it is in the good interest of both the logistics provider and the client to agree on the important issues. This includes the size and frequency of shipments, product handling, specifics regarding packaging, temperature control requirements, etc.

Supply Chain Visibility

Maintaining visibility of the supply chain can improve planning and expense control through better management of safety stock. To reduce the risk of product deficits, supply chain managers maintain a particular level of extra stock. It is a way to reduce uncertainties in the demand and supply process and maintain appropriate service levels.

Although there is no way to foresee or prevent interruptions in the logistics process, good supply chain visibility can give managers an understanding of issues. Utilising real-time dashboards that refresh data automatically supports supply chain managers and financial executives with the relevant and current information.

This way, they can respond quickly and find other routes of distribution or supply if the need arises. This as well reduces the need for safety stocks and contributes to cost control.

Optimised Use of Resources

Inadequate use of company assets, such as underutilised facilities, fleet vehicles, or inventory, directly affects the revenue. By optimising the utilisation of assets, we can greatly improve our business efficiency.

This can be done by rearrangement of the delivery schedules to keep the whole fleet of vehicles active throughout the day. We can avoid using the whole fleet in the morning and keep idle the rest of the day.

Companies experiencing high-level business peaks at particular times of the year can rent warehouse space when required. There is no need to own a warehouse that remains underutilised for the rest of the year.

Timely Planning

The well-timed planning of operations like production plan, shipping routes, and transit time is crucial. Hurried, last-minute decisions and choices will result in missed deadlines and delays, reflecting seriously on both the company image and finances.

3.5 ORDER MANAGEMENT

Logistic management enables speedy processing of customer orders. It implements several technologies for processing the information that led to project accomplishment in an adequate manner. Each order is managed properly from purchase point to final point of delivery for improving the consumer experience.

3.6 INCREASE SUPPLY CHAIN TRANSPARENCY

Logistics is a vital tool of supply chain management which enhances its overall transparency. It supports easy tracking of each stage of the supply chain ranging from manufacturing, warehousing, final shipment to customer. Managers can effortlessly view the stages of orders processed. A consistent logistic system builds the image of business and improves its overall market value.

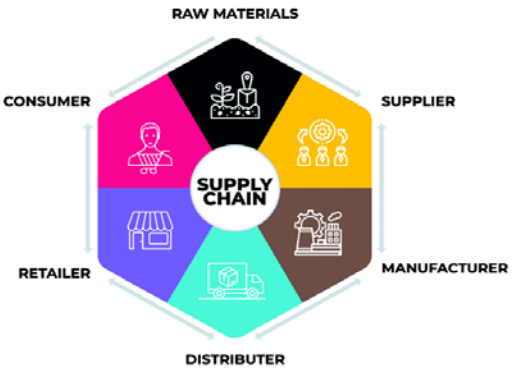


Fig. 3.12: Increase supply chain transparency

Note

5 General Steps That Companies Can Take to Initiate the Journey

Gauge Risks and Set Goals

A company may first take a look at future risks from past disruptions, regulation, and supplier-related issues. Regularly, this first step involves a plot of external and internal stakeholder interests known as a materiality assessment. Once the risks are understood, a company can identify its goals.

Visualise the Supply Chain

Having found and listed the primary risks, businesses can visualise the target supply chain. It will gain a greater understanding of map suppliers and processes, goods flows, and uncover present information gaps.

Collect Actionable Information

By mapping the supply chain, gather information on performance and practices that give insights about opportunities for improvement, potential risks, and information gaps. A company may need to track and profile batches, units, or lots of finished goods moving through the supply chain to confirm source of origin and chain of custody.

Engage

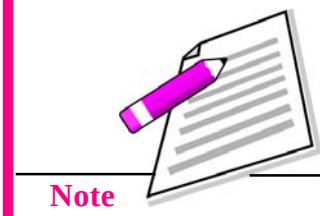
Equipped with actionable information, the business can now choose how to engage in the supply chain. This involves a program devised with critical KPIs in mind. The aim is to address particular issues such as environmental impacts at supplier sites, labour-related risks, or ambiguous sources of origin. The engagement includes supplier collaboration and contact, support and monitoring. It may also require 3rd party partnerships to gain competence that is not available internally.

Disclose

Finally, businesses set the level of disclosure they want to create. This includes deciding how they will meet related regulatory requirements and stakeholder demands, and how they will authenticate the information disclosed. The degree of disclosure can scale from sharing a code of conduct to disclosing traceability from the stage of raw materials of the supply chain.

INTEXT QUESTIONS 3.2

1. _____ frame effective strategies and execute them to ensure that quality products are delivered timely by company.



Note

2. _____ oversee all ongoing operations to confirm that all activities are working as per framed policies.
3. Logistic management enables speedy processing of _____ orders.
4. A consistent _____ system builds the image of business and improves its overall market value.

WHAT YOU HAVE LEARNT

- Logistics Importance and its role in daily life.
- Process of Order management
- Benefits that a business gets by ensuring seamless delivery

KEYWORDS- Logistics, Customer Service, Delivery, Order Management, Supply Chain Transparency

TERMINAL EXERCISE

1. Explain the importance of Logistics.
2. Explain various steps to provide better service to meet customers' needs?
3. What Suggest 7 ways that enables seamless delivery of a company.
4. List out various ways which contribute to reducing logistics and supply chain cost.
5. Logistics is a vital tool of supply chain management which enhances its overall transparency. How?

ANSWERS TO INTEXT QUESTIONS

3.1

1. production
2. place, time
3. public
4. environment

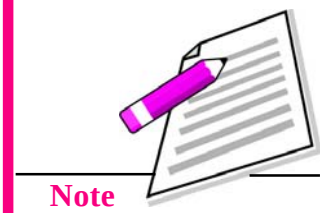
3.2

1. Logisticians
2. Logistician
3. customer
4. logistics

Note

ACTIVITY

- Imagine you are a "Logistics Manager", how will you provide better service to customers? Give a detailed activity plan.



Note

4

LOGISTICS—A SYSTEM & CONCEPT OF BUSINESS

Logistics System is a blend of facilities, where one or more operational activities are carried out like storage and distribution. Reverse logistics is the division of logistics dealing with goods flow which are unsold and returned from end destination to initial manufacturer.

OUTCOMES

After completing this lesson, the learner-

- assesses the process involved in logistics as a system with suitable examples;
- compiles the concept of the process of procuring raw material;
- analyzes various steps of the concept of the production process;
- plans out operational activities of storage and distribution of a company;
- examines the network and procedure of material management and physical distribution;
- lists out the role of Logistics in manufacturing and service sector business

4.1 LOGISTICS - A SYSTEM CONCEPT

Logistics System is a blend of facilities, where one or more operational activities are carried out like storage and distribution. Reverse logistics is the division of logistics dealing with goods flow which are unsold and returned from end destination to initial manufacturer.

The logistics management system is the process of planning, organising and controlling the logistics system.

A logistics system is a network of people, organisations, activities, resources,

Note

and information involved in the physical flow of products from supplier to consumer. A logistics system may consist of three primary networks or subsystems:

4.2 PROCUREMENT

The purchase of raw material and parts from suppliers and their transportation to the manufacturing units.

Fig. 4.1: Procurement

At its essence, procurement logistics is the obtaining of materials required to produce products. In other words, this part of the supply chain concentrates on purchasing raw materials, auxiliary supplies, replacement parts, operating supplies and other things required for the production process to work.

Procurement logistics handles storing, consolidating and shipping these materials to and from the warehouse. The procurement logistics team is also accountable for product sourcing and terms and conditions, selection policies, communication and procuring strategies to help keep the cost of purchase as low as possible.

4.3 PRODUCTION

The conversion of the raw materials into finished goods.

Production logistics involves planning, implementing and controlling effective and efficient flow and material storage, semi and final products and associated information in production processes of businesses for the purpose of conforming to customers' needs." Production logistics involves not only with flow sections where products and materials are handled, stored and transported but also with technological sections, specifically from viewpoint of their time period and way of capacity fulfilment. Production logistics is connected closely with the control of technological processes. Production logistics is principally applied in 2 management levels –operational and strategic. The strategic level of

Fig. 4.2: Production

Note

production logistics involves basic decisions of long-term to medium-term character, the general task of which is to create conditions for offering trouble free, economical production processes by the same time, securing good working conditions. The operational level of production logistics aims at a short-term to medium-term time horizon. The operational production planning and control are the most used terms in this context. Production has changed drastically. The number of required materials, semi-finished products, parts and components has been growing swiftly and, consequently, so has the complexity of production logistics. It is clear that bigger and bigger customer requirements cannot be satisfied at acceptable costs, without new solutions in that field.

4.4 DISTRIBUTION

The transportation of finished goods from manufacturing units to a network of stocking locations and from there to customers.

A logistics system based on its nature and definition includes the following:

- Warehousing, storage, and material handling
- Unitization and packaging
- Inventory
- Transport
- Information and control

The logistics planning department of a company includes professional people. The department's management has a highly challenging and complex position in planning and controlling the system.

Fig.4.3: Distribution

4.5 MATERIAL MANAGEMENT AND PHYSICAL DISTRIBUTION

These definitions view logistics as a section, part, or unit in a business, but we must keep in mind that there are logistics companies in most supply chains. These companies do not include logistics as a part of their business, since logistics becomes their business, thus all their strategies are regarding logistics, unlike the former where logistics strategy is a part of their competitive, operational, or business strategies.

Note

Material Management:

Materials management is a basic function of supply chain management, including the planning and execution of supply chains to meet the material requirements of an organisation. These requirements comprise controlling and regulating the flow of material at the same time assessing variables like price, demand, and quality, availability, and delivery schedules.

Material managers fix the amount of material needed and held in stock, plan for the refill of these stocks, create inventory levels for each type of item, and communicate information and requirements to purchasing operations and the extended supply chain. Materials management also includes assessing material quality to make sure it meets consumer demands in line with a production plan and at the lowest cost.

Material management systems encompass all of the activities associated with materials and are a basic business function that adds value to a finished product. It can also comprise the purchasing of machinery and other equipment required for production processes as well as spare parts.

Roles in Materials Management involve inventory control managers, inventory analysts, materials managers, material planners, and expediters as well as hybrid roles like planners/buyer.

Irrespective of role, the primary objective of Materials Management is ensuring a supply of material with optimised inventory levels and minimum difference between planned and actual results.

The key objectives of material management are referred to as the '5 R's of Materials Management:'

- The **right** material
- At the **right** time
- In the **right** amount

Quality that is:

- At the **right** price
- From the **right** sources

Physical Distribution:

The area of business management that is accountable for the movement of raw materials and finished goods and development of movement systems is called

Note

physical distribution. The main functions of physical distribution involve order processing, customer service, inventory control, logistics and transportation and packaging. It can create a competitive advantage for organisations. Physical distribution and logistics were slightly synonymous terms. Physical distribution emerged first, however Business logistics, with its wider scope that comprises inbound movement, followed later. Since the activities related to logistics were not considered essential it led to fragmentation. There were little attempts made to balance and integrate the activities of logistics. The significance of physical distribution was extended to include physical supply and was called business logistics. The term Logistics was used to focus on logistics activities that took place within the business firm. Purchasing was not generally considered nor was production. On the other hand, there was a similar movement by those interested in the purchasing activity. Since purchasing was considered as a buying activity, there were efforts to expand the scope to include many of the activities familiar to physical distribution but associated with the inbound side of the firm. Physical distribution indicates a broader concept that includes both inbound and outbound movement whereas business logistics involves both physical supply and physical distribution.

Utilities of time and place are normally considered as logistics or physical distribution activities. Since production and marketing were recognized functions within business, they laid claim to physical distribution, but their lack of consideration led physical distribution (logistics) to be developed as an independent entity and as a new function within the organisational structure. There are various lessons to be learned from the past. Logistics and Physical distribution were considered to have wide responsibilities for managing activities that were related with raw material purchase till the product flow to the end customer. Experts included distribution as a main activity in the marketing mix, though, distribution seemed to be defined much in terms of transaction channel activities than physical distribution ones. Since the scope of physical distribution was broad, actual management practice was normally limited to coordination of activities within the logistics task or among those activities linked with product flow. Logistics and Physical distribution were accepted by both production and marketing areas, but they gave meagre attention to issues of product flow. As a result, logistics and physical distribution developed as an independent function within business. It can be concluded that Logistics will continue to grow in significance as companies continue to outsource, expand their global operations, and do business in an international economic environment.

Note

INTEXT QUESTIONS 4.1

1. _____ System is a blend of facilities, where one or more operational activities are carried out like storage and distribution.
2. _____ logistics is the division of logistics dealing with goods flow which are unsold and returned from end destination to initial manufacturer.
3. The _____ management system is the process of planning, organising and controlling the logistics system.
4. A logistics system is a network of people, organisations, activities, resources, and information involved in the _____ flow of products from supplier to consumer.
5. Which of the following is not a subsystem of a logistics system?

   A) Procurement

   B) Production

   C) Distribution

   D) Marketing

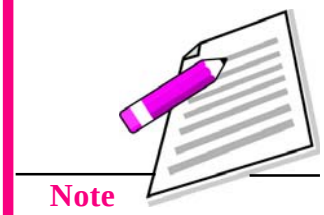
4.6 LOGISTICS : IMPORTANT ROLE IN MANUFACTURING AND SERVICE SECTOR BUSINESS

Logistics was initially used in a military context, meaning all the support activities necessary to keep an army in the field, fighting a war. Fifty years before, manufacturing and service organisations did not have a logistics function.

Normally, customer service was managed by the sales department. Inventory was managed by sales or manufacturing according to location. Suppliers organised inbound transport and outbound transport was booked by somebody in the sales department. In the intervening phase, many firms have created a logistics function to look after a growing proportion of storage and movement functions.

Typically, logistics manages strongly involved in:

- Order-processing
- Purchases



Note

- Inbound Transport
- Production plans and schedules,
- Inventory management
- Distribution and delivery transport
- Warehouse management
- Several information systems such as materials requirements planning, customer response management, and distribution requirements planning.

When we think about logistics, first comes to mind is the supply structure of a tangible good for it to reach the end-user properly on time. This gives rise to linked concepts such as "inventory" or “dispatch and distribution centres," where the product is the common factor. As it comes to services, these cannot be distributed or combined in the strict sense of the word. We are faced with intangible inventories that are difficult to measure but as real as a vacuum cleaner.

Logistics is redefined and plays a vital role, for instance, in regard to education , health, insurance, banking, and in the so-called services industry in common. As with product logistics, the focus is on the consumer only that in this case the main objective is delivering a satisfactory experience.

The difference between service logistics and product logistics mostly refers to their nature, whereby products are vulnerable to being accumulated whereas services are not. Therefore, where inventories are critical in the former, management capacity is in the latter. One of the utmost underlying features of this industry is the high skill level and specialisation of firms in this line of business. Therefore, logistics play such a significant role; if efficient, they can improve the quality of the experience that is offered.

For these suppliers, the cautious design and planning of all the activities involved in developing the service agreed upon are very vital, specifically those where the consumer has a direct or indirect role. It is important to present friendly platforms that permit the consumer to make the better decision when buying the service, where the information concerning all aspects of the purchase is available for delivery.

The variety, quality, cost, response time and availability of the service are amongst the variables that eliminate or reduce the gap between the service provided by these companies and the one valued by the consumer. To achieve this,

Note

companies must properly understand the preferences and needs of their consumers since this is critical for the constant development of the logistics management system.

Detailed description

Usually, the Supply Chain Operations Reference Model (SCOR Model) was used to describe the core logistics processes: “source” - obtain products, “make” - transform them, “deliver” - turn over, and “return” - processing returns to and from consumers and/or suppliers. In service logistics, service production is concurrent to its delivery; hence, the "make" and "deliver" occur at the same time.

In a few cases, for example with technical car services, products are combined with customized service. When the service comprises a product, it is mandatory to fulfil that with “the right product in the right time at the right place and in the right conditions." Sometimes the service requires a device to interact with the consumer, such as a tea machine at a medical emergency centre. In this case, we must expand logistics to include not only the supply of tea and hot water but also the need of electrical power for the machine and its appropriate maintenance.

Whatever be the service is, the consumer's perceptions and expectations are difficult to capture, and hence to satisfy. When a service is involved, the consumers do not know what they're buying, and the suppliers do not know what they're selling. Nevertheless, with these complexities, logistics can do more for services.

Nowadays there is an extreme level of competition among more demanding and selective consumers. This directly calls for companies in the field to obtain a high level of competition due to the several difficulties in satisfying the desired service level and the associated high costs.

INTEXT QUESTIONS 4.2

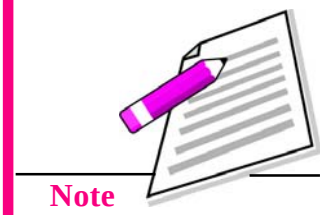
1. SCOR stands for?

   A) Supply Chain Output Reference

   B) Supply Chain Operations Reference

   C) Supply Chain Operations Report

   D) Supply Chain up Operations Reference



Note

2. March the following:

   Source - transform them

   Make - obtain products

   Deliver - processing returns

   Return - turn over

3. The consumer's perceptions and expectations are _____ to capture.

WHAT YOU HAVE LEARNT

- Process involved in Logistics system management
- Activities involved in Logistics
- The role of Logistics in manufacturing business
- The role of Logistics in service business
- Procurement and Distribution

KEYWORDS- Logistics, Procurement, Production, Distribution, Material Management, Physical Distribution

TERMINAL EXERCISES

1. What is the process involved in Logistics system management?
2. Analyse the relevance of various activities involved in the logistics system?
3. How does the logistics system play a pivotal role to speed up the manufacturing business to increase production ?
4. How is the role of logistics considered as a lifeline in the service business?Explain with suitable examples.
5. Explain the process of procurement of raw materials from different sources.

Note

6. Discuss the process and network of distribution of finished products.

7. What do you mean by 5R`s referred to as key objectives of material management.

ANSWERS TO INTEXT QUESTIONS

4.1

1. Logistics
2. Reverse
3. logistics
4. physical
5. D) Marketing

4.2

1. B) Supply Chain Operations Reference
2. Match the following

   Source - obtain products

   Make - transform them

   Deliver - turn over

   Return - processing returns
3. difficult

ACTIVITY

- Imagine you are running a small scale industry. How do you plan the distribution activities? Give a detailed activity plan.

5

TECHNOLOGY IN LOGISTICS MANAGEMENT

Fig. 5.1: Introduction of Technology in Logistics

In common, logistics involves coordinating the movement of a huge, complex group of supplies, people, operations, equipment, facilities, etc.

Today we may associate logistics with delivery services like FedEx and UPS, traditionally logistics was most appropriate to the movement of armies.

The logistics history is really fascinating. It would take more time to explain every evolution. Short history of logistics technology is given here.

OUTCOMES

After completing this lesson, the learner-

- lists out the modern technologies used in logistics in the present day scenario of business proliferation program;
- collects information of various types on technologies used before 1850 in logistics;
- evaluates the mode of technology used in logistics between the mid-20th to the mid-21st century during industrial era;
- analyzes the application of technology between the mid-20th century to 21st century;
- predicts the modern technologies to be used in logistics in the 21st century and beyond.

Note

5.1 LOGISTICS HISTORY BEFORE 1850

When we consider the limited forms of communication, transportation, and weaponry that militaries had access to before 1850, the scale of historical warfare is remarkable.

Ancient militaries seemed to have been delivered by a combination of local supplies and depots located alongside their march routes.

The 13thcentury Mongol cavalry was particularly well-known for its efficient and organised logistics system.

The army was split up into corps and each one travelled with pack animals, cattle, and baggage carts. Food stuff was stored along the way, but campsites were also selected based on convenience to grazing and forage.

The whole thing was wisely organised, and equipment and baggage were kept light to make transport at ease.

A significant development in this period was the increase in the size of armies that were mobilised .

The period of Napoleon brought about the progress of magazines, or storehouses containing supplies, and rolling magazines, which were mobile versions that brought supplies for a few days.

Overtime, supplies moved from animals to the soldiers. The progress of civilization and more densely populated areas made resupply simpler.

5.2 MID-19TH TO MID-20TH CENTURIES

The Industrial era changed logistics significantly. Technological innovations in machines, tools, communication and transportation transformed not only military activity, but also day-to-day life, businesses and the global economy.

In the late 19th century, steamships, railroad, and the telegraph considerably changed how people, armies, industries, and governments travelled and communicated.

The introduction of the internal combustion engine, powered vehicles that could travel on multiple surfaces, air transport, pipeline, radio, telephone, television, radar, and telephotography continued this transformation in the 20th century.

More supplies and more people could be mobilised over larger distances thanks to these advancements. New techniques for management and organisation were required to keep up with these developments, and distinct logistics functions started emerging in industry and military units.

Note

5.3 MID-20TH TO MID-21ST CENTURY

Since the 1940s, logistics technology changed from manual labour to employing mechanised ways of moving goods. With the advancement of pallet lifts, space in warehouses can be used more efficiently.

Early in the 1950s, intermodal containers permitted these pallets to be transported through ships, trucks, and rail more easily. Overtime, freight transport gradually transferred from rail to truck.

From the 1960s to the 1970s, record keeping was done manually. The introduction of computers enhanced logistics planning, management of inventory and truck route optimization.

The emergence of personal computers in the 1980s and internet emergence in the late 1990s fostered this data revolution.

Companies were able to use the technology of spreadsheet and map-based interfaces to improvise the planning and execution processes. Optimization Models (Large-scale) were built and ultimately incorporated into commercial operations. By this time technical innovation led to developments in automation. The term logistics is used more and more to describe a vital business function, rather than just relating military movements.

In the 1990s, much of the data existed in separate databases. To integrate data sources, Enterprise Resource Planning systems were developed. These systems could integrate multiple data sources, refining data accuracy and supporting materials and logistics planning.

INTEXT QUESTIONS 5.1

1. The 13th century _____ was particularly well-known for its efficient and organised logistics system.
2. From _____ to _____, record keeping was done manually.
3. The emergence of _____ in the 1980s and internet emergence in the late 1990s fostered this data revolution

5.4 21ST CENTURY AND BEYOND

Globalisation, advancement of computer technology and rising internet access have dominated logistics developments in the current century. The term Supply Chain Management (SCM) is now mostly used to incorporate strategy, planning and execution of the flow of information, goods, and services, with logistics being a vital part of this process.

Note

Logistics technology is indeed getting smarter. Cyber-Physical Systems link information technology and logistics and facilitate goods to flow and be tracked in real-time by diverse and complicated systems. This provides an extraordinary level of transparency and information for customers and suppliers.

Henceforward, it is inevitable that technology will go on to support faster and more complex flow of products, services, supplies and information to larger and wider end users. As with various other industries and functions, it is probable that logistics may possibly be transformed by emerging trends in automation, Internet of Things, and artificial intelligence.

Technology is making change in all walks of life and logistics too. Connectivity and the extensive presence of social media are increasing consumer expectations, placing increasingly greater focus on the capability of a company's logistics processes to meet, if not exceed, customer demands.

5.5 TEN TECHNOLOGY TRENDS THAT ARE RENOVATING LOGISTICS AND ITS MANAGEMENT

1. Cloud logistics

Fig. 5.2: Cloud Logistics

Most logistics companies use cloud-based services and others will soon use it. Going forward, remote-hosted data and process will lead.

Offering real-time and flexibility access to critical intelligence and operations software, cloud services are facilitating the scaling of extremely responsive on demand and pay-per-use business models that are attracting the norm in logistics.

Data security and migration may pose worries and hefty data traffic can slow processing times, but the savings in time and costs achieved are creating cloud logistics an attractive proposition.

2. Internet of Things

The connectivity of the IoT-Internet of Things is more than simply a cost cutter: it can improve operational efficiency, improve usage, and increase operational security.

The continuous flow of data between devices and logistics providers means supply chains can be self-maintaining and self-monitoring. In warehouse settings, smart sensors will notify robots to pick and pack orders or replenishment needs, in autonomous vehicles telematics will optimise delivery routes, renovating the way we staff and operate our logistics functions now and in future.

Fig.5.3: Internet Network

Note

INTEXT QUESTIONS 5.2

1. The 13th century _____ was particularly well-known for its efficient and organised logistics system.
2. From _____ to _____, record keeping was done manually.
3. The emergence of _____ in the 1980s and internet emergence in the late 1990s fostered this data revolution

3. Blockchain

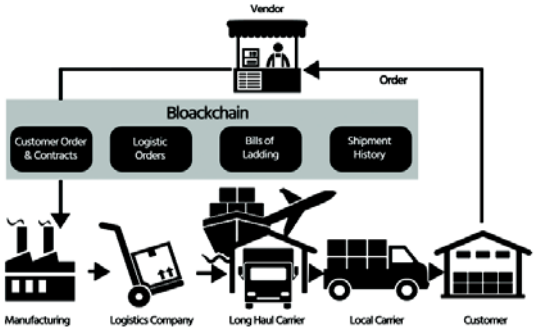


Fig. 5.4: Blockchain

Decentralised ledger technology has the capacity to transform the logistics industry.

By eliminating multiple layers of complexity through secure, clear transactional links, blockchains can replace the paperwork out of bills, cut fraud, reduce delays, and cut costs across supply chains.

Blockchain technology must overcome the barriers of association with problematic cryptocurrencies and confirm its scalability.

But in the future, the secured interconnectivity offered by blockchain might drastically increase speed in payments and bring superior transparency to an industry that can be annoying in its bureaucratic difficulty.

4. Artificial Intelligence

From enhancing human skills to handling back-office tasks we can streamline logistics processes to remarkable degrees of efficiency.

Note

Fig.5.5: Artificial Intelligence

Fed with data collected from IoT systems, Artificial Intelligence controlled automation can be used as a projecting tool in such activities as warehousing, where it can recognize upcoming demand fluctuations to prevent overstocking or shortages. It drives mechanical processes through computer vision and robotic systems and can even smooth customer experiences through assistive bots. Demand analyses by Artificial Intelligence can also weaponise retail and marketing strategies.

5. Virtual Reality and Digital Twins

The digital twin market is expected to be worth $15.66 billion in the year 2023. In the logistics space, the digital twinning and simulations of physical assets have grown into more commonplace as firms virtually monitor, test, and control processes and machinery.

Fig. 5.6: Virtual reality and digital twins

Virtual reality is re-establishing realistic digital settings that facilitate immersive e-learning and the training of hazardous processes over safe replication of potentially hazardous environments. It permits planned operating procedures and planned construction layouts to be assessed through digital visualisation, offering opportunities to streamline blueprints and lower costs and flaws. Managers also have the means through Virtual Reality to test, maintain and operate physical assets through their digital twinning from data gathered by Internet of Things (IoT) systems.

6. Self-Driving Vehicles

Fig. 5.7: Self-driving vehicles

Last-mile delivery presently accounts for 53% of all transportation costs. Starting from long-haul to last-mile deliveries, driverless vans and trucks will make an impact in the next few years as more than 40 firms continue massive testing of the technology.

Long trips require a great turnover of drivers and leave a massive carbon footprint. Autonomous technology can be used to part drive motor vehicles and guide them, supporting drivers physiologically and practically on demanding long runs. It is not just for trucks. Pallet stackers, forklifts, and other worksite and warehouse machinery will become semi-autonomous at least.

The logistics industry must adapt to innovative processes of making the vehicles too, modifying auto parts supply chains and connecting into the data feeds that will shape them.

7. Robotics and Automation

All over the world four-fifths of warehouses are running manually, extending enormous potential for automation in logistics processes.

Fig. 5.8: Robotics and automation

Robots have started working collaboratively with humans, reducing monotonous work and providing dynamic labour at times of employee shortages. Robotics will get more sophisticated, with sorting, picking, and packing becoming more ordinary and last-mile deliveries either being carried out assertively or autonomously. Trailer-loading bots will relieve employees of this physically demanding task and utilise Artificial Intelligence to load vehicles in an optimal way.

8. Big Data Analytics

Fig. 5.9: Big data analytics

The bank of data created by supply chains is offering the raw material that can be used to make structural variations and developments across networks.

These visions can also be projecting, allowing anticipatory inventory modifications to avoid incurring warehousing costs and also to fetch goods nearer to the markets that need them and when they need them.

9. Augmented Reality

Heads-up visors or other digital devices like smart glasses, warehousing tools can be augmented with barcode readers and other aids to hands-free operations.

Fig. 5.10: Augmented reality

When linked into management systems, Augmented Reality can support restructured operations and increase productivity.

Driving will be safer with assistive devices and navigation, last-mile deliveries may benefit from the application of object recognition software for extensiveness checks, and vehicle loading will be more efficient through space optimization prompts.

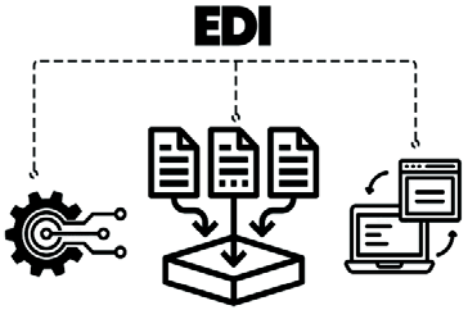
10. 3D Printing

Regional and local supply chains might be redrawn and become further complex, or even removed, as 3D printing reduces the necessity for long-distance physical transportation of parts and goods.

Fig. 5.11: 3D printing

Logistics operators will be central to the growth of the sector. In the growing aftermarket sector, logistics operators will be vital to fulfilling warehousing and spare parts needs and can set up global 3D printing plants for on-demand orders. They can also provide postponement services through local distribution centres.

Automation of Customs Clearance



Electronic Data Interchange interface implemented at the top international terminals in India. The customs clearance functions automation is easing customs clearance and procedures of inspection and is likely to lead to higher competences in international express.

Fig. 5.12: Automation of Customs clearance

Cross Border E-Commerce

Cross border e-commerce started to contribute to international express. Though, this segment is still at a budding stage due to high delivery and transport charges,

prolonged transit times, customs related bottlenecks and complex return processes.

Fig. 5.13: Cross border e-commerce

Cross border e-commerce was partial as Indian courier regulations did not support commercial transactions. Gifts and free samples were only allowed for shipping through courier mode. The e-commerce shipments were subjected to custom taxes and duties which significantly raised the cost of shipping as well the transit time. Courier Imports and Exports (Clearance) Amendment in 2016 allows e-commerce goods to be shipped by courier mode. It is expected to boost e-commerce .

INTEXT QUESTIONS 5.3

1. Early in the _____, intermodal containers permitted the pallets to be transported through ships, trucks, and rail more easily.

2. IOT stands for?

   A) Internet of Things

   B) Intranet of Things

   C) Internet of Time

   D) Intranet of Time

3. _____ technology must overcome the barriers of association with problematic cryptocurrencies and confirm its scalability.

   A) IOT

   B) Blockchain

   C) EID

   D) 3D Printing

4. EDI stands for?

   A) Electronic Data Interchange

   B) Electronic Data Interchange

   C) Electronic Data Intersection

   D) Electronic Documents Interchange

Note

5. _____ reduces the necessity for long-distance physical transportation of parts and goods.

   A) 3D printing

   B) IOT

   C) Blockchain

   D) EDI

6. The customs clearance functions automation is easing customs clearance and procedures of inspection and is likely to lead to higher competences in _____.

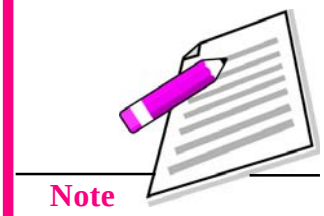
WHAT YOU HAVE LEARNT

- Technological Evolution of Mode of Logistics.
- Emerging Trends in Logistics.
- Domestic and International Courier/Express.
- Different Technology used in Logistics.

KEYWORDS- Logistics, Technology, IoT, Big Data , Automation

TERMINAL EXERCISE

1. Briefly discuss the technological evolution of logistics.
2. List out a few emerging trends in Logistics in the modern era.
3. “Innovative logistic management has made remarkable progress in the development of International Courier /Express services”.
4. Write a short on automation on custom clearance, cloud logistics and cross border e- commerce.
5. How does 3D printing technology contribute towards the development of logistic networks ?



Note

ANSWERS TO INTEXT QUESTIONS

5.1

1. Mongol cavalry
2. 1960s to 1970s
3. Personal computers

5.2

1. 1950s
2. A) Internet of Things
3. B) Blockchain
4. A) Electronic Data Interchange
5. A) 3D printing
6. International express

ACTIVITY

- Collect images and videos on Robotics used in Warehouses.

Note

6

LOGISTICS MANAGEMENT— ITS SUB-SECTOR

A warehouse is a building that stores products for stocking, packing, and shipping preparation. Warehouses are central locations that manage both inbound and outbound products. Maintaining a warehouse is crucial for any business that sells physical goods or receives products from a wholesale marketplace. As a business's sales grow, the need for physical space to maintain and package items grows, too. Depending on a company's needs or preferences, multiple service providers may handle separate warehouse-related tasks. There are different types of warehouses for different businesses, but every warehouse provides secure storage for products

OUTCOMES

After completing this lesson, the learner-

- summarizes the meaning of warehouse in terms of managing various processes of inventory management;
- assesses the importance of warehouses for supporting businesses to store, move, package and process orders from consumers.
- analyzes the functions of warehouse for better services for perseverance and distribution of goods;
- categorizes the types of warehouses based on the nature of product categories ;
- examines the benefits of warehousing to maintain efficient inventory to fulfill consumer's demand.

6.1 WAREHOUSE MEANING

A warehouse is a huge building where manufactured goods or raw materials are stored until they are distributed to shops to be sold or exported to other countries.

Fig. 6.1: Warehouse

A warehouse is a larger building, functioning as a storage facility for a chain of shops, or as an independent wholesale business.

Warehousing is the process of storing physical inventory for sale or distribution. Warehouses are used by all different types of businesses that need to temporarily store products in bulk before either shipping them to other locations or individually to end consumers.

For instance, many ecommerce businesses will purchase products in bulk from their suppliers, who ship them to their warehouse for storage. When an end customer then places an order from the ecommerce site, the business — or its third-party fulfilment provider — picks and packs the product from the warehouse and ships it directly to the customer.

Ecommerce has driven rapid growth throughout the warehousing industry. In fact, the market has doubled in the last decade as businesses around the world invest heavily in their supply chains to get goods to consumers and businesses faster and more efficiently.

This isn't only limited to ecommerce businesses. Most physical retail businesses have limited space in their stores to hold inventory but still need to keep up with demand. Having additional inventory available in nearby warehouses helps ensure they are always able to restock their stores during high volume times like the holidays, even if their suppliers are in other countries and are slow to produce and ship new products.

Warehousing is an essential part of the supply chain for most types of businesses that deal in physical goods. This could be consumer businesses holding a product that eventually makes its way to an end retail customer, or it could be business to business (B2B) companies storing products that eventually make it to business customers.

For retail and ecommerce businesses, warehousing allows the purchase of wholesale goods in bulk that may not fit in a physical retail store or yet be

Note

purchased by an end consumer online. Large bulk orders allow these businesses to negotiate lower prices with their suppliers, thus improving their margins when selling to customers. They can also keep inventory available as demand fluctuates to ensure products stay in stock.

In addition, warehousing allows businesses to store products in strategic geographic areas to reduce delivery times and shipping costs. For example, if a business is selling a product directly to consumers across India, they may want to store inventory in multiple different regions of the country. Similarly, if they're selling to consumers around the globe, they'll want to strategically place warehouses in different countries to speed up deliveries and minimise shipments that have to go through customs.

While warehousing may seem simple since it mainly involves leaving products in storage, there are a number of processes involved to ensure it's done efficiently and inventory can be moved in and out quickly, including:

- **Capacity Planning**

  Space is the key resource. Therefore, when a shipment of products is expected, staff needs to plan for where the products are going to be stored to make the most efficient use of the space.

- **Receiving Inbound Shipments**

  When products arrive at the warehouse, staff will need to receive the items and carefully move them to a staging area for processing.

- **Tracking Inventory**

  As items flow in and out of the warehouse, they need to be registered in the warehouse inventory management system to ensure administrators can track what's currently in inventory and plan for future changes.

- **Storing Products**

  After products have been received and processed, they need to be stored. This can involve putting the products in bins and pallets and then using moving equipment to transport them to their appropriate storage space.

- **Controlling Climate**

  Depending on the nature of the products, factors like temperature, humidity, or pressure may need to be kept constant. For example, frozen goods will need to be stored in areas where the temperature is below freezing. These requirements will affect how and where products are stored within the facilities to ensure proper quality.

- **Reorganising**

  As new products are brought in, existing inventory may need to be moved to make sure the whole space is being most efficiently utilised. Any changes need to be tracked and updated in the inventory management systems.

- **Retrieving and Outbound Shipping**

  Finally, when products need to go out of the warehouse for shipment, staff needs to retrieve, process, package, load them, and then release them from inventory to allow space for new inbound products.

INTEXT QUESTIONS 6.1

1. A _____ is a huge building where manufactured goods or raw materials are stored until they are distributed to shops to be sold or exported to other countries.
2. Warehousing is the process of storing _____ inventory for sale or distribution.
3. _____ is an essential part of the supply chain for most types of businesses that deal in physical goods.
4. When products arrive at the warehouse, staff will need to receive the items and carefully move them to a _____ area for processing.
5. After products have been received and processed, they need to be _____.

6.2 IMPORTANCE OF WAREHOUSE

Better Inventory Management

Nearly 8 % of small businesses do not track their inventory, 24% do not have inventory at all. This regularly leads to delay in shipments, late order processing and bad customer experience.

Fig. 6.2: Inventory Management

Warehouses offer a centralised place for the goods, making it simpler to track and manage

the inventory. By investing in warehouses , we can store, ship, and distribute goods much more efficiently. If products are out of stock, we will know it right away and offer consumers alternative choices rather than waiting for days or weeks.

More Efficient Packing and Processing

Fig. 6.3: Efficient Packing and Processing

Warehouses support businesses to store, move, package and process orders from consumers. Loading docks, Pallet racks, and packing materials are a few to mention. This way, we will have all in one place, which will save money and time.

A warehouse facilitates businesses to pack and grade their products according to legal requirements and consumer needs. The logistical cost is lowered, while flexibility is increased. This kind of facility can be a perfect distribution location, get rid of the need to organise for pickup and hire staff to manage fulfilment .

Superior Customer Service

Most online customers expect to know the guaranteed or estimated delivery time. Majority of the online customers would pay more for speedier delivery. Essentially, delivery speed is one of the first aspects buyers take into consideration when selecting a shipping carrier.

Fig. 6.4: Customer Service

Business owners want to keep their customers satisfied and engaged. If they fail to send their orders on time, their reputation will suffer. This can affect their revenue and brand image.

Warehousing enables on time delivery and optimised distribution, leading to improved labour productivity and better customer satisfaction. It helps in reducing errors and damage in the process of order fulfilment. Plus, it prevents products from getting stolen or lost during handling.

Ensure Price Stabilisation

The demand for goods and services differs from year to year and month to month,

depending on consumers' income, employment rates, government policies, climatic conditions, and other factors. A warehouse allows companies to store their products for a future date when the demand is high. This facilitates price stabilisation and lowers revenue losses.

Fig. 6.5 : Price Stabilisation

Improved Risk Management

Warehousing provides secured storage of perishable products. Depending on needs and type of business, companies can lease a warehouse equipped with freezers, refrigerators, and ideal temperature control.

Fig. 6.6: Risk Management

Food, plants, candles, artwork, and medications are few examples of products that require cold storage. A warehouse that provides this service will store goods at appropriate temperature, preventing changes in colour and texture and spoilage. In addition, it helps in extending the product's shelf life and ensures customer satisfaction.

Furthermore, the goods stored in warehouses are usually insured. These goods have more chances to receive compensation from insurance companies in case of fire, theft, or damage.

INTEXT QUESTIONS 6.2

1. A warehouse allows companies to store their products for a future date when the _____ is high.
2. Warehousing provides secured storage of _____ products.
3. Majority of the online customers would pay more for _____delivery.
4. Food, plants, candles, artwork, and medications are few examples of products that require _____ storage.
5. The goods stored in warehouses are usually _____.

6.3 WAREHOUSE FUNCTIONS

Fig. 6.7: Customer Service

Storage

Fig. 6.8: Storage

This is the main function of warehousing. Surplus products which are not needed instantly can be stored in warehouses. They can be delivered as and when required by the consumers.

Price Stabilisation

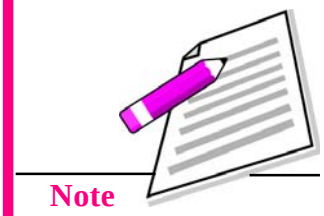
Warehouses play a vital role in the process of price stabilisation. It is attained by the creation of time utility by warehousing. Drop in the prices of products when their supply is in large quantities and increase in their prices during the slow season are avoided.

Risk Bearing

Fig. 6.9: Risk Bearing

When the products are stored in warehouses they are subjected to various risks in the form of deterioration, theft, exploration, fire etc. Warehouses are built in such a way as to reduce these risks. Contract of bailment functions when the products are stored in warehouses.

A warehouse keeper must take the sensible care of the products and safeguard



Note

them against several risks. For any damage or loss sustained by goods, the warehouse keeper will be liable to the owner of the goods.

Financing

Loans shall be raised from the warehouse keeper against the products stored by the owner. Products act as security for the warehouse keeper. Also, banks and financial institutions provide advance loans against warehouse receipts. In this way, warehousing acts as a source of finance for the companies for meeting business operations.

Fig. 6.10: Planning

Grading and Packing

Fig. 6.11: Grading and Packing

Warehouses currently provide the facilities of processing, packing, and grading of products. Products can be packed in suitable sizes as per the directions of the owner.

INTEXT QUESTIONS 6.3

1. Warehouses play a vital role in the process of _____ stabilisation .
2. When the products are stored in warehouses they are subjected to various risks in the form of _____.

   A) deterioration

   B) theft

   C) fire

   D) All of the above
3. For any damage or loss sustained by goods, _____ will be liable to the owner of the goods.
4. Banks and financial institutions provide advance loans against _____ receipts.

6.4 TYPES OF WAREHOUSES

Fig. 6.12: Types of Warehouse

When hearing the word "warehouse," most of us think of a dark, cold, and dusty building, filled with racks, crates and boxes. Reality is, the modern-day warehouse is a hive of activity, bright, clean, and supports our economy moving. Here are six different types of warehouses in use these days.

Distribution Centre

Most people confuse warehouse with distribution centre and the terms are used interchangeably. However, a warehouse may hold goods for a long period of time, a distribution centre holds goods for a short time period sees higher velocity of goods coming in and going out.

Fig. 6.13: Distribution Centre

Distribution centres are customer-centric and are located close to where the end user is, thus they receive products faster and in good shape. A distribution centre also provides value added services, such as pick and pack services, cross docking, or simple product mixing or packaging. A distribution centre provides many services than a warehouse; they are also equipped with more advanced technology to ease the processes happening within.

Pick, Pack, & Ship Warehouse

Fig. 6.14: Pick, Pack, & Ship Warehouse

In a warehouse, picking, packing, and shipping are the process that happens after an order is received, either from a brick-and-mortar store or an online store.

The warehouse receives a pick list of goods, and automated systems or people find the products within the warehouse. Then, the products are packed, labelled, and shipped to the consumer.

Smart Warehouse

A smart warehouse uses interconnected technologies and automation systems to receive goods, put away, picking, shipping, and to keep an accurate inventory count. Smart warehouses employ technology to decrease errors, increase production, and minimize the number of human resources required to run the warehouse.

Fig. 6.15: Smart Warehouse

Cold Storage

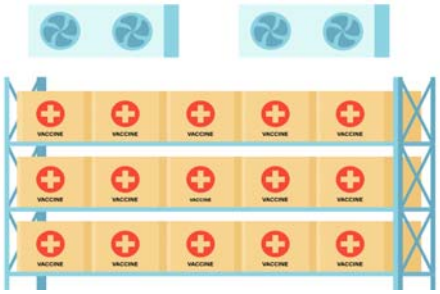


Fig. 6.16: Cold Storage

Cold storage stores temperature sensitive products at low temperatures. Cold storage warehouses allow perishable foods, medicine, cosmetics, plants, candles, and artworks to have longer lives. Cold storage warehouses use refrigerated shipping for all inbound and outbound shipping.

On-Demand Storage

A budding trend in warehousing is on-demand storage. On-demand warehousing links businesses with a demand for warehouse space (seasonal, temporary, or to handle sales spikes) with warehouses which have excess space.

Fig. 6.17: On Demand Storage

Bonded Warehouse

Bonded warehouses are also called "customs" warehouses. A bonded warehouse is a building where imported goods are manipulated, stored, or undergo manufacturing operations without duty payment for five years from date of acceptance. The duty on imported products can be very high. Hence, the bonded warehouse allows the goods to be sold first, and later duty is paid from the proceeds of the sale.

Fig. 6.18: Bonded Warehouse

INTEXT QUESTIONS 6.4

1. A distribution centre provides many services than a _____.
2. _____ warehouses employ technology to decrease errors, increase production, and minimise the number of human resources required to run the warehouse.
3. _____ storage stores temperature sensitive products at low temperatures.
4. Cold storage warehouses use _____ shipping for all inbound and outbound shipping.
5. _____ warehousing links businesses with a demand for warehouse space with warehouses which have excess space.

6.5 BENEFITS OF WAREHOUSE

Benefits of Warehousing are:

1. Regular Production

Raw materials must be stored to facilitate mass production to be carried on uninterruptedly. Occasionally, products are stored in expectation of a rise in prices. Warehouses support manufacturers to produce products in anticipation of future demand.

Fig. 6.19: Regular production

2. Time Utility

Fig. 6.20: Time Utility

A warehouse generates time utility by bringing the time gap in the production and consumption of products. It supports making available the products each time demanded or required by the consumers.

Some products are manufactured throughout the year, but its demand will be only in particular seasons, e.g., raincoat, wool, heater, umbrella, etc. by the same time, some products have demand throughout the year, but they are manufactured in certain region, e.g., rice, wheat, potatoes, etc. Goods like tobacco, rice, jaggery and liquor become valuable with the passage of time.

3. Store of Surplus Goods

Fig. 6.21: Store of Surplus Goods

A warehouse acts as a store of surplus products which are not required immediately. Products are often manufactured in anticipation of demand and required to be preserved appropriately until they are demanded by the consumers. Products which are not needed immediately can be stored in a warehouse to meet the future demand.

4. Price Stabilisation :

Warehouses bring down violent fluctuations in prices by storing products when their supply exceeds demand and by issuing them when the demand is more than immediate production. Warehouses confirm a regular supply of products in the market. This pairing of supply with demand helps to stabilise prices.

5. Minimization of Risk

Warehouses support for the safe custody of products. Perishable goods can be preserved in cold storage. By keeping their products in warehouses, businesses can reduce the loss from fire, damage, theft etc. The products stored in the warehouse are usually insured. In case of damage or loss of the products, the owner of products will get complete compensation from the insurance company.

Fig. 6.22: Minimization of Risk

6. Packing and Grading :

Fig. 6.23: Packing and Financing

Certain items must be processed or conditioned to make them fit for human use, e.g., tobacco, coffee, etc. A modern warehouse offers facilities for blending, processing, grading, packing, etc., of the products for the purpose of sale. The prospective purchasers can inspect the products kept in a ware-house.

7. Financing :

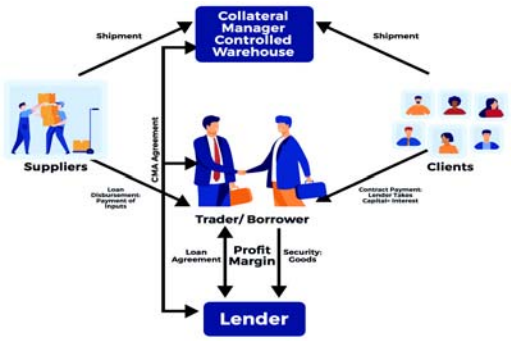


Fig. 6.24: Financing

Warehouses offer a receipt to the owner of products for the products kept in the warehouse. The owner may borrow against the security of goods by producing an endorsement on the warehouse receipt. In a few countries, warehouse organisations advance cash against the products deposited in the warehouse. By holding the imported products in a bonded warehouse, an importer can pay customs duty in installments.

INTEXT QUESTIONS 6.5

1. Warehouses support manufacturers to produce products in anticipation of _____ demand.
2. Products are often manufactured in anticipation of demand and required to be preserved appropriately until they are demanded by the _____.
3. In case of damage or loss of the products, the owner of products will get complete compensation from the _____.
4. A modern warehouse offers facilities for _____.

   A) Blending

   B) Grading

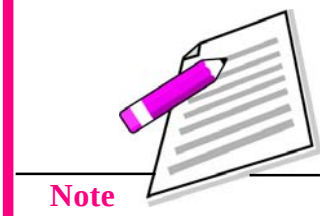
   C) Packing

   D) All of the above
5. By holding the imported products in a _____ warehouse, an importer can pay customs duty in installments.

KEYWORDS- Warehouse, Sorting, Grading, Packing

WHAT YOU HAVE LEARNT

- Importance of Warehouse.
- Types of Warehouses.
- Functions of Warehouse.



- Forms of risk in Warehouse.
- Benefits of Warehousing.

TERMINAL EXERCISE

1. Define Warehouse.
2. Write down the importance of warehouses .
3. What are the types of Warehouses?
4. What is a bonded warehouse?
5. What are the functions of Warehouse?
6. What are the different forms of risk in a warehouse ?
7. List out the benefits of Warehousing.
8. How does warehouse support in reducing risk in business?

ANSWERS TO INTEXT QUESTIONS

6.1

1. warehouse
2. physical
3. Warehousing
4. staging
5. stored

6.2

1. demand
2. perishable
3. speedier
4. cold
5. insured

6.3

1. price
2. D) All of the above

Note

3. warehouse keeper
4. warehouse

6.4

1. warehouse
2. Smart
3. Cold
4. refrigerated
5. On-demand

6.5

1. future
2. consumers
3. insurance company
4. D) All of the above
5. bonded

ACTIVITY

- Collect videos and Images of Warehouse functions.

7

LOGISTICS—EFFICIENT TRANSPORTATION SYSTEM

Transportation is responsible for the development of civilizations from very old times by meeting travel requirements of people and transport requirements of goods. Such a movement has changed the way people live and travel. In developed and developing nations, a large fraction of people travel daily for work,shopping and social reasons. But transport also consumes a lot of resources like time,fuel, materials and land.

OBJECTIVES

After studying this lesson, the learner-

- summarizes the meaning and role of transportation in the development of civilization;
- analyzes the importance of transportation to facilitate logistics network;
- prepares points of difference between transportation and logistics for procurement of raw materials to final product;
- lists out the types of transportation with its advantages and disadvantages;
- analyzes the determining factors of an efficient transportation system.

7.1 TRANSPORTATION-MEANING

The movement of person and goods from place to place and the several means by which such movement is achieved. The growth of the capacity and the need to transport large numbers of people or quantities of goods over long distances at high speeds in safety and comfort has been a symbol of civilization and regarding technological progress.

Modes of Transport Include Land, Air, Water, Pipeline, Cable and Space

Fig. 7.1: Modes of Transportation

Transportation is a non separable part of any society. It exhibits a very close relation to the style of life, the range and location of activities and the goods and services which will be available for consumption. Advances in transportation have made possible changes in the way of living and the way in which societies are organised and therefore have a great influence in the development of civilizations. This chapter conveys an understanding of the importance of transportation in modern society by presenting selected characteristics of existing transportation systems, their use and relationships to other human activities.

Economic Role of Transportation

Economics involves production, distribution and consumption of goods and services. People depend upon natural resources to satisfy the needs of life but due to the uneven surface of earth and due to differences in local resources, there is a lot of difference in standard of living in different societies. So there is an immense requirement of transport of resources from one particular society to another. These resources can range from material things to knowledge and skills like movement of doctors and technicians to the places where there is a need for them.

The Place, Time, Quality and Utility of Goods

An example is given to evaluate the relationship between place, time and cost of a particular commodity. If a commodity is produced at point A and wanted by people of another community at any point B distance x from A, then the price of the commodity is dependent on the distance between two centres and the system of transportation between two points. With an improved system the commodity will be made less costly at B.

Changes in Location of Activities

The reduction of cost of transport does not have the same effect on all locations. Let at any point B the commodity is to be consumed. This product is supplied by two stations A and K which are at two different distances from B. Let at present

the commodity is supplied by A since it is at a lesser distance but afterwards due to improvement in road network between B and K,the point K becomes the supply point of product.

- Transport extends the range of sources of supply of goods to be consumed in an area, making it possible for users to get resources at cheap price and high quality.
- The use of more efficient systems of supply results in an increase in the total amount of goods available for consumption.
- Since the supply of goods is no longer dependent on the type of mode, items can be supplied by some alternative resources if the usual source cannot supply what is needed.

Social role of transportation

Transportation has always played an important role in influencing the formation of urban societies. Although other facilities like availability of food and water played a major role, the contribution of transportation can be seen clearly from the formation, size and pattern, and the development of societies, especially urban centres.

Formation of Settlements

From the beginning of civilization, man has lived in settlements which existed near banks of major river junctions, a port, or an intersection of trade routes. Cities like New York, Mumbai and Moscow are good examples.

Size and Pattern of Settlements

The initial settlements were relatively small developments but with due course of time, they grew in population and developed into big cities and major trade centres. The size of settlements is not only limited by the size of the area by which the settlement can obtain food and other necessities, but also by considerations of personal travels, especially the journey to and from work. The increased speed of transport and reduction in the cost of transport have resulted in a variety of spatial patterns.

Growth of Urban Centres

When the cities grow beyond normal walking distance, then transportation technology plays a role in the formation of the city. For example, many cities in the plains developed as a circular city with radial routes, whereas the cities beside a river developed linearly. The development of automobiles, and other factors like increase in personal income, and construction of paved road network, the settlements were transformed into urban centres of intense travel activity.

Note

Political Role of Transportation

The world is divided into numerous political units which are formed for mutual protection, economic advantages and development of common culture. Transportation plays an important role in the functioning of such political units.

Administration of an Area

The government of an area must be able to send/get information to/about its people. It may include laws to be followed, security and other needful information needed to generate awareness. An efficient administration of a country largely depends on how effectively the government could communicate this information to all the country. However, with the advent of communications, its importance is slightly reduced.

Political Choices in Transport

These choices may be classified as communication, military movement, travel of persons and movement of freight. The primary function of transportation is the transfer of messages and information. It is also needed for rapid movement of troops in case of emergency and finally movement of persons and goods. The political decision of construction and maintenance of roads has resulted in the development of the transportation system.

Environmental Role of Transportation

The negative effects of transportation are more dominating than its useful aspects as far as transportation is concerned. There are numerous categories into which the environmental effects have been categorised. They are explained in the following sections.

Safety

Growth of transportation has a very unfortunate impact on society in terms of accidents. Worldwide death and injuries from road accidents have reached epidemic proportions. -killed and about 15 million injured in road accidents annually. Increased variation in the speeds and vehicle density resulted in a high exposure to accidents. Accidents result in loss of life and permanent disability, injury, and damage to property. Accidents also cause numerous non-quantifiable impacts like loss of time, grief to the near ones of the victim, and inconvenience to the public. The loss of life and damage from natural disasters, industrial accidents, or epidemics often receive significant attention from both government and public. This is because their occurrence is concentrated but sparse. On the other hand, accidents from the transport sector are widespread and occur with high frequency.

For instance, a study has predicted that death and disabilities resulting from road accidents in comparison with other diseases will rise from ninth to third rank between 1990 and 2020. Road accidents as cause of death and disability could rank below heart disease and clinical depression, and ahead of stroke and all infectious diseases. Significant reduction to accident rate is achieved in the developing countries by improved road designed maintenance, improved vehicle design, driver education, and law enforcements. However in developing nations, the rapid growth of personalised vehicles and poor infrastructure, road design, and law enforcement has resulted in a growing accident rate.

Air Pollution

All transport modes consume energy and the most common source of energy is from the burning of fossil fuels like coal, petrol, diesel, etc. The relation between air pollution and respiratory disease have been demonstrated by various studies and the detrimental effects on the planet earth is widely recognized recently. The combustion of the fuels releases several contaminants into the atmosphere, including carbon monoxide, hydrocarbons, oxides of nitrogen, and other particulate matter. Hydrocarbons are the result of incomplete combustion of fuels. Particulate matters are minute solid or liquid particles that are suspended in the atmosphere. They include aerosols, smoke, and dust particles. These air pollutants once emitted into the atmosphere , undergo mixing and disperse into the surroundings.

Noise Pollution

Sound is acoustical energy released into the atmosphere by vibrating or moving bodies whereas noise is unwanted sound produced. Transportation is a major contributor of noise pollution, especially in urban areas. Noise is generated during both construction and operation. During construction, operation of large equipment causes considerable noise to the neighbourhood. During the operation, noise is generated by the engine and exhaust systems of the vehicle, aerodynamic friction, and the interaction between the vehicle and the support system (road-tire, rail-wheel). Extended exposure to excessive sound has been shown to produce physical and psychological damage. Further, because of its annoyance and disturbance, noise adds to mental stress and fatigue.

Energy Consumption

The spectacular growth in industrial and economic growth during the past century have been closely related to an abundant supply of inexpensive energy from fossil fuels. Transportation sector is unbelieved to consume more than half of the petroleum products. The compact of the shortage of fuel was experienced during major wars when strict rationing was imposed in many countries. The impact of

this had cascading effects on many factors of society, especially in the price escalation of essential commodities. However, this has few positive impacts; a shift to the public transport system, a search for energy efficient engines, and alternate fuels. During the time of fuel shortage, people shifted to cheaper public transport systems. Policy makers and planners, thereafter, gave much emphasis to public transit, which consumes less energy per person. The second impact was in the development of fuel-efficient engines and devices and operational and maintenance practices. A fast depleting fossil fuel has accelerated the search for energy efficient and environment friendly alternative energy sources. The research is active in the development of biofuels, hydrogen fuels and solar energy.

Other Impacts

Transportation directly or indirectly affects many other areas of society and few of then are listed below:

Almost all cities use 20-30 percent of their land in transport facilities. Increased travel requirements also require additional land for transport facilities. A good transportation system takes a considerable amount of land from the society.

Aesthetics of a region is also affected by transportation. Road networks in the quiet countryside are a visual intrusion. Similarly, the transportation facilities like fly-overs are again a visual intrusion in urban context.

The social life and social pattern of a community is severely affected after the introduction of some transportation facilities. Construction of new transportation facilities often requires substantial relocation of residents and employment opportunities.

INTEXT QUESTIONS 7.1

1. Modes of transport include _____

   A) Land

   B) Air

   C) Water

   D) All of the above

2. Transport extends the range of sources of supply of goods to be consumed in an area, making it possible for users to get resources at cheap _____ and high _____.

3. _____ are the result of incomplete combustion of fuels.

4. _____ is a major contributor of noise pollution, especially in urban areas.

5. The research is active in the development of

   A) bio-fuels

   B) hydrogen fuels

   C) solar energy

   D) All of the above

7.2 IMPORTANCE OF TRANSPORTATION

1. Transportation Helps in Mass Production and Stability of Prices

The credit for the growth of large-scale industries goes to a specific extent on the superior transport facilities in the world. Purchasing raw materials at low cost in huge volumes from the faraway locations has been possible because of effective transportation and infrastructure facilities. It has promoted mass production that has influenced the creation of new and old market expansions.

Fig. 7.2: Mass production and stability

If the labour cost in one specific place is very high, it is possible to hire labour from other regions as they can travel without problems from one place to another. Transportation helps in reducing cost of production. In the past, prices used to fluctuate extremely because of the scarcity of products in one area and surplus in another.

Transportation has currently brought uniformity in price ranges by equalising and stabilising it all over the nation. This change has been a blessing because it has fostered healthy competition and opposed the policy of monopoly of goods.

2. Transportation Helps in Economic Development

Human beings depend on natural resources and goods and services to satisfy the wants and needs of life. Uniformity is not there in the production of these things and resources and at this juncture, it is the transportation that comes forward as a boon in disguise and delivers the luxuries as well as necessities from one place to another.

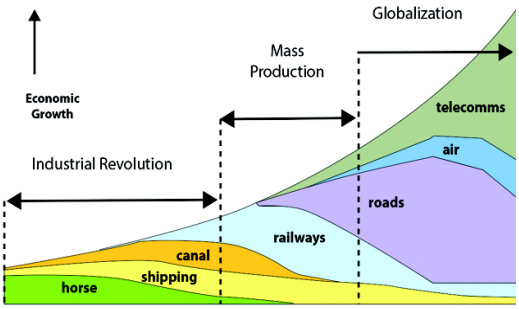


Fig. 7.3: Contribution towards Economic Development

Trade is not restricted within specific boundaries.It has spread wide and far within every corner of the world. It is the development of transportation that has worked as a binding force to link the world market. The significance of transportation is that it has turned into a most important force in enhancing the immobility of labour and capital.

These days it is feasible for labourers to migrate to locations where the job opportunities and facilities to earn are greater than the local areas. Economic development made possible due to efficient transportation.Infrastructure minimised the exploitation of the labour and maximised the optimization of resources. It is possible for a region to concentrate on the production of products best suited for and distribute it to places where demand is more.

The significance of transportation is that it has become a key element of economic growth as it can move resources easily supporting societies to grow and prosper at a good rate. Currently, there is improved accessibility to investors for existing as well as new business entities. It is easy to notice the emergence of schools, colleges, markets, and other facilities that have been a mark of improved economic growth in a place.

3. Transportation Offers Numerous Opportunities

There are various modes of transportation like water, air, road, ships, trains, etc.leadbest. The prominence of transportation is that it provides numerous opportunities to masses all around the globe.

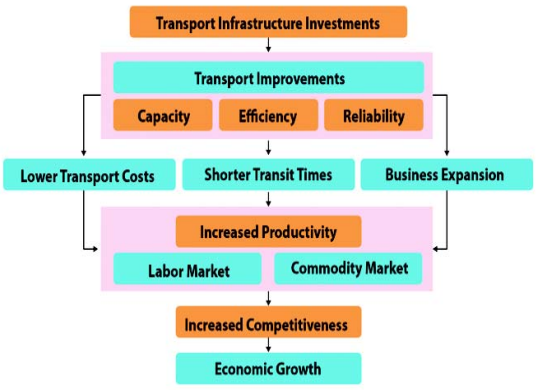


Fig.7.4: Numerous Opportunities

An effective transportation system offers economic, social, cultural, and political advantages like infusion of investors, accessibility to markets, distribution of resources, etc that result in an indirect impact on the development and growth of a country. It can be assessed in terms of employment and added value.

There is a rise in employment opportunities, and it helps to boost the income of the nation. It acts as a feasible opportunity for the customer who can be benefited with several goods and services that were not available earlier in their local place.

4. Transportation Helps in Social Development

It is mostly because of transportation human beings can travel to distant places where the clue of a visit was unimaginable. New lands have been discovered which are utilised now to gain ideal benefits.

Fig.7.5: Social development

The rate of land has increased as mankind is determined to use wastelands for their benefit. Better links of transportation have guaranteed connectivity that has resulted in better lifestyle and social inclusion. There has been a dispersion of population as it is not essential to live in a place where the resources are maximum as an alternative due to easy distribution facilities people can live anywhere and buy desired resources accordingly.

One of the solid importance of transportation is, it has been possible to increase the amount of production as materials, equipment, and labour can now be moved from one place to another.

INTEXT QUESTIONS 7.2

1 Purchasing raw materials at low cost in huge volumes from the faraway locations has been possible because of effective _____ and _____ facilities.

2. _____ has currently brought uniformity in price ranges by equalising and stabilising it all over the nation.

3. _____ development made possible due to efficient transportation.

4. The prominence of _____ is that it provides numerous opportunities to masses all around the globe.

5. It is mostly because _____ human beings can travel to distant places where the clue of a visit was unimaginable.

7.3 DIFFERENCE BETWEEN TRANSPORTATION AND LOGISTICS

The logistics services business is defined as the procuring, producing, and distributing of products and materials in the right quantities to a customer or a destination.It comprises the science of planning, managing, and implementing procedures for efficient and effective storage and transportation of goods. Services and associated information from the point of source to the consumer is sent through logistics to meet and fulfil customer demands.

Fig.7.6: Difference between Transportation and Logistics

The movement of goods, people, and animals from one place to another by rail, air, road, cable, sea, pipeline, or space is known as transportation.

Transportation services are shared into three parts: vehicles, infrastructure, and operations. Transportation is very vital because it permits trade and communication between two parties.

Though both logistics and transportation deal with receiving valuables from one place to another, logistics has added functions and benefits.

Logistics executives must make decisions dealing with containerization, packaging, documentation, storage, insurance, importing and exporting regulations,working and collaborating, freight damage claims, managing partners and vendors, and risk mitigation.

Though these terms have been used as a substitution for each other, the main differentiations are that logistics deals with the integration of transportation, storage, handling, cataloguing, and packaging of products while transportation deals with the activity of moving individuals or products from one place to the next.

INTEXT QUESTIONS 7.3

1. The logistics services business is defined as the _____of products and materials in the right quantities to a customer or a destination.

   A) procuring

   B) producing

C) distributing

D) All of the above

2. Transportation is very vital because it permits _____ and communication between two parties.

3. Transportation services are shared into parts like _____.

A) vehicles and operation

B) infrastructure and operation

C) vehicles, infrastructure and operations

D) None of the above

4. The movement of goods, people, and animals from one place to another by rail, air, road, cable, sea, pipeline, or space is known as _____.

7.4 TYPES OF TRANSPORTATIONS

1. Air Transportation
2. Roadways Transportation
3. Railways Transportation
4. Water Transportation
5. Pipelines Transportation

Air Transportation Services

Air transportation is high-speed transport. We can reach one place to another place in very less time. But it is expensive transportation. The value of transactions is high per alternative mode.

Fig.7.7: Air Transportation Services

Air Transportation Service Advantages

- Higher speed
- Delivers the product to far off

Air Transportation Service Disadvantages

- The higher price of transportation
- Adverse weather impacts transportation
- Higher fuel consumption

Roadways Transportation Service

The road is the basic transport. This mode of transport supports the transfer of goods from one location to another location by road through various ways like buses, motorcar, trucks, cargos, and suitable alternatives.

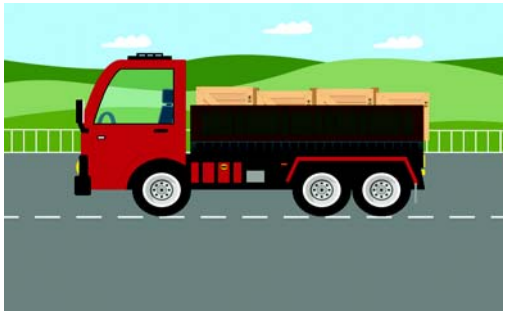


Fig. 7.8: RoadwaysTransportation Service

Roadways Transportation Service Advantages

- Uses different routes to achieve the destination faster.
- Door to door service.
- High safety loading.
- Chance to choose the carrier that is suitable for carrying the goods.

Roadways Transportation Service Disadvantages

- It mainly depends on the climate.
- Higher price for distances.
- Low productivity.

Railways Transportation Service

Rail transport is also known as train transport. It is a means of transferring goods and passengers on wheeled vehicles running on rails. It is comfortable for long-distance travel. It plays an important role in national integration.

Fig. 7.9: Railways Transportation Service

Railways Transportation Service Advantages

- High capability of loading.
- High frequency of long-distance delivery.
- Climate don't have any impact
- No traffic problems

Railways Transportation ServiceDisadvantages

- Huge capital and initial investments.
- High fuel consumption.

Water Transportation Service

In water transport, the loads of products are unit giants when compared with alternative methods of carriers. It plays a vital role in the development of imports and exports of products within the entirely different elements of the planet.

Fig. 7.10: Water Transportation Service

Water Transportation Service Advantages

- It is an economic mode for transport.
- It is the safest mode.
- It provides international transport.

Water Transportation Service Disadvantages

- It is very tormented by the weather.
- It needs a giant initial investment
- It could be a slow method.

Pipelines Transportation Service

Pipelines transportation is used to move liquids and gases from one location to another location. Through this mode of transport, we can send biofuels, chemicals, and natural gases.

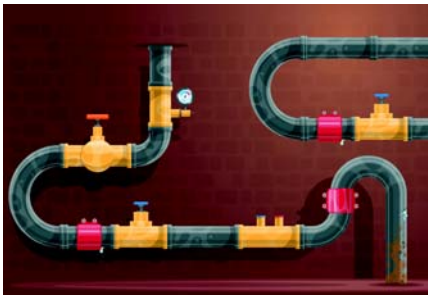


Fig. 7.11: Pipelines Transportation Service

Pipelines Transportation Service Advantages

- They are versatile in transporting gases and liquids.
- Low energy consumption.
- It needs a restricted space of maintenance.
- Pipelines are safe and accident-free.

Pipelines Transportation Service Disadvantages

- It is not versatile.
- Troublesome to make security arrangements for this mode of transport.

INTEXT QUESTIONS 7.4

1. The _____ transportation is a high-speed transport.

   A) Air

   B) Roadways

   C) Railways

   D) Water

2. _____ is expensive.

   A) AirTransportation

   B) Roadways Transportation

   C) Railways Transportation

   D) Water Transportation

3. Which of the following is not an advantage of Railways Transportation?

   A) High capability of loading

   B) High frequency of long-distance delivery

   C) Climate don't have any impact

   D) High fuel consumption

4. Which of the following is not an advantage of Pipelines Transportation?

   A) They are versatile in transporting gases and liquids.

   B) Low energy consumption.

   C) It needs a restricted space of maintenance.

   D) It is not versatile

5. Which of the following is not an advantage of Pipelines Transportation?

   A) It is an economic mode for transport.

   B) It is the safest mode.

   C) It provides international transport.

   D) It is very tormented by the weather.

7.5 EFFICIENT TRANSPORTATION SYSTEM

Efficient transportation systems facilitate the movement of goods and people while minimising cost, time, and energy.

Fig.7.12: Efficient Transportation System

We can conceptualize the system of transport as a set of relationships between networks, nodes, and demands. The relationships include places spatially expressing the demand, flows, and the designed infrastructure to link and handle the flows. All the key elements of a transport system support to facilitate the movement of information, passengers, and freight.

Transport systems are the essential arteries of a nation's economy.People refer to them as the lifeline of a country. A well-linked and coordinated transport system has a vital role in maintaining the growth and development of cities and a country.

Features of a Good Transport System

Affordable

Affordability denotes the relative cost of existing transit choices compared to the average income of individuals. The price of a monthly transport ticket must be low compared to the average monthly income of the individual. The right way of ensuring complete urban mobility in a high-density city is to cope with the

Fig. 7.13: Affordable

affordability of private transport. That can assist control congestion and make the whole transport system sustainable. Relatively superior fares imply that public transport is away from the reach of low-income groups. In such situations, poor citizens may perhaps have to spend equal to a fifth of their income on transportation.

Additionally, a costly transport system may not be viable as it may lessen passenger flows and raise the cost of goods.

Available

One of the crucial attributes of an efficient transport system is availability.

Availability represents the collection of indicators that determine the different transit options available to people in a city. A typical system of transport must have rail systems and dense subways in populated zones and road infrastructure in areas where populations are less.

Fig.7.14: Available

Efficient Essentials of a Good Transport System

A view of distinct types of vehicles on the road. Twitter Efficiency is one of the crucial features of the contemporary transport system in cities. It calculates how quickly and reliably it will take for an individual to complete a trip either by private or public transport. As transport systems expand, it becomes vital to ensure their efficiency to offer users the confidence of having reliable and quick transportation. Efficient transportation systems facilitate the movement of goods and people while minimising cost, time, and energy.

Convenience

Convenience is one of the most important features of transport systems. Convenience complements efficiency to describe the service quality provided by systems of transport in a city. A basic consideration for people when deciding to travel is physical comfort.

People are required to use a modern system of transport at any time for all passenger groups. Comfort begins from the ticketing system, wherein passengers can use a simple system of payment for all categories of public transport. It next comes down to transfers to permit people to connect their current networks of transport or find metro stations with ease.

Fig.7.15: Convenience

Safe

Transportation safety is one of the key characteristics of a transportation system and a vital element of every urban mobility aspect for all people. Security in a transport system lessens severe injuries and fatalities on public roads. Passengers must perceive being safe from traffic and crime while on the road. Security class of a transport system comprises three aspects.

These include, Safety from crime, whereby there is police, staff, lighting, proper layout on the roads, visible monitoring, and easily identifiable help points. Safety from accidents, whereby there is presence or visibility of support systems, active safeguarding and avoidance of hazards. The conspicuousness of safety measures. While a transport system is safe, it can significantly minimise accidents, risks, or injuries and reduce the effects on the economy.

Fast Essentials of a Good Transport System

Speed is the utmost critical contributing factor to a good transport system. Mobility is determined by speed. It is one of the main reasons several people desire using cars to move from one place to another place and why cars are faster than other transportation modes. But in the short journeys, specifically in cities and towns, it becomes faster to cycle because vehicles move slowly due to the forced speed limits. For long distances in urban districts and links between city centres, the public wish to travel in metro or train to move faster. Huge traffic in most towns implies that passengers travel in public transport to move faster. When it comes to road trips, a car journey makes sense. Speed

Fig.7.16: Fast essentials of a good transport system

is the utmost decisive aspect of driving mobility. Higher speeds do not mean saving time.

Some of the prerequisites of a good transport system comprise availability, affordability, convenience, efficiency, speed and safety. While a transport system is inexpensive, it can reduce the cost of goods and increase passenger flows. A safe transport system reduces severe injuries and fatalities on public roads.

INTEXT QUESTION 7.5

1. Efficient transportation systems facilitate the movement of goods and people while minimising _____.

   A) Cost

   B) Time

   C) Energy

   D) All of the above

2. We can conceptualise the system of transport as a set of relationships between _____.

   A) networks,and demands

   B) nodes, and demands

   C) network, node and demands

   D) None of the above

3. _____ systems are the essential arteries of a nation's economy.

4. Availability represents the collection of indicators that determine the different _____ options available to people in a city.

5. Mobility is determined by _____.

WHAT YOU HAVE LEARNT

- Importance of Transportation
- Different between Logistics and Transportation
- Roles played by Logistics Executives
- Types of Transportation
- Features of Good Transport System

KEYWORDS- Transportation, Logistics, Airways, Seaways, Roadways, Railways, Pipelines

TERMINAL EXERCISE

1. Define transportation.
2. List out the importance of transportation.
3. What is the difference between Logistics and Transportation?
4. List out various roles played by Logistics Executives?
5. Classify the different types of transportation.
6. Describe the advantages of Pipelines transportation.
7. Identify the various features of a good Transport System.
8. In what way is the transport system beneficial for regulating logistic and supply chain network.

ANSWERS TO INTEXT QUESTIONS

7.1

1. D) All of the above
2. price, quality
3. Hydrocarbons
4. Transportation
5. D) All of the above

7.2

1. transportation, infrastructure
2. Transportation
3. Economic
4. transportation
5. transportation

7.3

1. D) All of the above
2. trade
3. C) vehicles, infrastructure and operations
4. transportation

7.4

1. A) Air
2. A) Air Transportation
3. D) High fuel consumption
4. D) It is not versatile
5. D) It is very tormented by the weather.

7.5

1. D) All of the above
2. C) network, node and demands
3. Transport
4. transit
5. speed

ACTIVITY

- Create a document on the Safe Transport System.

8

LOGISTICS— COURIER/EXPRESS SERVICES

Courier services focus on express and door-to-door delivery. Couriers may use self-owned, privately shared or public transportation to supply these services. Included are express delivery services, which might include, for example, on-demand pick-up or time-definite delivery.

Express delivery is the fastest form of shipping. The customer pays an extra shipping cost for this type of delivery, as the shipment will get transported to him anywhere between 24 to 72 hours.

OUTCOMES

After completing this lesson, the learner-

- summarizes the meaning of Courier/Express services for the fastest shipping of goods;
- analyzes the functions of Courier services to support customers in obtaining goods and services;
- examines the importance of Courier/Express services for international and domestic shipping to promote global business;
- assesses the role of the express sector in international shipping to approach global market;
- evaluates the role of the express sector in domestic shipping for the fast delivery of goods.

8.1 COURIER/EXPRESS

Courier - Meaning

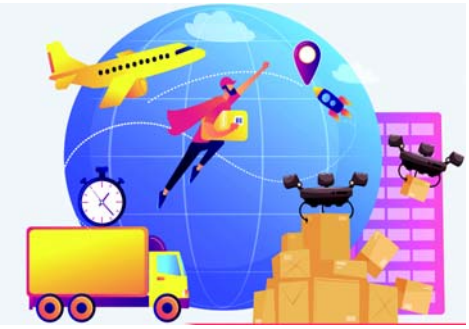


Fig.8.1: Courier/Express

A messenger, generally traveling in speed, bearing urgent news, very important packages or reports, diplomatic messages, etc.

A person or a company who transports messages or transmits messages and packages. An example of a courier is FedEx, UPS, or Post office.

Express - Meaning

Express logistics denote the safe and quick delivery of goods to consumers within a specified time limit.

Express delivery is the speediest form of shipping. The customer pays an additional shipping cost for this category of delivery, as the shipment will be transported to him/her anywhere between 24 hours to 72 hours.

Express shipping is a distinct service given by various carrier businesses to shorten the time taken to deliver an order, thus accelerating the shipping process. The express shipping is generally carried out by air transport, in case of international transit. This is the speediest method of shipment delivery to the receiver.

INTEXT QUESTIONS 8.1

1. Express logistics denote the _____ delivery of goods to consumers within a specified time limit.
2. Express delivery is the _____ form of shipping.
3. The customer pays an additional shipping cost for this category of delivery, as the shipment will be transported to him/her anywhere between _____ hours to _____ hours.
4. _____ shipping is a distinct service given by various carrier businesses to shorten the time taken to deliver an order, thus accelerating the shipping process.

5. The express shipping is generally carried out by _____ transport, in case of international transit.

   A) Water

   B) Rail

   C) Road

   D) Air

8.2 FUNCTIONS OF COURIER SERVICES

Speed and Efficiency

Fig.8.2: Speed and Efficiency

Courier Firmsconcentrate on the easy and quick delivery of packages. The main function of courier services is the efficiency and speed with which the courier company sends its shipments.Businesses involved in a lot of international shipping in a limited time must use courier service for their best client support.

The firm has highly skilled, professional staff to oversee the parcels efficiently. It gives a sense of relief to the consumers. Furthermore, consumers are not very likely to suffer any loss by using a courier service.

Time is a crucial factor for the delivery of the shipment. Companies Never tend to wait longer for the commercial parcels as they need to proceed with sales. Therefore, timely delivery of consignments is one of the most important functions.

Reliability

Fig.8.3: Reliability

Courier services are reliable for sending any sensitive or valuable goods or documents. The courier firm understands that customers put faith in them with their valuables and they contribute to their fullest potential. It also helps out in building connections and trust between the firm and its customers.

The firm handles our package as its own to show their trustworthiness towards their customers. Any queries or concerns regarding the customer's package can be resolved by the exceptionally helpful staff. People can get annoyed when waiting for the delivery.To prevent such a situation the firm provides support and assistance to deliver the shipment timely.

Real-Time Tracker

Fig.8.4: Real-Time Tracker

Courier Firmprovides GPS technology which indicates customers can track their order.The courier service pattern has progressed a lot. The usual courier service only made people wait for their package with by no means access to the real-time tracker. But now, GPS technology made it feasible for customers to keep track of their package.

In addition, customers can call the courier service and inquire about the updates on their shipment. The access to real-time tracking by customers has made it extremely helpful to monitor the deliveries' whereabouts. The packages that are shipped internationally, can also be kept an eye on by utilising the features of international tracking.

Professional Packing

Packaging could be seen as a small issue in the entire complex process of the courier. Obviously, packaging plays an important role in shipping the courier carefully to the mentioned destination. It is mandatory to pack goods properly and fulfil the required specifications.

Businesses never use courier services to deliver one or two articles rather it delivers goods in bulk. Which must be packed cautiously so that they do not get hampered in the long trip. The courier firm has customer support to give expert guidance. This could also include those offering useful tips to ensure that the shipment is delivered carefully and securely.

Fig.8.5: Professional Packing

Affordability

Shipping is the most misjudged expense in any business. The price differs with the urgency and the weight of the shipment. Individuals and companies should constantly dig a bit deeper while selecting the right courier service provider. Examine the available products like fragile shipping, insurance, premium packaging, and international fees.

Fig.8.6: Affordability

Plan a partnership with a courier firm; organize plans for packages that are at par with quality products and services. Going for a custom deal or package helps in saving money in the long run. Money paid for the service is worth the products provided by the firm.

INTEXT QUESTIONS 8.2

1. Courier Firms concentrate on the _____ delivery of packages.
2. The main function of courier services is the _____ and _____ with which the courier company sends its shipments.
3. Courier Firmprovides _____ technology which indicates customers can track their order.
4. The courier firm has customer support to give _____ guidance.
5. _____ is the most misjudged expense in any business.

8.3 IMPORTANCE OF COURIER/EXPRESS

It is very easy to use courier delivery services. There is no necessity to visit the postal service to receive and send packages and mail with this service. We can have a courier deliver or pick up the packages for us. This may free up staff to focus on their job and get additional work done for business.

Maximum courier firms have online management tools. With these tools we can schedule pickup and delivery times and much more, making the service easier.

Fast Delivery

Courier delivery services offer same-day delivery services, which signifies

Fig.8.7: Fast Delivery

enormous benefits, so that documents and packages get to where they need to go quickly. For quicker service we can request one-hour service for urgent delivery. With these good services, we have the capacity to have control over our parcel deliveries making our business more effective.

Affordable Cost of Service

Shipping documents and packages through a courier service have a few of the best reasonably priced options and benefits out there. Delivering a parcel same-day through big parcel firms can be very costly as they cost on dimensions and weight. In a courier service, the price of shipping is mainly based on distance traveled, making it an affordable choice.

Fig.8.8 : Affordable Cost of Service

Reliable Professionals Packing

Fig. 8.9 : Reliable Professional Packing

In courier service, we can trust they will take care of our packages and documents. Committed drivers take their job honestly and extend a more personal experience compared to large parcel services. We can hope for perfect communication from beginning to end so we know our parcel will be collected and delivered on time.

Parcels are Safe and Secure

The professionals taking care of our documents and packages will safeguard your packages so that there is least chance it received damage or not arriving at all. It will be offered with a tracking number so we can find our package and know when it will be delivered.

This is a good reason to opt for a courier delivery service particularly when we have medical specimens that require extra care or legally sensitive documents. In medical specimens transport at times requires the appropriate temperature to remain feasible which will be taken care of when using a courier.

Fig. 8.10: Safety and Security

INTEXT QUESTIONS 8.3

1. Maximum courier firms have _____ management tools.
2. With Online Management Tools, we can schedule _____ and _____ times and much more, making the service easier.
3. Courier delivery services offer _____ delivery services.
4. For quicker service we can request _____ service for urgent delivery.

8.4 EXPRESS SECTOR FOR INTERNATIONAL AND DOMESTIC SHOPPING

The express industry is projected to have begun during the 1850s in the United States as the US congress approved an overland stage route that carried parcels and mail. This caused the development of surface transport and took the lead to the first continent-wide passenger and mail service and facilitated the rise of the stage or pony coach system. Private express firmslike Wells Fargo capitalized on such changes to set up impressive enterprises for package and mail delivery. The development of industry was more pushed in the 1900's with the advent of firms such as UPS using air transportation and motor vehicles transportation. UPS began its businesses in 1907 and used motor vehicles to distribute packages from drug stores and grocery to customers' houses. Success pushed expansion led to the firm establishing the world's first air express service in 1929. Successive technological changes and advancements in US shopping patterns drove express carriers to upmarket and extend services such as

Fig.8.11: International and Domestic Shopping

Note

2-day air delivery to mainWest and East Coast cities. These developments ultimately resulted in the rise of express delivery in the 1960s. By this time, the industry got prominence over its capability to provide value added, reliable, time bound, on demand, integrated door-to-door logistics for parcels, documents, and merchandise goods which neither the freight forwarders nor the postal services could provide. Later in the 1970s, de-regulation of the air cargo in the US led to fast growth. The industry went out of the US and transformed into a global business in the 1980s. Globalization and a rise in cross-border trade performed an important role in the international expansion of the industry. The industry was also given force by the additional development of the worldwide aviation sector, as express service providers regularly ship large sacks of documents on commercial flights.

Evolution of the Global Express Industry

1960's - Express industry originates in the US

1970's to 1980's - Makes an entry into the European Market

1990's - Rapid growth in India post liberalization policies

Domestic Landscape for Indian Express Industry

Domestic express, encompassing shipments moved and delivered within the nation, is the key constituent of the Indian express industry. North-South and West-South are the significant lanes for domestic express. To comprehend the demand tendencies shaping this segment, let us look at the customers, their demands in regard to the profile of the shipments and the usage mode. Corporates are the main users of domestic express services. Shipments by small scale corporations or individuals over the counter constitute a small share of the market.

Global Landscape for Indian Express Industry

International express is projected to contribute close to 6000 crore INR to the total Indian express industry. This comprises outbound as well as inbound shipments for door-to-door delivery and excludes freight delivery. All the global shipments are delivered by air. In addition to transport, collection, and delivery, the express providers also support customs clearance and regulatory procedures for international express.

Structure of International Express

The key constituents of international express include:

Inbound Express

The inbound shipments consist of industrial goods, auto component spare parts. In India, the rising aerospace industry is also a main user of the express services and is anticipated to drive growth in future.

Outbound Express

The outbound shipments consist of samples from many Indian manufacturing units and products such as leather, apparel, handicraft, jewelry, and gems.

Key Trends for International Express

The key trends determining the international express industry are as follows:

Growth Drivers

Development of MSMEs, progress of manufacturing in India as a result of 'Make in India' initiative, technology deployment aiding superior tracing and tracking are few key factors that have driven the development of international express.

Fig.8.12: Growth drivers:

Automation of Customs Clearance

Electronic Data Interchange interface implemented at the top international terminals in India. The customs clearance functions automation is easing customs clearance and procedures of inspection and is likely to lead to higher competences in international express.

Fig.8.13: Automation of Customs clearance

Cross Border E-Commerce

Cross border e-commerce started to contribute to international express. Though, this segment is still at a budding stage due to high delivery and transport charges, prolonged transit times, customs related bottlenecks and complex return processes.

Cross border e-commerce was partial as Indian courier regulations did not support

Fig.8.14: Cross border e-commerce

commercial transaction.Gifts and free samples were only allowed for shipping through courier mode. The e-commerce shipments were subjected to custom taxes and duties which significantly raised the cost of shipping as well the transit time. Courier Imports and Exports (Clearance) Amendment in 2016 allows e-commerce goods to be shipped by courier mode. It is expected to boost e-commerce.

INTEXT QUESTIONS 8.4

1. The express industry is projected to have begun during the _____ in the United States as the US congress approved an overland stage route that carried parcels and mail.

   A) 1840s

   B) 1850s

   C) 1860s

   D) 1870s

2. UPS began its businesses in _____ and used motor vehicles to distribute packages from drug stores and grocery stores to customers' houses.

   A) 1905

   B) 1907

   C) 1909

   D) 1911

3. Later in _____, de-regulation of the air cargo in the US led to fast growth.

   A) 1960s

   B) 1970s

   C) 1980s

   D) 1990s

4. In India, the rising _____ industry is also a main user of the express services and is anticipated to drive growth in future.

5. Courier Imports and Exports (Clearance) Amendment in 2016 allows _____ goods to be shipped by courier mode.

WHAT YOU HAVE LEARNT

- The functions of Courier.
- Professional Packing.
- Importance of Courier/Express.
- Domestic/International Courier.

KEYWORDS- Courier, Express, Domestic Shipping, International Shipping

TERMINAL EXERCISE

1. What do you mean by courier and express services? Explain its relevance in logistics and supply chain management with suitable examples.
2. Enumerate the various functions of courier services for delivering goods at a faster rate to customers.
3. How do courier/Express services pay attention towards professional packing of goods?
4. "Courier/Express services contribute to delivering goods and services well in time to ultimate consumers". List out various impotence on the basis of the statement.
5. Share your experience with Courier you received recently.
6. What is your understanding of Domestic Courier/Express Services?
7. Explain key trends of the International Express Industry?

ANSWERS TO INTEXT QUESTIONS

8.1

1. safe and quick
2. speediest
3. 24, 72

Note

4. Express
5. D) Air

8.2

1. easy and quick
2. efficiency, speed
3. GPS
4. expert
5. Shipping

8.3

1. online
2. pickup, delivery
3. same day
4. one-hour

8.4

1. B) 1850s
2. B) 1907
3. B) 1970s
4. aerospace
5. e-commerce

ACTIVITY

- Go to the Courier Offices nearby your home and observe day-to-day activities and record the same.

9

LOGISTICS—E-COMMERCE IN BUSINESS EXPANSION

E-Commerce, also known as internet commerce or electronic commerce, is an activity of selling and buying goods or services over the internet or open networks. Hence, any type of transaction (whether funds, money, or data) is considered as E-commerce. Thus, E-commerce can be defined in various ways, some define E-Commerce as selling and buying goods and services through the Internet, others define E-Commerce as retail sales to consumers for which the transaction takes place on open networks. The selling and buying of products, services, and digital products through the Internet all fall under the umbrella of e-commerce.

E-Commerce logistics is a congregation of numerous processes such as warehousing, inventory management, packaging, labelling, billing, shipping, payment collection, exchange, and return, that work in synchronisation leading to a supply chain. All these put together turn into a crucial task that requires a full-proof strategy to be accomplished.

E-Commerce logistics also requires a thorough knowledge of roads, territories, road conditions, regulations regarding the movement of goods, and transport laws. The principal purpose of creating a logistics unit is to deliver parcels much safer, faster, and more efficiently.

OUTCOMES

After studying this lesson, the learner-

- summarizes the meaning of E-Commerce for selling and purchasing goods through internet;
- analyzes the importance of E-Commerce in the era of fast growing pace of business world;

Note

- Assesses the functions of E-commerce for the proliferation of global business world;
- lists out the need for fulfillment centers in E-commerce sector;
- analyzes consumer - friendly need of reverse logistics in the E-commerce sector.

9.1 E-COMMERCE - MEANING

Ecommerce means buying and selling of products and services over the Internet. It is conducted over tablets, computers, smartphones, and other devices. Ecommerce works in 4 market segments, including business-to-consumer, business-to-business, consumer-to-business, and consumer-to-consumer.

There is a reason why eCommerce has demonstrated such explosive growth in the past couple of years. Indeed, with the internet becoming an essential requirement of everyday life, businesses are learning to take advantage of the numerous benefits of eCommerce.

• Advantages of E-Commerce

- **Global Market.** A physical store will always be limited by a geographical area it can serve. An online store, or any other type of eCommerce business for that matter, has the whole world as its market. Going from a local customer base to a global market at no additional cost is really one of the greatest advantages of trading online.
- **Around-The-Clock Availability.** Another great benefit of running an online business is that it is always open. For a merchant, it's a dramatic increase in sales opportunities; for a customer, it's a convenient and immediately available option. Unrestricted by the working hours, eCommerce businesses can serve customers 24/7/365.
- **Reduced Costs.** eCommerce businesses benefit from significantly lower running costs. As there's no need to hire sales staff or maintain a physical storefront, the major eCommerce costs go to warehousing and product storage. And those running a dropshipping business enjoy even lower upfront investment requirements. As merchants are able to save on operational costs, they can offer better deals and discounts to their customers.
- **Inventory Management.** eCommerce businesses can automate their inventory management by using electronic tools to accelerate ordering, delivery and payment procedures. It's saving businesses billions in operational and inventory costs.

- **Targeted Marketing.** With access to such a wealth of customer data and an opportunity to keep an eye on customer buying habits as well as the emerging industry trends, eCommerce businesses can stay agile and shape their marketing efforts to provide a better-tailored experience and find more new customers. Just consider for a moment that you have a chance to address thousands of your customers by their first name; that is something already.
- **Serving Niche Markets.** Running a niche brick-and-mortar business can be tough. Scaling a niche product to become popular is effortful. By tapping into a global market, on the other hand, eCommerce retailers can build a highly profitable niche business without any further investment. Using online search capabilities, customers from any corner of the world can find and purchase your products.
- **Working From Anywhere.** Often, running an eCommerce business means that you don't need to sit in an office from 9 to 5 or suffer through a commute day-in and day-out. A laptop and a good internet connection is all it takes to manage your business from anywhere in the world.

There are 3 main types of e-commerce:

Business-to-Business (Websites such as Shopify)

In a B2B business model, a business sells its product or service to another business. Sometimes the buyer is the end user, but often the buyer resells to the consumer.

Fig.9.1: Business-to-Business

B2B transactions generally have a longer sales cycle, but higher order value and more recurring purchases.

Recent B2B innovators have made a place for themselves by replacing catalogues and order sheets with ecommerce storefronts and improved targeting in niche markets.

In 2020, close to half of B2B buyers are millennials — nearly double the amount from 2012. As younger generations enter the age of making business transactions, B2B selling in the online space is becoming more important.

Business-to-Consumer (Websites such as Amazon)

B2C businesses sell to their end-user. The B2C model is the most common business model, so there are many unique approaches under this umbrella.

Fig.9.2: Business-to-Consumer

Anything you buy in an online store as a consumer — think wardrobe, household supplies, entertainment — is done as part of a B2C transaction.

The decision-making process for a B2C purchase is much shorter than a business-to-business (B2B) purchase, especially for items that have a lower value.

Think about it: it's much easier for you to decide on a new pair of tennis shoes than for your company to vet and purchase a new email service provider or food caterer.

Because of this shorter sales cycle, B2C businesses typically spend less marketing dollars to make a sale, but also have a lower average order value and less recurring orders than their B2B counterparts.

And B2C doesn't only include products, but services as well.

B2C innovators have leveraged technology like mobile apps, native advertising and remarketing to market directly to their customers and make their lives easier in the process.

Consumer-to-Consumer (Websites such as eBay).

A C2C business — also called an online marketplace — connects consumers to exchange goods and services and typically make their money by charging transaction or listing fees.

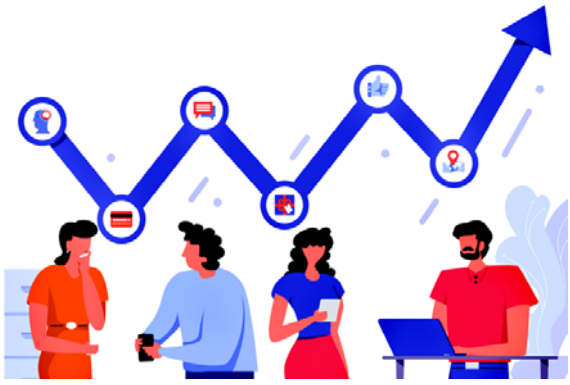


Fig. 9.3: Consumer-to-Consumer

Online businesses like Craigslist and eBay pioneered this model in the early days of the internet.

C2C businesses benefit from self-propelled growth by motivated buyers and sellers, but face a key challenge in quality control and technology maintenance.

INTEXT QUESTIONS 9.1

1. ECommerce means buying and selling of products and services over the

   A) Mobile

   B) Telephone

   C) Internet

   D) None of the above

2. ECommerce is conducted over _____.

   A) tablets

   B) computers

   C) smartphones

   D) All of the above

3. Ecommerce works in the market segment _____.

   A) business-to-consumer

   B) business-to-business

   C) consumer-to-business

   D) All of the above

4. B2C businesses sell to their _____.

   A) end-user

   B) dealer

   C) supplier

   D) distributor

5. _____ businesses benefit from self-propelled growth by motivated buyers and sellers, but face a key challenge in quality control and technology maintenance.

   A) B2C

   B) B2B

   C) C2C

   D) None of the above

Note

9.2 IMPORTANCE OF E-COMMERCE

• E-Commerce Helps You Reduce Your Costs

To own an online store it is not essential that we have all our products presented in a physical space. There are various companies that manage online where they only show all their stock through their electronic commerce.This means not only saving by not requiring a purchase or rental of premises, but also all that involves internet, electricity, etc.

• E-Commerce Helps Businesses Go Global

Completely related to the previous point, this allows us to put products for sale everywhere in the world. Need not travel to find what I have to offer.

Physical store operating will be limited by the geographical.Owning an eCommerce website will give the opportunity to improve outreach. It will offer products and services to consumers around the world, irrespective of the time zone and distance.

Additionally, this removes all forms of linguistic and geographical barriers. E-commerce translated to various languages may allow you to buy from several countries.

With eCommerce and mobile commerce, the whole world is a playground. Products or services are within reach for many customers who are in another part of the world.

Hence, if we want to grow our online business globally, it is a wonderful idea to start creating our own online store and localise it in different languages.

• E-Commerce Can Be Done With Fewer Overheads and Fewer Risk

Starting an online store considerably reduces start-up costs when compared to a brick-and-mortar retailing.The retailer or the online store owner need not have to consider the expenses of shop rental, employing a salesperson to handle the customer, security measures, utility bills, etc. Thiswill enable us to sell products at competitive prices.Having an online store enables us to have increased profitability with fewer risk.

• E-Commerce Can Broaden Your Brand and Expand Your Business

E-Commerce stores can be used to expand the range of products and services for sale, expanding business, bringing more custom, and diversifying sales. It is the perfect way to take the brand from a usual brick and mortar store to an innovative one.

With E-Commerce, it is not necessary to have more than one branch, just a single online store to reach customers fully without having worries about moving locations, just manage online business from home.

E-Commerce will be helpful for B2B and B2C businesses to boost brand awareness in the market.

• E-Commerce Offers Better Marketing Opportunities

E-Commerce sites are the finest marketing tool. Thanks to the internet, now everyone can market through online tools like email marketing, social media marketing,search engine marketing, SEO, and pay per click ads,helping to build very useful contacts and links.

With good SEO, the online store will appear in the top results of SERPs. Social media networks may offer you a platform to connect and build trust with customers through ratings and reviews, also keeping them updated with regular posts about products and offers.

INTEXT QUESTIONS 9.2

1. Owning an eCommerce _____ will give the opportunity to improve outreach.

   A) company

   B) advertisement

   C) website

   D) None of the above

2. Starting an _____ store considerably reduces start-up costs when compared to a brick-and-mortar retailing.

3. Having an online store enables us to have increased _____ with fewer risks.

4. The retailer or the online store owner need not have to consider the expenses of _____.

   A) shop rental

   B) security measures

   C) utility bills

   D) All of the above

5. Which of the following is an online marketing tool _____.

A) email marketing

B) social media marketing

C) pay per click ads

D) All of the above

9.3 FUNCTIONS OF E-COMMERCE

Fig. 9.4: Functions of E-Commerce

Global Reach

Fig. 9.5: Global reach

E-commerce businesses are done online on an international level. It covers up enormous areas serving a huge number of consumers at a time. Its operations differ from one country to another. There is no limitation on expanding the business to larger areas.

It is not restricted to a specific area like a physical market. These businesses operate in large areas earning high profits.

24×7 Service

Fig. 9.6: 24×7 Service

This is one the key features of the E-commerce business. E-commerce businesses do their business 24 hrs. and on all days of the week. Consumers can get their services anytime at their home. In the physical market, there is a time for opening and closing.Consumers need to visit as per

schedule. There are no such restrictions in e-commerce business. People from anywhere and anytime can shop as per their choices.

Easy Navigation

It implies that the required products can be searched easily in less time in the E-commerce business. Consumers need not waste their time in searching for a specific product. Product is simply searched in the search bar of the website of business.If it is not available in a particular website, consumers can search it easily in various other websites. Products can be ordered and will be shipped to customer addresses in a short time.

Fig. 9.7: Easy navigation

Ubiquity

Fig. 9.8: Ubiquity

It implies that services of business are accessible from anywhere and anytime. These businesses are not restricted to a specific area like a usual business. Consumers can do transactions as per their comfort and choice.The website can be accessed easily from consumer cell phones, desktops, or tablets anytime. It is entirely user-friendly,and it gives ubiquity to it.

Easy Product Comparison

There are many products available over the internet. Products comparison is quite easy. Products in terms of their quality, price, and various other features can be compared over various websites.Consumers can effortlessly find the finest product as per their preference after improved comparison. This aspect of e-commerce satisfies the consumers and benefits in increasing sales.

Fig. 9.9: Easy product comparison

Interactivity

It indicates the communication between the customer and business. Customers can effortlessly interact with the business. They can raise their issues and queries through the business website.Customers can also provide feedback and suggestions about business products and services. This feature supports creating better relationships between customers and business.

Fig. 9.10: Interactivity

INTEXT QUESTIONS 9.3

1. E-commerce businesses do their business _____ hrs.

   A) 12

   B) 16

   C) 18

   D) 24

2. In E-commerce, consumers can do transactions as per their _____.

   A) comfort

   B) choice

   C) comfort and choice

   D) None of the above

3. The website can be accessed easily from consumers _____ anytime.

   cell phones

   A) desktops

   B) tablets

   C) laptops

   D) All of the above

4. In Ecommerce, Consumers can effortlessly find the finest product as per their preference after improvements _____.

5. In Ecommerce, Customers can also provide _____ about business products and services.

   A) feedback

   B) suggestions

   C) feedback and suggestions

   D) None of the above

9.4 BRIEF OF FULFILMENT CENTERS

A fulfilment centre operates as the hub for every logistics processes necessary to get a product from the producer to the consumer. It carries the complete order fulfilment process, ranging from order picking, processing,packaging, and shipping.

Fig. 9.11: Brief on Fulfilment Centres

A third-party logistics provider, likeShipBob, uses the fulfilment centre to receive, process, and fulfil consumer orders for ecommerce retailers.A fulfilment centre exists to get online orders to consumers in a timely fashion and ease ecommerce companies' handling of this crucial and challenging process.

How Do Fulfilment Centres Work?

Fulfilment centre operations consist of the work that supports getting online orders to customers' doorstep. It is also referred to as the process of order fulfilment. An ecommerce business's stock is stored tactically in a 3PL's fulfilment centre in arrangement for fulfilling customer orders. After a customer completes a purchase on an ecommerce store, product is picked and packed, and labelled for shipment.

Fulfilment centres can handle both business-to-business (B2B) orders in general with a higher volume of product that is sent to a big-box retailer as well as business-to-consumer (B2C) orders, which are dispatched directly to an individual customer's home.

As a seller outsourced fulfilment, the 3PLwill complete the fulfilment operations on behalf of the store owner. This comprises everything from stock management to negotiating shipping rates with carriers.

Note

INTEXT QUESTIONS 9.4

1. A _____ centre exists to get online orders to consumers in a timely fashion and ease ecommerce companies' handling of this crucial and challenging process.

2. Fulfilment centre operations consist of the work that supports getting online orders to customers' _____.

3. As a seller outsourced fulfilment, the _____ will complete the fulfilment operations on behalf of the store owner.

9.5 BENEFITS OF USING A FULFILMENT CENTRE

Eliminate Storing Inventory and Packing Boxes

It is not a surprise that several e-commerce businesses want to avoid the trouble of storing stock or dealing with e-commerce warehousing.

Additionally, if you don't want to pack cartons and run to the post office on a daily basis, a fulfilment centre is an excellent alternative. It is time to use a fulfilment centre as it is no longer capable of keeping up with increasing order volume. Fulfilment service providers help you spend less time bothering about packing supplies and post office lines and offer you more time to grow your business.

Focus on the Big Picture

When packing boxes and delivering consumer orders are critical to meet up consumer expectations, they are commonly tasks that can be easily outsourced. E-Commerce store managers and entrepreneurs have an infinite to-do list, so they need stay centred on the tasks only that they can do and those that may help them scale and make money.There will not be time in the day, but having a fulfilment centre can support sellers be proactive in other areas of the business.

Leave it to the Experts

Inbound and outbound logistics can be tough, and a fulfilment centre is a complex system with several moving pieces that must instantaneously work together. Starting from order processing and managing inventory to arrangements for peak shopping seasons, fulfilment firms are domain experts and have witnessed it all.

A single fulfilment centre manages operations for numerous ecommerce businesses and delivers millions of orders regularly. Experience and volume make them a strategic partner.

Fulfilment firms can also drive larger efficiencies in all from the low shipping rates they negotiate with transporters to the size, number, and locations of their fulfilment centres all to be optimised by the ecommerce businesses they work with.

Automate Warehousing and Fulfilment

Modern fulfilment firms keep technology at the focal point of their fulfilment services. This implies that each step of the fulfilment process is documented automatically in real-time for ecommerce businesses to get the status of their stock and all orders in the fulfilment centre without having to be there.This is feasible when fulfilment solutions have created integrations with marketplaces and ecommerce platforms. This connection permits each consumer order to be automatically sent to the fulfilment centre for picking, packing, and shipping out. After products are shipped, tracking information is pushed back to the ecommerce store and shared with the consumer.

INTEXT QUESTIONS 9.5

1. Modern fulfilment firms keep _____ at the focal point of their fulfilment services.
2. Each step of the _____ process is documented automatically in real-time for ecommerce businesses.
3. Fulfilment solutions have created integrations with marketplaces and _____ platforms.
4. Consumer orders are automatically sent to the fulfilment centre for _____.

   A) picking

   B) packing

   C) shipping

   D) All of the above.
5. After products are shipped, tracking information is pushed back to the ecommerce store and shared with the _____.

9.6 REVERSE LOGISTICS IN THE E-COMMERCE SECTOR

Change in customer expectations and growing customer-friendly return policy have taken the lead to an increase in request for returns more than ever. Allare

feeling the pain of returns including manufacturers and retailers. Possibilities are you have purchased something from Amazon and returned it. In e-commerce, facilitating easy and quick returns is the cost of operating an ecommerce business. Reverse logistics in e-commerce is the customer-faced part of the e-commerce market.

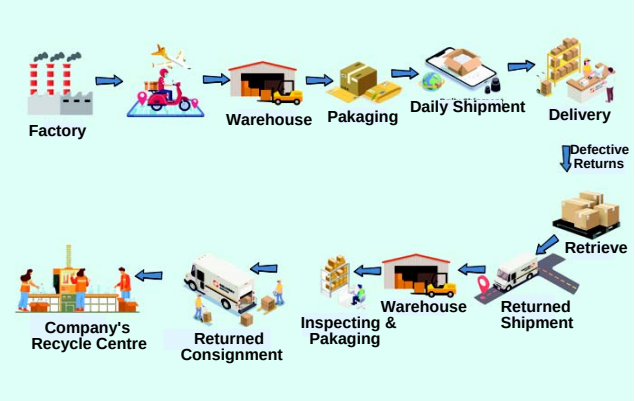


Fig. 9.12: Reverse logistics in the e-commerce sector

Reverse logistics implies all the procedures linked with product repairs, maintenance and returns. Overall, it represents running products in reverse through the supply chain.

While thinking about e-commerce logistics, all think of a forward moving process with the end goal getting the product fulfilled to the customer. Though, the evolution of e-commerce and a rise up in consumer awareness has created a challenge for retailers and manufactures of moving products backwards.

As Online Shopping Volumes Grow, so do Returns.

Returns are common in the online retail industry. The rate of product return in traditional stores cannot be compared with the online retail stores. This is due to customers purchasing online, they only see the product pictures and can know the product information by given description. There is no testing or trying. That is the reason returns are familiar in retail e-commerce.

Top Reasons for Reverse Logistics in Online Retail

Online retailers cannot place a board “no returns”. There are several reasons that make reverse logistics unavoidable including customer behaviour, delivery of incorrect product, damaged product, and delay in order fulfilment.

Product Returns by the Customer

Some products are inevitably returned to the seller. It is true in the case of e-commerce as well as physical stores. Consumers return the products for,

- Wrong product or product size ordered
- When consumer does not need the product
- The product fails to meet consumer expectations

- The product damaged on arrival
- When the customer finds product does not fit
- Orders cancelled by consumer
- Mal-functioning product
- Wardrobing

Wardrobing

Wardrobing is when a consumer purchases a product, uses it and returns the product requesting a full refund.

Example:

A job seeker who purchases suits for an interview returns it after the interview to save money. This approach is not limited to accessories and clothing.

Product Returns by Carrier

All is fine. The product is in good condition, it is the right product which the consumer has ordered, the consumer is honest and not wardrobing, still it is being returned. Here is the whole list of reasons the carrier is returning the product to the seller.

- The customer gave incomplete or the wrong address
- Consumer opened the package and rejected it
- The consumer is not available to receive the order
- Dispute between the customer and delivery person (usually happens in COD orders)
- Mis-delivered products
- Fake delivery attempt
- Product repairs

When getting these reasons from delivery partners and customers, it ultimately results in receiving back the product.

Cost of Reverse Logistics in E-Commerce

The reverse flow cost is generally high. The returns are extremely expensive and eat up the pressured margin of profit.

Product returns projected 8 - 10% of the product cost price. In the textile industry, for example, return rates are higher by 40% than other industries as we offer multiple colours and multiple sizes.

Retailers will see the reverse logistics cost go up drastically over the next decade.

The reverse logistics cost is almost 1.5 times forward. There are few factors which determine the cost of shipping which are,

- From and to City/State/Region/Country
- Package size
- Product weight
- Product price
- Delivery rate
- Fuel charges
- SGST & CGST
- Customer group

The cost of product returns is not only the cost of logistics but also the damage to the customer experience due to the discomforts caused to the customer.

Every time the consumer returns the product, probabilities are high that they may not purchase again from your store. When a consumer churns, businesses lose the lifetime value of that consumer. Also lose the cost of acquiring the consumer. Besides, making competitors stronger by giving consumers an inferior product and service.

INTEXT QUESTIONS 9.6

1. Reverse logistics implies all the procedures linked with the product _____.

   A) repairs

   B) maintenance

   C) returns

   D) All of the above

2. While thinking about e-commerce logistics, all think of a forward moving

process with the end goal getting the product fulfilled to the _____.

3. The evolution of e-commerce and a rise up in consumer awareness has created a challenge for retailers and manufactures of moving products _____.

4. _____ are common in the online retail industry.

5. The cost of product returns is not only the cost of logistics but also the damage to the customer experience due to the _____ caused to the customer.

WHAT YOU HAVE LEARNT

- Types and Importance of ECommerce
- The different online tools for marketing
- Fulfilment Centres
- Reverse Logistics

KEYWORDS- E-Commerce,Fulfilment centre, Reverse Logistics

TERMINAL EXERCISE

1. Define E-Commerce. List out its various advantages in the modern business world.
2. Mention the types of E-Commerce With its advantages?
3. "E-Commerce has brought a revolution by changing the manifold dimensions of the modern business world globally". Explain the importance of in the light of the statement.
4. Give a brief description of different online tools for marketing?
5. Wright notes on 24x7 Service in E-Commerce?
6. What is a fulfilment centre? How does a fulfilment centre work?
7. What are the benefits of fulfilment centres?.
8. Define Reverse Logistics? Give the reasons - Why do customers return the products?

ANSWERS TO INTEXT QUESTIONS

9.1

1. C) Internet
2. D) All of the above
3. D) All of the above
4. A) end-user
5. C) C2C

9.2

1. C) website
2. online
3. profitability
4. D) All of the above
5. D) All of the above

9.3

1. D) 24
2. C) comfort and choice
3. D) All of the above
4. comparison
5. C)feedback and suggestions

9.4

1. fulfilment
2. doorstep
3. 3PL

9.5

1. technology
2. fulfilment
3. ecommerce

4. D) All of the above.
5. consumer

9.6

1. C) returns
2. customer
3. backwards
4. Returns
5. discomforts

ACTIVITY

- Visit a nearby ECommerce company and interact with the manager and get the reason why products are returned after sales.

Note

10

EXIM : FREIGHT FORWARDING, CUSTOM CLEARANCE AND COLD CHAIN

Exporting and Importing are means of Foreign Trade. Foreign trade is carried out in goods and services – which includes exports, imports, and the balance of foreign trade – is presented separately for services and for goods. The total exports, imports, and balance of foreign trade are presented as summaries of goods and services. Exporting refers to the selling of goods and services from the home country to a foreign country. While, importing refers to the purchase of foreign products and bringing them into one's home country. Additional, it is divided in two ways, which are,

1. Direct

2. Indirect

Every country is blessed with certain assets, resources, and abilities. Few countries are rich in natural reserves, for example, timber, petroleum products, fertile soil or valuable minerals and metals, while different countries have deficiencies of these resources.

The national economies that were accomplishing the objective of self-sustainability are at present developing routes towards International-Business.

OUTCOMES

After completing this lesson, the learner-

- summarizes the meaning and concept of EXIM to regulate foreign trade;
- analyzes the process of freight forwarding of global trade;
- illustrates the various functions, roles, and activities of Freight Forwarding in SCM;

- examines the concept of Cold Chain logistics for the transportation of temperature-friendly goods;
- assesses the various functions of the Cold Chain storage for the preservation of goods.

10.1 EXIM - EXPORT AND IMPORT

Exporting is defined as the trade of products and services in overseas countries that are made or sourced in the home country. Importing refers to purchasing goods and services from overseas sources and bringing them into the home country.

Fig. 10.1: EXIM

Export and import signify two sides of the same coin of global trade. In other words, the countries ought to buy the goods which are either not adequately available or not available in the home country and trade the excess goods and services produced by it to other countries that need them utmost. Briefly, each country must import deficit goods and export surplus goods.

India's Global Trade before 1815 involved manufacturing products primarily while luxury items and metals were imported.

19th& 20th Century – Food grains and Agriculture products are exported.

1757 to 1813 – Age of mercantilism.

Indian overseas trade was led by the Dutch, English, Portuguese and French merchants and traders.

1814 to 1857 – Agricultural goods exports in exchange for imports of finished goods.

1858 to 1914 – Rise of multilateral trade

1915 to 1947 – Indian Foreign Trade setback

Economic Reforms of 1991 - Evolution of India's International Trade

- Liberalization
- Privatization
- Globalization

Reduced restrictions on trade and liberalized import of raw material and capital goods.

Increase of the products lists eligible for imports.

Reducing the import tariffs.

Freight Forwarding and Custom Clearance

Freight forwarders are an attached wing of global trade as they enable the transportation of goods from one country to another.

The secured link between Importer – Exporter

They do Export and Customs documentation, port and terminal charges and insurance.

Few do selected functions; others do complete functions.

Few restrict them to specific geographical coverage. Others do maximum coverage.

INTEXT QUESTIONS 10.1

1. _____ is defined as the trade of products and services in overseas countries that are made or sourced in the home country.

2. _____ refers to purchasing goods and services from overseas sources and bringing them into the home country.

3. Food grains and Agriculture products are exported.in _____.

   A) 16th&17th Century

   B) 17th&18th Century

   C) 18th&19th Century

   D) 19th& 20th Century

4. Age of mercantilism is _____.

   A) 1757 to 1810

   B) 1757 to 1811

   C) 1757 to 1812

   D) 1757 to 1813

Note

5. Indian overseas trade was led by the _____ merchants and traders.

A) Dutch

B) English,

C) Portuguese and French

D) All of the above

Export and Import Meaning

Export

Exports are goods and services that are produced in one nation and sold to buyers in another. Exports, along with imports, make up international trade. Exports are incredibly significant to modern economies because they offer people and companies many more markets for their products. One of the main functions of diplomacy and foreign policy between governments is to foster economic trade, encouraging imports and exports for the benefit of all trading parties.

Import

An import is a good or service bought in one nation that was produced in another. Exports and Imports are the components of international trade. If the value of a nation's imports exceeds the value of its exports, the country has a negative balance of trade, also known as a trade deficit.

Countries are most likely to import goods or services that their domestic manufacturers cannot produce as cheaply or efficiently as the exporting country. Countries may also import commodities or raw materials that are not available within their borders. For example, many countries import oil because they cannot produce it domestically or cannot produce enough to meet demand. Free trade agreements and tariff schedules often dictate which goods and materials are less expensive to import.

How to Start EXIM Businesses

If you are interested in starting an export/import business, there are many considerations you need to make, just as you would for any business. For an export/import business, explicitly, it is helpful to have a background in business, global relations, or global finance. This should give you an understanding of the several hoops one must jump through to buy or sell a product from an overseas supplier. The compliances make it so complicated that even if you did know how to do it, you are still going to have to keep in mind a lot of random considerations. Anybody starting a business in the 21st century needs to cover

certain bases, like creating a website as well as social media channels like Twitter, Facebook, and a host of others. The next step in starting an export/import business is to find industry or a product you are passionate about and that you think could sell in global markets. Once you have a product you will like to trade globally, you need to find a local manufacturer or other producer that makes your product and can lead to a solid partnership. A good relationship with a supplier is vital to long-running success in an exports/imports business. You know what product you want to work with, and you have identified your target market. Next up, figuring out how much to charge. Next up on how to start an exports/imports business? Finding customers to sell to.

Registration

An import export code is a unique 10-digit code that is required for every import/export business owner in India. The code is issued by the Director-General of Foreign Trade (DGFT), Ministry of Commerce, and needs no filing or renewal. IEC is required by importers to clear customs and shipment, and to transfer money to foreign banks. Exporters require their IEC to send shipments and receive money from foreign banks. In short, no importer/exporter can operate in India without getting the IEC.

To get your import export license online, you will need to do the following simple IEC registration steps.

Step 1: All the required documents, including bank details and DSC, have to be submitted.

Step 2: The online IEC application form will be filed with the Directorate General of Foreign Trade (DGFT)

Step 3: Once the documents and application are verified by the authorities, the import export code will be granted as a soft copy to the entity.

10.2 FREIGHT FORWARDING

Freight forwarding is the shipment of goods from one location to another via a single or multiple carriers via marine, air, highway, or rail.

The importance of freight forwarding for international trade was recognized in 1948 in Canada with

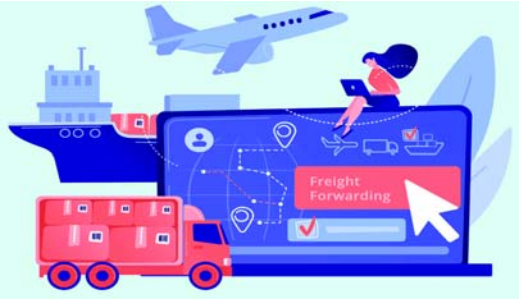


Fig. 10.2: Freight Forwarding

Note

the formation of the Canadian International Freight Forwarders Association (CIFFA).

Canadian International Freight Forwarders Association recognized that forwarding freight, whether by marine, land, air or rail requires regulation, coordination, and agreed-upon best practices to confirm that goods flow in a proficient manner and a timely overseas, across borders, and throughout the world.

The Principles of Freight Forwarding

- The principles of freight forwarding are preceded by the transfer of the cost-effective and efficient goods that is upheld in the right condition throughout their travels.
- To achieve this, freight forwarders become specialists in managing the logistics essential to confirm on-time of arrival of goods.
- Successful shipping and trade in growing globalised markets mean having the appropriate tools at your disposal.
- Negotiating tariffs, custom regulations and being efficient in the requirements of shipping by sea, land, air, and rail. Freight forwarders manage the benefits and risks of shipping both internationally and nationally using the advancement in information technology.

INTEXT QUESTIONS 10.2

1. Freight forwarding is the shipment of goods from one location to another via _____.

   A) Marine

   B) Air

   C) Highway and rail

   D) All of the above

2. The importance of freight forwarding for international trade was recognized in _____ in Canada.

   A) 1945

   B) 1946

   C) 1947

   D) 1948

Note

3. What does CIFFA stand for?

   A) Canadian International Freight Forwarding Association

   B) Canadian International Freight Forwarders Association

   C) Canada International Freight Forwarders Association

   D) Canada International Freight Forwarding Association

4. The principles of freight forwarding are preceded on the _____ and efficient goods transfer that are upheld in right condition throughout their travels.

5. To achieve cost efficiency, freight forwarders become specialists in managing the logistics essential to confirm on _____ of goods.

6. Successful shipping and trade in growing _____ markets mean having the appropriate tools at your disposal.

7. Negotiating tariffs, customs regulations and being efficient in the requirements of shipping by _____.

   A) Sea

   B) Land

   C) Air and rail

   D) All of the above

8. Freight forwarders manage the benefits and risks of shipping both internationally and nationally using the advancement in _____ technology.

10.3 FUNCTIONS OF FRIEGHT FORWARDING

The freight Forwarder and the Clearing Agent are chief role players in the freight logistics pipeline.

i. Freight Forwarder's Role in the Supply Chain

Usually, it has been confined to organising transport and preparing documents as an agent of the shipper.

With development the role of the freight forwarder also changed due to containerization and multimodal transportation, instead of being just an intermediary, few become transport operators providing container services, as well as multimodal international and inland transportation.

The Freight Forwarder can fulfil the below services:

- Act as a shipper's agent organising transport services and preparing documents.
- Act as a transport expert advising shippers on cost-efficient and better means of transport.
- Act as a multimodal transport organizer. It acts as the principal transport organiser with the direct contractual accountability for the carriage of goods door to door, assuming accountability for those transport segments for which he may not be the actual operator.
- Act as an expert service provider in container packing/unpacking, packing, customs clearances and the raising of insurance claims.

ii. Activities of Freight Forwarders

- Negotiating Contracts
- Processing Documentations
- Booking Cargo with the carriers
- Issuing their own approved house bill of lading
- Organising movement of Cargo
- Providing expert advice and consultancy

iii. Freight Forwarders - Main Functions

- Play the consultant role
- Advice on –Custom Clearance, Export cost, import duty, special tariffs, other duties and tax.
- Documentation advises
- Determining optimum shipping route
- Reservation of Cargo space
- Advise

INTEXT QUESTIONS 10.3

1. Freight Forwarders play a _____ role.
2. Freight Forwarders advice on _____.

   A) Custom Clearance

   B) Export cost

Note

C) Import duty

D) All of the above

3. Freight Forwarders determine optimum _____ route.

4. Freight Forwarders Book Cargo with the _____.

5. Freight Forwarders negotiate _____.

10.4 COLD CHAIN

Cold chain logistics is the transportation of temperature-controlled goods, s uch as temperature-sensitive equipment, foods, and biopharmaceutical products.

It impacts each step of the supply, from procurement, storage, transport, and last-mile delivery.

Cold chain management or cold chain delivery details specialist packaging, which cannot be compromised. An end-to-end delivery process that retains the temperature of a package constant is known as an 'unbroken' cold chain. Dedicated medical couriers run unbroken cold chain delivery.

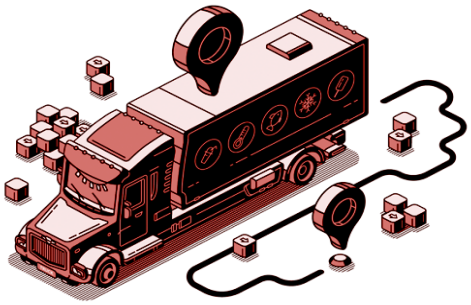


Fig. 10.3: Cold Chain

It takes a chain of exactly coordinated events in a temperature-controlled set up to manage, store, and transport these life-saving products. This is called a cold chain. Vaccines must be uninterruptedly stored in a limited range of temperatures from the time they are produced until the time of vaccination.

Main players in the cold chain market are Americold Logistics LLC., Agro Merchants Group LLC, Burris Logistics Inc., Al Rai Logistica K.S.C., Swire Group, Cold Chain Technologies, Inc., Swire Cold Storage, Nichirei Corporation, Versa Cold Logistics Services, and Lineage Logistics.

The “Cold Chain” is the transport system storing vaccines within the temperature range of 35°F to 45°F. The cold chain starts when a vaccine is produced, moves through the distribution centre, and ends with the local immunisation provider at the administration time.

The Key Elements of Cold Chain

The cold chain has 3 main components:

- Transport and storage equipment
- Trained personnel
- Efficient management procedures

All three elements should combine to confirm safe vaccine storage and transport.

INTEXT QUESTIONS 10.4

1. _____ logistics is the transportation of temperature-controlled goods, such as temperature-sensitive equipment, foods, and bio-pharmaceutical products.
2. Cold chain impacts each step of the supply, from _____, storage, transport, and _____ delivery.
3. Cold chain management or cold chain delivery entails _____ packaging, which cannot be compromised.
4. An end-to-end delivery process that retains the temperature of a package constant is known as a _____ cold chain.
5. Dedicated _____ couriers run unbroken cold chain delivery.

10.5 FUNCTIONS OF COLD CHAIN STORAGE

The cold chain does not start when temperature-sensitive stuff leaves a manufacturer's firm. It begins with the storage of the items at a refrigerated facility.

If producers of cold chain items do not have the required storage equipment to keep their items cold, they will have to outsource their cold chain operations to a service provider who can support the equipment.

Fig. 10.4: Functions of Cold Chain Storage

3PL firms provide warehouse services for the storage of cold chain items for some time, at an intermediary place for easy

supply to the local market or shipping to a distant market in near future.

A few common types of cold storage facilities and equipment include cold rooms, refrigerated containers, cold boxes, chillers, vaccine carriers and blast freezers.

i. Packaging

For temperature-controlled items to uphold their quality during shipment, they must be packaged appropriately. Proper packaging minimises the risk of item contamination and also confirms energy-efficient storage of items along the cold chain.

Fig. 10.5: Packaging

Fig. 10.6: Key Benefits of Biopharmaceutical cold chain packaging

ii. Monitoring

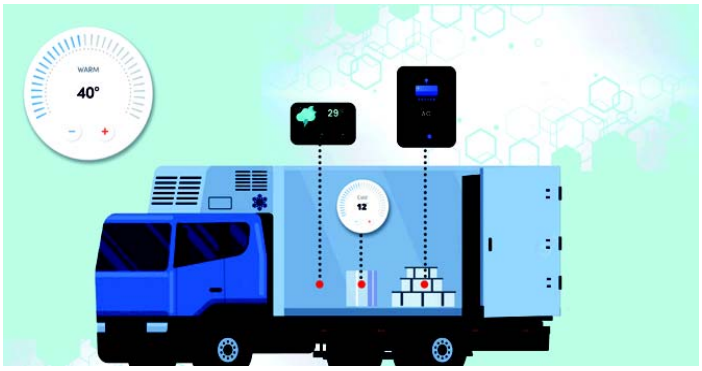


Fig. 10.7 Monitoring

Sellers of cold chain items need to keep track of information on their shipment, depending on the type of items they produce.

This information comprises ranges of temperature and other environmental parameters like humidity levels that may compromise the integrity of temperature-sensitive freight. Prepared with this information, shippers can inspect their supply chain procedures to spot activities and environments that lead to inefficiencies.

A. Benefits of Cold Chain

1. Elimination Of food safety risks

2. Reduce thermal abuse in the cold chain

3. Increase food quality

4. Extend the shelf life of food items

5. Eliminate finger pointing between distributor, franchisee, and supplier

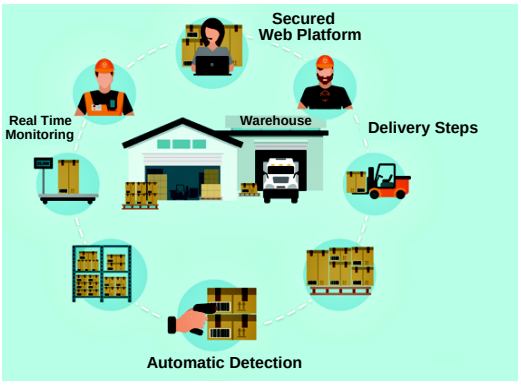


Fig. 10.8: Benefits of Cold Chain

6. Increase cold chain productivity and efficiency

INTEXT QUESTIONS 10.5

1. Proper packaging minimises the risk of item _____ and also confirms energy-efficient storage of items along the cold chain.

2. _____ of cold chain items need to keep track of information on their shipment, depending on the type of items they produce.

3. Cold Chain elimination of _____ risks

4. Cold Chain reduce _____ abuse in the cold chain

WHAT YOU HAVE LEARNT

- Full form of EXIM
- Principles of Freight Forwarding
- Functions of Freight Forwarding
- Key Elements and Functions of Cold Chain

KEYWORDS

EXIM, Export, Import, Freight Forwarding, Cold Chain

TERMINAL EXERCISE

1. "Export and import signify two sides of the same coin of global trade". Explain.

2. Write down the full form of LPG?
3. What is Freight Forwarding? Explain the various Principles of Freight Forwarding.
4. What are the main functions of Freight Forwarding?
5. What do you mean by Cold Chain? Mention its key key elements also ?
6. Evaluate the functions of the Cold Chain for preservation of product with an example.
7. List out the benefits of the Cold Chain?

ANSWERS TO INTEXT QUESTIONS

10.1

1. Exporting
2. Importing
3. D) 19th& 20th Century
4. D) 1757 to 1813
5. D) All of the above

10.2

1. D) All of the above
2. D) 1948
3. B) Canadian International Freight Forwarders Association
4. Cost-effective
5. Time Arrival
6. Globalised
7. D) All of the above
8. Information

10.3

1. Consultant
2. D) All of the above
3. Shipping

Note

4. Carriers
5. Contracts

10.4

1. Cold Chain
2. Procurement, last mile
3. Specialist
4. Unbroken
5. Medical

10.5

1. Contamination
2. Sellers
3. Food safety
4. Thermal

ACTIVITY

- Collect videos and images of Cold Chain functions.

11

LIQUID LOGISTICS AND RAIL LOGISTICS

Liquid logistics is a special category of logistics that relates to liquid products and is used extensively in the "supply chain for liquids" discipline. Liquid logistics is a special type of logistics that relates to liquid goods and is used widely in the "liquid supply chain" discipline.

OUTCOMES

After completing this lesson, the learner-

- Summarizes the meaning concept of liquid logistics and supply chain process;
- analyzes the need for liquid logistics for the preservation of liquid goods;
- explains the various advantages of liquid logistics to regulate supply chain process;
- assesses the relevance of different roles and advantages of rail logistics.

11.1 LIQUID LOGISTICS

Liquid logistics is a dedicated material-handling and transportation discipline that is used when moving liquid.

Liquid logistics is a special type of logistics that relates to liquid goods and is used widely in the "liquid supply chain" discipline.

Liquids can be transported in a varied range of container shapes and sizes because they do not have fixed dimension requirements. Hence, liquid logistics offers cost-saving opportunities that are not possible when transporting solid units. Various factors impact liquid logistics, comprising the transportation methods, temperatures and precautions that will vary depending on the ingredients being moved. The quantity of a liquid product can faster be measured by its levels in

the tank, and visible changes in the liquid consistency can be early alerts to any environmental control problems during transportation. Flow metres and sensors may also be installed to monitor continuously the condition of the product being transported.

Fig. 11.1: Liquid Logistics

Liquids provide signs through changes in their appearances that may be detected and translated into measures of the quality of the liquid.

Liquids in some cases are "processed" well downstream from the original manufacturing facility and thus provide the opportunity for enhanced efficiencies throughout the supply stream with more flexibility as to the nature of the item at the final point of usage.

Fig. 11.2 Source: Liquid logistics i

All these points signify a differentiation of liquid logistics from logistics methods used for discrete items. When appropriately planned and handled this differentiation may lead to business advantages for firms that manufacture, move, process, or liquid products. AMUL has the major cold chain network in India when compared with any other company. Milk is a perishable product so it must be consumed within 24 hours. To avoid wastage AMUL converts the milk to SNF and milk solids by evaporating the water, which contains up to 60-70% of milk contents. This is possible only if the channel of distribution right from the producer to the customer is well organised.

INTEXT QUESTIONS 11.1

1. Liquids can be transported in a varied range of container shapes and sizes because they do not have fixed _____ requirements.

2. Liquid logistics offers _____ opportunities that are not possible when transporting solid units.

Note

3. Various factors impact liquid logistics, comprising the transportation methods, temperatures and precautions will vary depending on the _____being moved.

4. Flow metres and _____ may also be installed to monitor continuously the condition of the product being transported.

5. Liquids provide signs through changes in their appearances that may be detected and translated into measures of the_____of the liquid.

11.2 NEED FOR LIQUID LOGISTICS

Industrial transportation is hazardous, whether it is loading and unloading plastic containers onto trucks or dealing with accidental leakages, the risks are higher. Planning the journey, many considerations must be made to ensure the safe transportation of liquid goods.

For liquid goods transportation, it is recommended that steel drums or plastic barrels are used. To add additional protection against contamination and spillages, plastic and metal liners can be inserted.

For lesser quantities of liquid cargo, the industrial plastic barrels which are in blue colour are most popular. Made from rigid tough plastic, they are sealed extremely well and are recognised universally as one of the long-lasting and most reliable industrial storage containers.

For most sensible and safest storage and transportation of liquid goods, best practice guidelines for substances, machinery and processes should be followed. These processes include:

- Loading and unloading
- Load and Weight-bearing
- Appropriate labelling of hazardous cargo
- Storage and Transportation guidelines
- Contracting registered and proficient carriers to transport goods.

INTEXT QUESTIONS 11.2

1. For liquid goods transportation, it is recommended that _____ drums or _____ barrels are used.

2. To add additional protection against contamination and spillages, _____ and _____ liners can be inserted.

3. For lesser quantities of liquid cargo, the industrial plastic barrels which are in _____colour are most popular.

   A) Red

   B) Blue

   C) Green

   D) Black

11.3 ADVANTAGES OF LIQUID LOGISTICS

Large Shipping Capacity

The ISO tank has a large capacity ranging from 5,000 to 11,000 gallons and, for a long time, has been the ideal way of bulk liquid transportation.

Fig. 11.3: Advantages of Liquid Logistics

Cost-Effective

The transportation should be reliable with trained professionals handling the entire operation, proper sanitization and sterilization procedures need to be followed, all industry regulations need to be met, and the vehicles and tankers/ containers need to be reliable.

Makes Loading/Unloading Faster

Liquid logistics uses specialized material handling that moves liquid products through a supply chain.

Requires Less Labour

Mostly Liquid handling is by Hose and Pipelines. Very less labour force is required to handle liquid logistics.

No Cleaning Cost in Case of Flexitanks

You do not have to clean them up after they are unloaded, as it occurs in the case of tank containers. This further helps to reduce costs.

No Additional Storage is Required.

Flexitanks storage containers do not require a forklift to load or unload. This makes the entire loading and unloading process faster.

Eco-Friendly

This is a fundamental component of eco-friendly systems because it helps businesses lower the usage of renewable resources.

Easy Availability

Very efficient liquid logistics services are easily available with a dedicated team of liquid logistics professionals.

INTEXT QUESTIONS 11.3

1. Liquid Logistics is apt for _____ Shipping Capacity
2. _____is Cost-effective
3. Liquid Logistics makes loading/unloading _____.
4. There is no cleaning cost in case of _____.
5. _____ Logistics are eco-friendly.

11.4 RAIL LOGISTICS

Fig. 11.4: Rail Logistics

When your shipping requirements include more than 120,000 pounds of material shipped at the same time to the same location, railcar shipment may be a choice for you. Since railcar shipping is regularly cheaper and more eco-friendly than over-the-road shipping, it is worth considering this mode.

Since railcars travel on the steel tracks laid by the railroad, regular railcar shippers and receivers have tracks built into their facilities.

Rail is an excellent solution for pre-planned long-hauls and moving from over-the-road to rail could benefit the supply chain in various ways. Using rail transportation for freight can help resolve some of the problems like gas emissions, guaranteed capacity, and the ageing generation of drivers that mainly logistics professionals face.

A. Safety

Additional investments in rail infrastructure are increasing the efficiency and safety of rail transportation. The rail extends a higher level of safety because of less human involvement and the lack of highway congestion.

Fig. 11.5: Safety

B. Technology

Fig. 11.6: Technology

Latest technology innovations in railway transportation are at the height of development. Modern railway systems, automation, IoT, artificial intelligence and big data are all the latest tools impacting railway transportation.

C. Greener Transportation

The greatest apparent advantage of railway transport comparing trucks is being less harmful to the environment. The railway can handle a higher quantity of freight and extended distances compared to other methods of transportation. In common, railcar shipments cause fewer carbon discharges into the environment per ton-mile.

Fig. 11.7: Greener transportation

D. Fuel Savings

Fig.11.8: Fuel savings

Though the transit period will be longer, delivery via railcar can be cheaper than over-the-road. The rail can assist in reducing costs, particularly on cross-country and long-haul runs. A great part of this savings is because of less fuel being utilised per ton-mile of freight being hauled.

E. Freight Visibility

Rail companies offer more advanced and sophisticated technology for tracking than most automobile carriers. Railcars are tracked automatically throughout their passages and these sightings are circulated by the railroads for the use of the shipment parties involved.

Fig. 11.9: Freight visibility

INTEXT QUESTIONS 11.4

1. Railcars travel on the _____ tracks.
2. The rail extends a higher level of safety because of less _____ involvement and the lack of highway congestion.
3. Which latest tool impacts railway transportation?
   - A) IoT
   - B) Artificial intelligence
   - C) Big data
   - D) All of the above
4. Though the transit period will be longer, delivery via railcar can be _____ than over-the-road.
5. The greatest apparent advantage of railway transport compared to trucks is being less harmful to the _____.

11.5 ADVANTAGE OF RAIL LOGISTICS

1. Dependable:

The ultimate advantage of rail transport is that it is the highly dependable mode of transport as it is the least affected by weather conditions such as fog, rains, etc. compared to other transport modes.

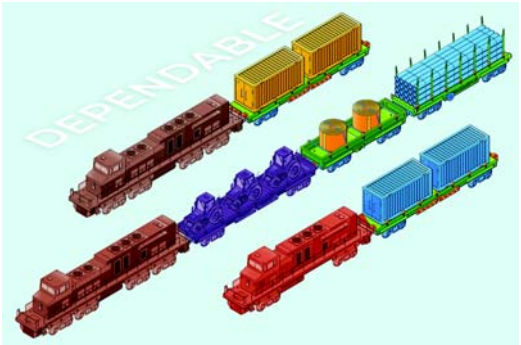


Fig. 11.10: Dependable

2. Better Organised:

Railway transportation is better organised than any other transportation mode. It has fixed schedules and routes. Its service is more uniform, regular and certain as compared to other transport modes.

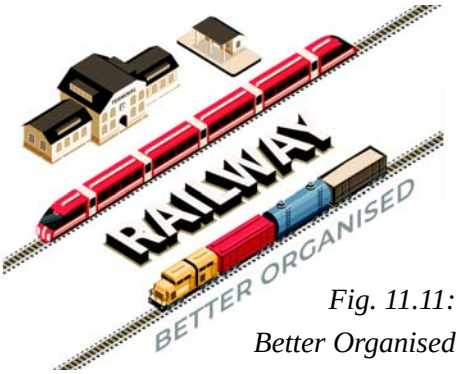


Fig. 11.11: Better Organised

3. High Speed Over Long Distances

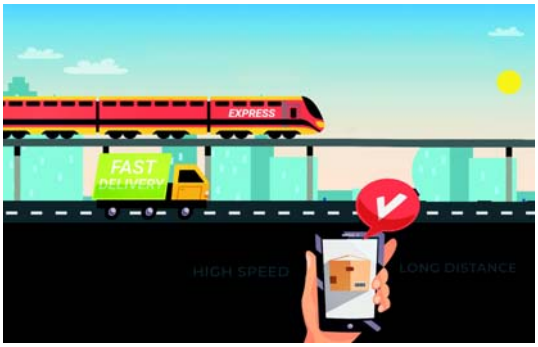


Fig. 11.12: High Speed over Long Distances

Its speed in long distances is more than any other transport mode, except airways. Therefore, it is the finest option for long-distance traffic.

4. Suitable for Bulky and Heavy Goods

Rail transport is quicker, economical, and best suited for bulky goods and carrying heavy goods over long distances.

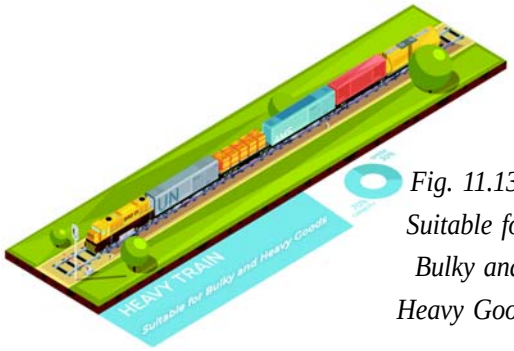


Fig. 11.13: Suitable for Bulky and Heavy Goods

5. Cheaper Transport

Fig. 11.14: Cheaper Transport

It is a cheaper transport mode as compared to other transport modes. Most of the operating expenses of railways are fixed costs. Each increase in rail traffic resulted in a decrease in the average cost.

Railway transport is inexpensive in the use of labour also. One driver and one guard are enough to carry more load than the motor transport.

6. Safety:

Fig. 11.15: Rail Safety Leadership

Rail transport is the safest mode of transport. The chances of breakdowns and accidents on railways are least as compared to other transport modes. Furthermore, the traffic can be protected from exposure to rain, sun, snow etc.

7. Larger Capacity

The carrying capacity of rail transport is very large. Furthermore, its ability is flexible which can be increased easily by adding more wagons.

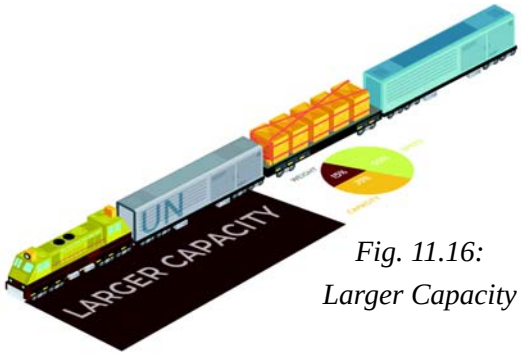


Fig. 11.16: Larger Capacity

8. Public Welfare:

Fig. 11.17: Public Welfare

It is the major public undertaking in the nation. Railways operate many public utility services. 'Charge what the traffic can bear' is the charging principle of railways which helps the poor.

9. Administrative Facilities of Government

Fig. 11.18: Administrative Facilities of Government

Railways support administrative facilities for the Government. The public servants and the defence forces drive their mobility mainly from the railways.

10. Employment Opportunities

The railways offer more employment opportunities for both unskilled and skilled labour. More than 16 lakh people are depending on railways for their livelihood.

Fig. 11.19: Employment Opportunities

INTEXT QUESTIONS 11.5

1. Rail transportation for freight can help resolve issues like _____.
2. Railway transport is _____in the use of labour also.
3. In the Railway, _____ driver and _____ guard are enough to carry more load than the motor transport.
4. The _____capacity of the rail transport is very large.
5. The public servants and the defence forces drive their _____ mainly from the railways.

WHAT YOU HAVE LEARNT

- Liquid Logistics advantages
- Need for Liquid Logistics
- Advantages of Rail Logistics
- Role of Rail Logistics
- Logistics in Supply Chain

KEYWORDS

Liquid Logistics, Rail Logistics, Freight, Bulk Cargo

TERMINAL EXERCISE

1. What is Liquid Logistics?
2. What does AMUL do to avoid wastage?
3. What are the advantages of Liquid Logistics?

Note

4. What are the advantages of Rail Logistics?
5. Explain the need for Liquid Logistics.
6. Explain the role of Rail Logistics.

ANSWERS TO INTEXT QUESTIONS

11.1

1. Dimension
2. Cost-saving
3. Ingredients
4. Sensors
5. Quality

11.2

1. Steel, plastic
2. Blue
3. B) Blue

11.3

1. Large
2. Liquid logistics
3. Faster
4. Flexi tanks
5. Liquid logistics

11.4

1. Steel
2. Human
3. D) All of the above
4. Cheaper
5. Environment

11.5

1. Gas emissions
2. Inexpensive
3. One, one
4. Carrying
5. Mobility

ACTIVITY

- Prepare a detailed document on the role of Indian Railways in COVID-19 crisis management.