

NATIONAL OPEN UNIVERSITY OF NIGERIA

TPM104: INTRODUCTION TO LOGISTICS

FACULTY OF MANAGEMENT SCIENCES

COURSE GUIDE

Course Developer:

Callistus Chukwudi Ibe

Department of Transport Management Technology

Federal University of Technology Owerri, (FUTO)

NATIONAL OPEN UNIVERSITY OF NIGERIA

National Open University of Nigeria

Headquarters

91, Cadastral Zone University Village Jabi-Abuja

Nigeria

Abuja Annex

245 Samuel Adesujo Ademulegun Street

Central Business District

Opposite Arewa Suites

Abuja

e-mail: centralinfo@nou.edu.ng

URL: www.nou.edu.ng

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CONTENT

Introduction

Course Aims and Objectives

Working through this Course

Course Materials

Study Units

Textbooks and References

Assignment File

Presentation Schedule

Assessment

Tutor-Marked Assignments (TMAs)

Final Examination and Grading

Course Marking Scheme

How to Get the Most from this Course

Tutors and Tutorials

Summary

Introduction

The course Introduction to Logistics TPM104 is a first semester course which carries two credit units for first year level students in the Faculty of management Sciences at the National Open University, Nigeria. This coursework will be useful in your academic pursuit and help to gain in-depth insight into principles of transport and tourism.

This course guide is built partially on prerequisite knowledge (i.e. introductory part in Logistics Management), however, its simplicity will make the student assimilate faster and practice questions at the end of each unit will also prepare the student for the examination purposes. It suggests some general guidelines for the amount of time required of users on each unit in order to achieve the course aims and objectives successfully. It also provides users with some guidance on their tutor marked assignments (TMAs) as contained herein.

Course Content

This Course is made up of Fourteen Units (Four Modules) spread across fourteen lecture hours and covering areas such as; Meaning of Logistics, Basic Concepts in logistics, historical perspective of logistics overview of logistics and planning.

Logistics and Supply chain management, organization and operation of materials, warehousing and storage, total logistics management, distribution channels, customer service in logistics and supply chain management.

Course Aims and Objectives

The course attempt to explain the concepts and conceptual framework of logistics and supply chain management. The historical perspectives and evolution of logistics and supply chain management.

Also, the course is prepared in a way in which the users would easily enhance their knowledge. This course aims are to help users develop critical thinking skills, learn how to evaluate logistics and supply chain management arguments and understand the roles of logistics as a competitive edge in the globalized economy. However, the overall Objectives of the course will be achieved by;

- i. Understanding the concepts of historical perspectives of logistics and supply chain management
- ii. Explaining the different layers of logistics
- iii. Establishing the relationship between logistics and supply chain management.
- iv. Understanding the flow of materials in Logistics
- v. Explaining total logistics concepts
- vi. Explaining the distribution channels
- vii. Understanding customer service in logistics and supply chain management

Working through the Course

To successfully complete this course, you are required to read the study units, referenced books and other materials on the course.

Each unit contains self-assessment exercises called Student Assessment Exercises (SAE). At some points in the course, you will be required to submit assignments for assessment purposes. At the end of the course, there is a final examination. This course should take about 10 weeks to complete and some components of the course are outlined under the course material subsection.

Course Material

The major component of the course and what you have to do and how you should allocate your time to each unit in order to complete the course successfully on time are listed as follows:

1. Course guide
2. Study unit
3. Textbook
4. Assignment file
5. Presentation schedule

Study Unit

There are fourteen (14) units in this course which should be studied carefully and diligently.

Module 1: Introduction to Logistics

Unit 1: Meaning of Logistics

Unit 2: History perspectives of logistics

Unit 3: Overview of logistics and planning

Unit 4: Layers of logistics services

Module 2: Logistics and Supply Chain Management

Unit 1: Logistics and Supply Chain Management

Unit 2: Supply Chain Synchronization

Module 3: Organization and Materials flows in Logistics

Unit 1: Organization and Operation of Materials

Unit 2: Warehousing and storage

Unit 3: Distribution Chemicals

Module 4: Total Logistics

Unit 1: Concept of Logistics and supply chain Management

Unit 2: Logistics supply chain planning and strategy

Unit 3: Globalization and International logistics

Unit 4: Financial measures in Logistics performance

Unit 5: Customer service in Logistics and Supply Chains

Assignment File

There are assignments on this course and you are expected to do all of them by following the schedule prescribed for them in terms of when to attempt them and submit same for grading by your tutor. The marks you obtain for these assignments will count toward the final mark you obtain for this course. Further information on assignments will be found in the Assignment File itself and later in this Course Guide in the section on Assessment.

There are four assignments in this course. The four course assignments will cover:

Assignment 1 - All TMAs' question in Units 1 - 4 (in Module 1)

Assignment 2 - All TMAs' question in Units 1 – 2 of Module

Assignment 3 - All TMAs' question in Units 1 - 3 of Module 3

Assignment 4 -All TMAs' question in Units 1 - 5 of Module 4

Presentation Schedule

The presentation schedule included in your course materials gives you the important dates for this year for the completion of tutor-marking assignments and attending tutorials. Remember, you are required to submit all your assignments by due date. You should guide against falling behind the schedule.

Assessment

There are two types of assessment of the course. First are the tutor-marked assignments; second, there is a written examination.

In attempting the assignments, you are expected to apply information, knowledge and techniques gathered during the course. The assignments must be submitted to your tutor for formal assessment in accordance with the deadlines stated in the Presentation Schedule and the Assignments File. The work you submit to your tutor for assessment will count for 30 % of your total course mark.

At the end of the course, you will need to sit for a final written examination of three hours duration. This examination will also count for 70% of your total course mark.

Tutor-Marked Assignments (TMAs)

There are four tutor-marked assignments in this course. You will submit all the assignments. You are enjoined to work all the questions thoroughly. The TMAs constitute 30% of the total score.

Assignment questions for the units in this course are contained in the Assignment File. You will be able to complete your assignments from the information and materials contained in your text books, reading and study units. However, it is desirable that you demonstrate that you have read and researched more widely than the required minimum.

You should use other references to have a broad viewpoint of the subject and also to give you a deeper understanding of the subject.

When you have completed each assignment, send it, together with a TMA form, to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the Presentation File. If for any reason, you cannot complete your work on time, contact your tutor before the assignment is due to discuss the possibility of an extension. Extensions will not be granted after the due date unless there are exceptional circumstances.

Final Examination and Grading

The final examination will be of three hours' duration and have a value of 70% of the total course grade. The examination will consist of questions which reflect the types of self-assessment practice exercises and tutor-marked problems you have previously encountered. All areas of the course will be assessed

Use the time between finishing the last unit and sitting for the examination to revise the entire course material. You might find it useful to review your self-assessment exercises, tutor-marked assignments and comments on them before the examination. The final examination covers information from all parts of the course.

Course Marking Scheme

The table presented below indicate the total marks (100%) allocation.

Assessment	Marks
Assignment (Best three assignments out of the four marked)	30%
Final Examination	70%
Total	100%

How to Get the Most from This Course?

In distance learning the study units replace the university lecturer. This is one of the great advantages of distance learning; you can read and work through specially designed study materials at your own pace and at a time and place that suit you best.

Think of it as reading the lecture instead of listening to a lecturer. In the same way that a lecturer might set you some reading to do, the study units tell you when to read your books or other material, and when to embark on discussion with your colleagues. Just as a lecturer might give you an in-class exercise, your study units provides exercises for you to do at appropriate points.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next is a set of learning objectives. These objectives let you know what you should be able to do by the time you have completed the unit.

You should use these objectives to guide your study. When you have finished the unit you must go back and check whether you have achieved the objectives. If you make a habit of doing this, you will significantly improve your chances of passing the course and getting the best grade.

The main body of the unit guides you through the required reading from other sources. This will usually be either from your text books or from a readings section. Some units require you to undertake practical overview of historical events. You will be directed when you need to embark on discussion and guided through the tasks you must do.

The purpose of the practical overview of some certain historical economic issues are in twofold. First, it will enhance your understanding of the material in the unit. Second, it will give you practical experience and skills to evaluate economic arguments, and understand the roles of history in guiding current economic policies and debates outside your studies. In any event, most of the critical thinking skills you will develop during studying are applicable in normal working practice, so it is important that you encounter them during your studies.

Self-assessments are interspersed throughout the units, and answers are given at the ends of the units. Working through these tests will help you to achieve the objectives of the unit and prepare you for the assignments and the examination. You should do each self-

assessment exercises as you come to it in the study unit. Also, ensure to master some major historical dates and events during the course of studying the material.

The following is a practical strategy for working through the course. If you run into any trouble, consult your tutor. Remember that your tutor's job is to help you. When you need help, don't hesitate to call and ask your tutor to provide it.

Read this Course Guide thoroughly.

- ❖ Organize a study schedule. Refer to the 'Course overview' for more details. Note the time you are expected to spend on each unit and how the assignments relate to the units. Important information, e.g. details of your tutorials, and the date of the first day of the semester is available from study centre. You need to gather together all this information in one place, such as your diary or a wall calendar. Whatever method you choose to use, you should decide on and write in your own dates for working through each unit.
- ❖ Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course work. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.
- ❖ Turn to Unit 1 and read the introduction and the objectives for the unit.
- ❖ Assemble the study materials. Information about what you need for a unit is given in the 'Overview' at the beginning of each unit. You will also need both the study unit you are working on and one of your text books on your desk at the same time.
- ❖ Work through the unit. The content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the unit you will be instructed to read sections from your text books or other articles. Use the unit to guide your reading.
- ❖ Up-to-date course information will be continuously delivered to you at the study centre.
- ❖ Work before the relevant due date (about 4 weeks before due dates), get the Assignment File for the next required assignment. Keep in mind that you will learn a lot by doing the assignments carefully. They have been designed to help you meet the objectives of the course and, therefore, will help you pass the exam. Submit all assignments no later than the due date.

- ❖ Review the objectives for each study unit to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.
- ❖ When you are confident that you have achieved a unit's objectives, you can then start on the next unit. Proceed unit by unit through the course and try to pace your study so that you keep yourself on schedule.
- ❖ When you have submitted an assignment to your tutor for marking do not wait for it return `before starting on the next units. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comments, both on the tutor-marked assignment form and also written on the assignment. Consult your tutor as soon as possible if you have any questions or problems.
- ❖ After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in this Course Guide).

Tutors and Tutorials

There are some hours of tutorials (2-hours sessions) provided in support of this course. You will be notified of the dates, times and location of these tutorials. Together with the name and phone number of your tutor, as soon as you are allocated a tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on any difficulties, you might encounter, and provide assistance to you during the course. You must mail your tutor-marked assignments to your tutor well before the due date (at least two working days are required). They will be marked by your tutor and returned to you as soon as possible.

Do not hesitate to contact your tutor by telephone, e-mail, or discussion board if you need help. The following might be circumstances in which you would find help necessary. Contact your tutor if.

- You do not understand any part of the study units or the assigned readings
- You have difficulty with the self-assessment exercises
- You have a question or problem with an assignment, with your tutor's comments on an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face to face contact with your tutor and to ask questions which are answered instantly. You can raise any problem encountered in the course of your study. To gain the maximum benefit from course tutorials, prepare a question list before attending them. You will learn a lot from participating in discussions actively.

Summary

The course Introduction to Logistics, exposes the users to the rudiments of logistics such as the concepts and conceptual framework of logistics, the historical perspectives of logistics, layers of logistics, logistics and supply chain management, material flows and storage, total logistics, International Logistics, distribution channels, logistics cost calculation, International Logistics, and customer servicing in logistics and supply chain management.

On successful completion of this course, you would have developed crucial thinking skills with the material necessary for efficient and effective discussion of logistics and supply chain management, issues and events both theoretically and practically. However, to gain a lot from the course please try to apply anything you learn in the course to term papers writing in other logistics and supply chain management and transport courses. We wish you success with the course and hope that you will find it both interestingly intuitive and courteously functional.

MODULE ONE

INTRODUCTION TO LOGISTICS

Unit 1: Meaning of Logistics

Unit 2: History perspectives of logistics

Unit 3: Overview of logistics and planning

Unit 4: Layers of logistics services

UNIT 1: MEANING OF LOGISTICS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Meaning of Logistics

3.2 Principal Components of Logistics

3.3 Global Logistics

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked assignment

7.0 References/Further Readings

1.0 INTRODUCTION

Logistics as a concept connotes different meanings to different people. The clear meaning of Logistics and different principal components would be known in this unit.

Also, the meaning of global logistics would be known.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- i. Explain the concept of Logistics
- ii. Identify the different components of Logistics

iii. Define the concept of Global Logistics

3.0 MAIN CONTENT

3.1 Meaning of Logistics

Logistics deals with planning and control of materials flow and related information, in public and private organizations.

Logistics is the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements.

The mission of logistics is to get the right goods or services to the right place, at the right time, and in the desired condition, while making the greatest contribution to the firm.

Customer Service standards set the level of output and degree of readiness to which the logistics system must respond. Logistics costs increase in proportion to the level of customer service provided.

Setting very high service requirements can force logistics costs to exceedingly high levels.

Logistics has different types, they are inbound logistics, outbound logistics, and third party logistics

According to Council of logistics management: “Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming to the customer requirement”.

“Logistics is the positioning of resources at the right time, in the right place, at the right cost, at the right quantity”. (CILT UK 2005)

Logistics = Supply +Materials Management +Transport

Byrne & Markham, 1991 argued that Logistics activities cover the entire supply chain so they become important in improving supply chain’s overall performance.

The target of logistics process is to merge and organize all activities involved in acquiring, converting and distributing goods from raw materials to finished goods to the

customers in order to achieve customer service objectives in a proficient cost efficient manner

Logistics is about creating value – value for customers and suppliers of the firm, and value for the firm’s stakeholders. Value in logistics is expressed in terms of time and place.

Products and services have no value unless they are in the possession of the customers when (time) and where (place) they wish to consume them.

Logistics revolves around a primary decision triangle of Location, Inventory, and Transportation, with Customer Service being the result of these decisions.

By tracing the flow of a product from the procurement of raw materials through manufacture of the end product to the customer, one can gain a broad view of logistics processes.

In this context, a distinction can be drawn among the phases of logistics. They are;

- i. Procurement Logistics
- ii. Production Logistics
- iii. Distribution Logistics
- iv. Spare-parts Logistics
- v. Reverse Logistics

All types of value chain can be performed in every step of the logistics process.

As a result, there are warehouses both in procurement as well as in production and distribution (DHL, 2008).

A relevant issue in Logistics is to take decisions (e.g. how and when raw materials should be acquired), by satisfying a given set of constraints (e.g. a budget constraint) while optimizing a certain performance measure (e.g. minimizing the total cost).

Specifically, a logistics system is made up of a set of “facilities” linked by “transportation services”, where: facilities are sites where materials are processed (produced, stored, sold, consumed.); they include manufacturing centres, warehouses, distribution centres (DC), transportation terminals transportation services denote the movement of materials

between facilities (using vehicles and equipment), and they are usually depicted as directed as: Facility to facility.

SELF ASSESSMENT EXERCISES

- i. How would you explain the concept of logistics to a layman?
- ii. Carefully state the different phases of logistics

3.2 Principal Components of logistics

The principal components of logistics are the following:

- i. Order processing;
- ii. Stock levels or inventory;
- iii. Warehousing;
- iv. Transportation.

Logistics is concerned with ensuring that the individual efforts that go to make up the distributive functions are optimised so that a common objective is realised.

This is called the 'systems approach' to distribution management and a major feature of logistics is that these functions be integrated.

Order Processing: Order processing is the first of the four stages in the logistical process.

The efficiency of order processing has a direct effect on lead times.

Orders are received from the sales team through the sales department.

Many companies establish regular supply routes that remain relatively stable over a period of time provided that the supplier performs satisfactorily.

Very often contracts are drawn up and repeat orders (forming part of the initial contract) are made at regular intervals during the contract period.

Order processing varies by industry, but often consists of four major activities: a credit check; recording of the sale, such as crediting a sales representative's commission account; making the appropriate accounting entries; and locating the item, shipping, and adjusting inventory records.



Fig.1.1 Order Processing

Stock levels or Inventory: Inventory, or stock management, is a critical area of logistics because stock levels have a direct effect on levels of service and customer satisfaction.

The optimum stock level is a function of the type of market in which the company operates.

Few companies can say that they never run out of stock, but if stock-outs happen regularly then market share will be lost to more efficient competitors.

The key lies in ascertaining the re-order point. Carrying stock at levels below the re-order point might ultimately mean a stock-out, whereas too high stock levels are unnecessary and expensive to maintain.

The stock/cost dilemma is clearly illustrated by the systems approach to logistics that is dealt with later.

Stocks represent opportunity costs that occur because of constant competition for the company's limited resources.

If the company's marketing strategy requires that high stock levels be maintained, this should be justified by a profit contribution that will exceed the extra stock carrying costs.

Inventory control can be a major component of a small business physical distribution system.

Costs include funds invested in inventory, depreciation, and possible obsolescence of the goods.

Experts agree that small business inventory costs have dropped dramatically due to deregulation of the transportation industry.



Inventory control analysts have developed a number of techniques which can help small businesses control inventory effectively.

The most basic is the Economic Order Quantity (EOQ) model.

This involves a trade-off between the two fundamental components of an inventory control cost: inventory-carrying cost (which increases with the addition of more inventory), and order-processing cost (which decreases as the quantity ordered increases). These two cost items are traded off in determining the optimal warehouse inventory quantity to maintain for each product.

The EOQ point is the one at which total cost is minimized. By maintaining product inventories as close to the EOQ point as possible, small business owners can minimize their inventory costs.

Warehousing: Currently, many companies function adequately with their own on-site warehouses from where goods are dispatched direct to customers. When a firm markets goods that are ordered regularly, but in small quantities, it becomes more logical to locate warehouses strategically around the country.

Transportation can be carried out in bulk from the place of manufacture to respective warehouses where stocks wait ready for further distribution to the customers.

This system is used by large retail chains, except that the warehouses and transportation are owned and operated for them by logistics experts (e.g. INTEL Logistics).

Levels of service will of course increase when numbers of warehouse locations increase, but cost will increase accordingly.

Again, an optimum strategy must be established that reflects the desired level of service.

A storage warehouse holds products for moderate to long-term periods in an attempt to balance supply and demand for producers and purchasers.

They are most often used by small businesses whose products' supply and demand are seasonal.

On the other hand, a distribution warehouse assembles and redistributes products quickly, keeping them on the move as much as possible.

Many distribution warehouses physically store goods for fewer than 24 hours before shipping them on to customers.

On the other hand, a distribution warehouse assembles and redistributes products quickly, keeping them on the move as much as possible.

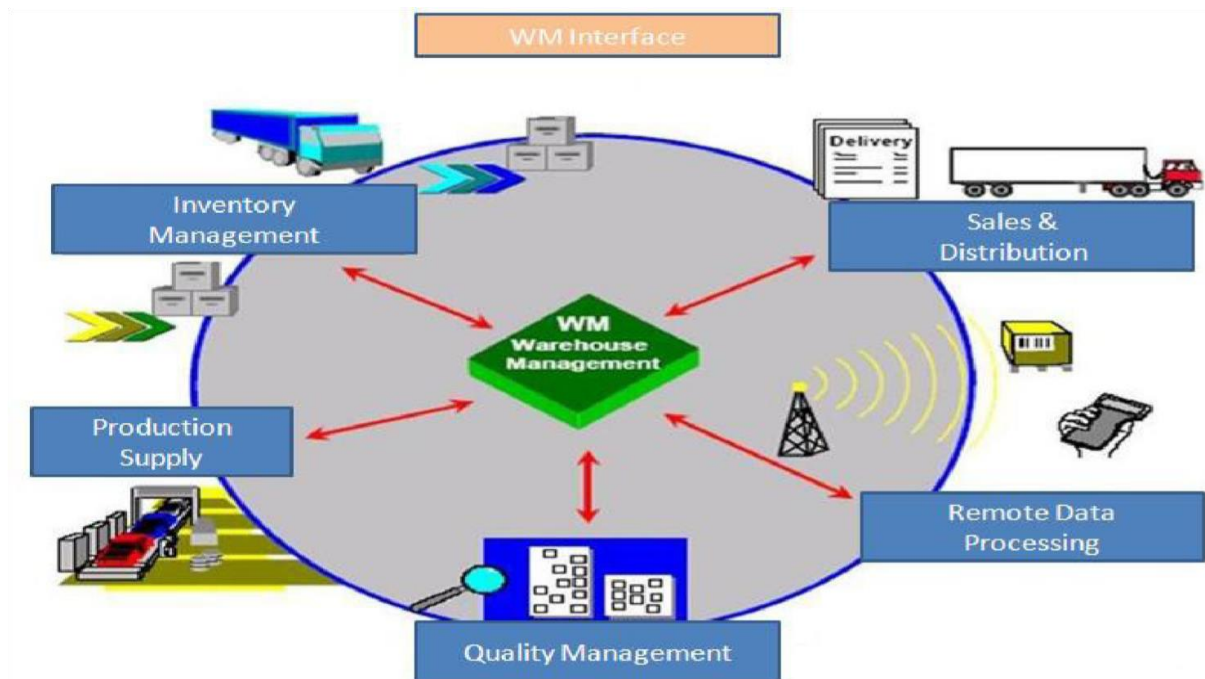


Figure 1.3: Warehousing

Transportation: Transportation usually represents the greatest distribution cost. It is usually easy to calculate because it can be related directly to weight or numbers of units.

Costs must be carefully controlled through the mode of transport selected amongst alternatives, and these must be constantly reviewed.

The patterns of retailing that have developed, and the pressure caused by low stock holding and short lead times, have made road transport indispensable when the volume of goods being transported reaches a certain level some companies purchase their own vehicles, rather than use the services of haulage contractors.

However, some large retail chains like Tuski designers, BYC polo have now entrusted all their warehousing and transport to specialist logistics companies as mentioned earlier.

For some types of goods, transport by rail still has advantages.

When lead-time is a less critical element of marketing effort, or when lowering transport costs is a major objective, this mode of transport becomes viable.

Similarly, when goods are hazardous or bulky in relation to value, and produced in large volumes then rail transport is advantageous.

Rail transport is also suitable for light goods that require speedy delivery (e.g. letter and parcel post).

Exporting poses particular transportation problems and challenges.

The need for the exporter's services needs to be such that the customer is scarcely aware that the goods purchased have been imported.

Therefore, above all, export transportation must be reliable. The chosen transportation mode should adequately protect goods from damage in transit (a factor just mentioned makes air freight popular over longer routes as less packaging is needed than for long sea voyages).

Not only do damaged goods erode profits, but frequent claims increase insurance premiums and inconvenience customers, endangering future business.



Figure 1.4: Transportation modes

SELF ASSESSMENT EXERCISE

- i. Identify the principal components of logistics in the supply chain management.
- ii. Explain the importance of order processing and inventory management in supply chain management

3.3 Global Logistics

Global logistics is the flow of material, information, and money between countries. Global logistics connects our suppliers with our customers internationally.

Global logistics flows have increased dramatically during the last several years due to globalization in the world economy, expanding use of trading blocs, and global access to Web sites for buying and selling merchandise.

Global logistics is much more complex than domestic logistics, due to the multiplicity of handoffs, players, languages, documents, currencies, time zones, and cultures that are inherent to international business.

Key benefits of logistics and supply chain management

They are as follows:

- Develops better customer relationship and service.
- Creates better delivery mechanisms for products and services in demand with minimum delay.
- Improvises productivity and business functions.
- Minimizes warehouse and transportation costs.
- Minimizes direct and indirect costs.
- Assists in achieving shipping of right products to the right place at the right time.
- Enhances inventory management, supporting the successful execution of just-in-time stock models.
- Assists companies in adapting to the challenges of globalization, economic upheaval, expanding consumer expectations, and related differences.

- Assists companies in minimizing waste, driving out costs, and achieving efficiencies throughout the supply chain process.

SELF ASSESSMENT EXERCISE

Why is global logistics more complex than domestic logistics?

4.0 CONCLUSION

This unit provides a basic knowledge of the definition, meaning and types of logistics management. You must have full knowledge of the meaning of logistics, different components of logistics and the meaning of global logistics as a prerequisite to your understanding of the remaining units of this course

5.0 SUMMARY

Logistics is a word that is sometimes used by many people in different contexts. You now have known that logistics is about creating value/value for customers and suppliers of the firm, and value for the firm's shareholders. You should know that value in logistics is expressed in terms of time and place. You should also know that logistics revolves around a primary decision triangle of location, inventory and transportation.

6.0 TUTOR-MARKED ASSIGNMENT

Identify six benefits of logistics in Supply Chain Management

7.0 REFERENCES/FURTHER READINGS

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UNIT 2: HISTORICAL PERSPECTIVES OF LOGISTICS

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Evolution of Logistics
 - 3.2 Importance of Logistics and Supply Chain
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Logistics as we know it today evolved from the military which was concerned mainly with the movement of soldiers and rations. However, business logistics at the early stage was fragmented around 1960; each function then was carried out by individual departments without reference to the other departments. By 1980 evolving integration emerged which led to inbound logistics and outbound logistics. By year 2000, total integration was achieved leading to logistics supply chain.

2.0 OBJECTIVES

At the end of the unit, you will be able to :

- i. Explain the historical perspectives of logistics
- ii. Understand the evolution of logistics
- iii. Explain the importance of logistics and supply chain

3.0 MAIN CONTENT

Historical Perspective of Logistics

Logistics is first mentioned in Sun Tzu Wu's Art of War-500BC. Alexander the Great produced a logistics system to support troops rather than relying on off the land. The Romans introduced supply lines and support depots at 30km intervals (one day's march).

Napoleon planned his logistics campaigns well and logistics and supply was a top priority. However, Napoleon and Hitler fell afoul of supply chain which became too long causing a great disruption and ultimate failure. Supply lines are always a target for enemy forces. Gourdin, (2006). Ancient Roman and Greek Wars formed the basics for today's logistics system. Rome developed a highly efficient logistics supply system, to supply its legions. Military Officers called Logistikas were responsible for ensuring the supply and allocation of resources so that soldiers could move forward effectively. After world war 11, logistics moved from warfare to business. Physical distribution of products began with focus on activities such as filling order, distribution of products, storage and warehousing, production planning and customer service. These activities are now important aspects of logistics.

The total logistics concept aims to address all the elements that come under the distribution and logistics as a single integrated system. These include procurement; order processing, customer service, inventory management, warehousing, transportation and order picking and packaging.

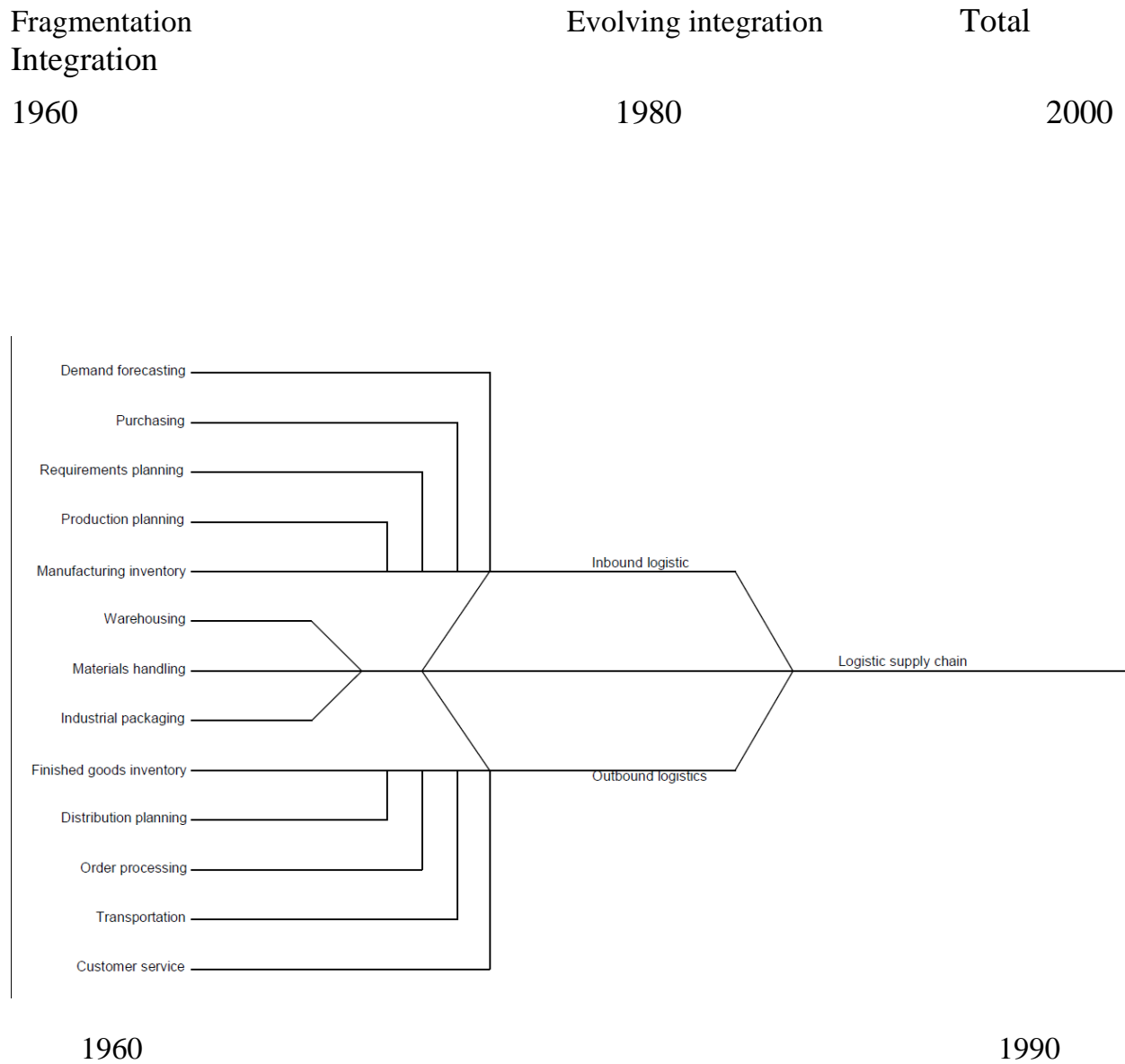
3.1 Evolution of Logistics

The subject matter is organised in chronological order by decades. The 1950s were primarily the study of transportation. During the 1960, the study of transportation evolved into the study of physical distribution.

During the 1990s more attention was given to physical supply, the inbound side of logistics system. Latter in the 1970s Universities and Polytechnics began to offer more courses in transportation, physical distribution and logistics. By 1980s the term physical distribution was phased out and the term business logistics was emphasised. During the 1990s business logistics received more attention and was therefore emphasised. During the 1990s business logistics had more emphases as many cost oriented businesses became aware of the opportunities that could be gained from cost savings through negotiations with carriers and implementation of system approach, that is, logistics supply chain and the total cost concept. The present decades have witnessed the characterization of a low evolution from logistics supply chain management which is called total integration. See

figure 1.

FIGURE 1. Integrated Logistics management



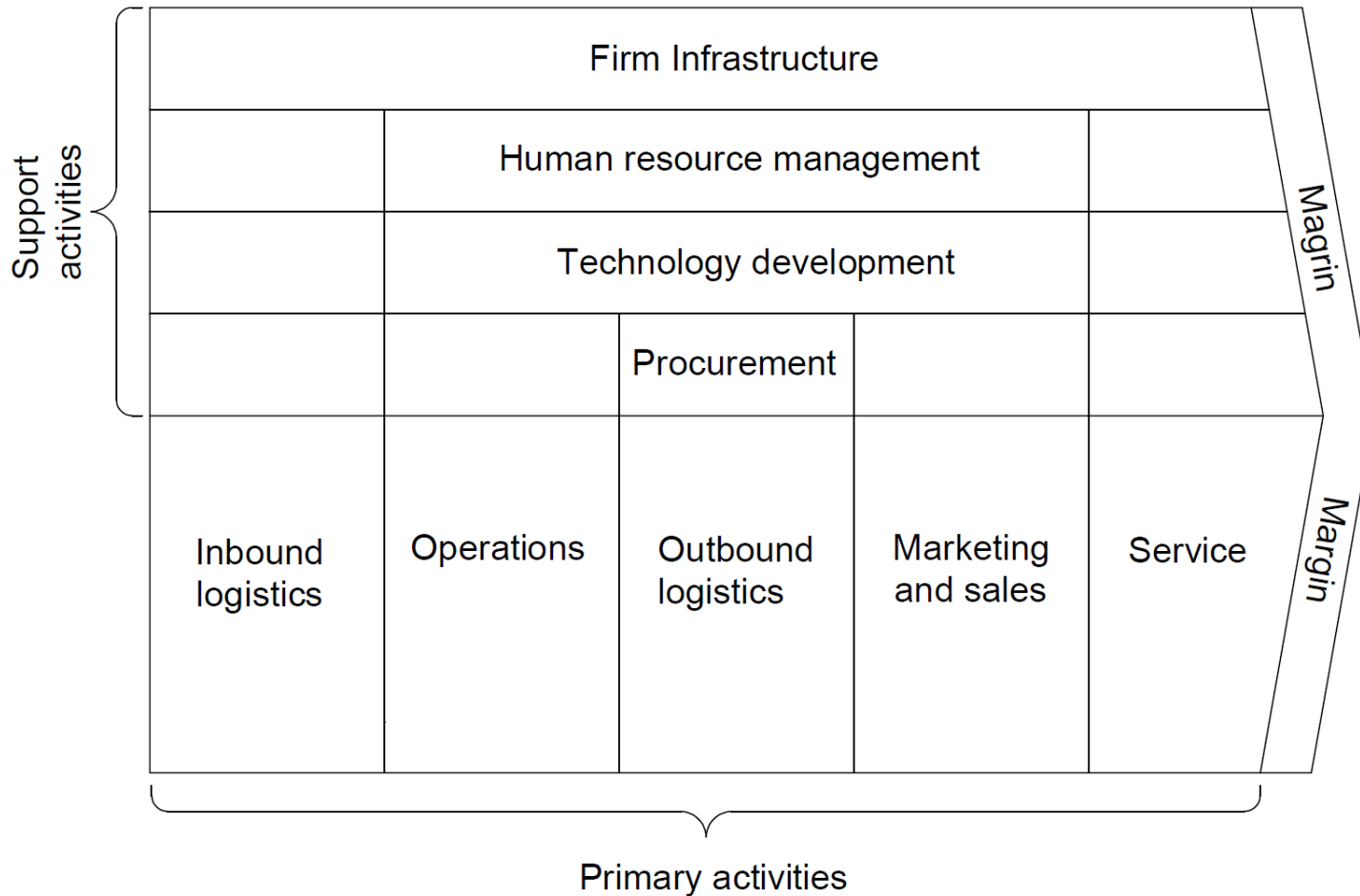
Source: Centre for supply Chain research, Penn State University

The present decades also have witnessed the increasing application of information and communication technology (ICT) which enhanced the intensity of information flow from the vendor to the customer. This application of ICT has facilitated the use E-Commerce. Information and Communication Technology has enhanced the introduction of Just-In-Time, (JIT) On-Time and Day- One for Day-Two Logistics. Speed of delivery which is facilitated by the application of information and communication technology is now the hallmark of logistics and supply chain in the present century knowledge economy. Increasing outsourcing by organizations has witnessed tremendous growth in logistics and supply chain management in present decades.

The rationales for total concept were still important for logistics concepts. However, value chain concept has also been developed as a tool for competitive analysis and strategy (See figure 2.).

As can be seen, in the Porter's value chain, inbound and outbound logistics are important primary components that are contributing value to the firm's customers and making the company financially viable. While firm's infrastructure, human resources management, technology and procurement are important support activities. Information flow connects the two and helps to create value.

Logistics in Porter's Value Chain



Source: Michael Porfun, competitive advantage (New York, The free Press, 1985)

SELF ASSESMENT EXERCISE

Identify the different stages of Logistics Evolution.

3.2 Importance of Logistics and Supply Chain

Logistics plays essential roles in supply chain management. It plays the following functions:

1. It is used to plan and coordinate movement of products timely, safely and

effectively.

2. Customers now not only include your neighbours and local friends, they include people across the globe as well.

3. Logistics management is extremely important if your organization is to be successful because it involves careful control of goods both leaving your business premises and entering them, that is, incoming and outgoing goods.

4. It keeps an organization running smoothly as a whole.

Logistics is a key element in keeping pace with customer demand and out performing competitors.

5. Logistics helps in streamlining operations and removal of non essential activities that add cost and do not create value.

SELF ASSESSMENT EXERCISE

Identify the importance of Logistics.

4.0 CONCLUSION

This unit provides a basic knowledge of the historical perspectives of logistics involvement

You must have a full grasp of the evolution of logistics from 1960 to the present day integrated logistics which is a necessary condition for your understanding of the remaining part of the course. The importances of logistics are also highlighted. You know that logistics is an important tool that could create value for the sustainability of organization in a competitive environment.

5.0 SUMMARY

Logistics is first mentioned in Sun Tzu Wu's Art of War around 500. Logistics therefore originated from military which used logistics in the supply of troops and rations. Ancient Romans and Greek Wars formed the bases for today's logistics system. Business logistics came about after World War 11. This period witnessed a shift from military logistics to business logistics. Business logistics brought about physical distribution which focused on outbound distribution of products, storage and warehousing, production planning and customer service.

Thus, organized logistics developed in chronological order over the decades. It moved from primary study of transportation in the 1950s to the study of physical distribution in the 1960s. By 1970s attention shifted to physical supply of inbound materials, that is, material handling. By 1970 also more awareness on the usefulness of logistics has been created and it became a taught course in the Universities and Polytechnics. By 1980s business logistics became more prominent as a cost saving process through negotiations with carriers and implementation of total cost concepts. The 21st century witnessed a move from logistics to supply management in the total integration of inbound logistics and outbound logistics. This period also witnessed the increasing use of the application of information and communication technology (ICT) to logistics. The increased intensity of information flow in logistics chain management brought about logistic concepts of Just-in-time, on-Time and Day-one for Day-two logistics. The creation of value by logistics has compelled organizations that want to be competitive to reduced cost and create value through the increasing use of outsourcing and third-party logistics. The importance of logistics as a planning and coordination tool that streamlines cost and increased value was discussed

6.0 TUTOR-MARKED ASSIGNMENT

Why is logistics practiced in an Organization?

7.0 REFERENCES/FURTHER READING

John, J., Coyle, E., Bardi, J., & John, C.L. (2006). *The Management of Business Logistics a Supply Chain Perspective*, Thomson Press.

UNIT 3: OVERVIEW OF LOGISTICS AND PLANNING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Overview of Logistics and Planning
 - 3.2 Shipment and Planning
 - 3.3 Strategic Planning in Logistics
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assessment
- 7.0 References/Further Reading

1.0 INTRODUCTION

This unit will give you the general overview of logistics planning and strategies involved in logistics operation and shipment planning of raw materials and finished products in the industry for the achievement of customer service that will lead to sustainable growth.

2.0 OBJECTIVES

At the end of this unit, students should be able to:

- i. Know the various Logistics planning process
- ii. Explain the shipment planning process, mode and carrier selection, route scheduling and vehicle routing.
- iii. Understand the Logistics strategic planning in the logistics operational services.

3.0 MAIN CONTENT

3.1 Overview of Logistics and Planning

Planning is a deliberate attempt to achieve a set target. Logistics Planning is a planning process that develops short- and long-term metrics, process definitions, information system requirements, and organizational requirements for logistics as a whole and for customer response, inventory management, supply, transportation, and warehousing.

No matter the level of detail, we always move through the phases in the same order: investigate, innovate, implement.

These three steps investigate, innovate, implement are the foundation of the Logistics Planning methodology.

This methodology can and has been used in a wide variety of industries, countries, and operating scenarios.

Logistics master planning is the logic applied to logistics that is often missing.

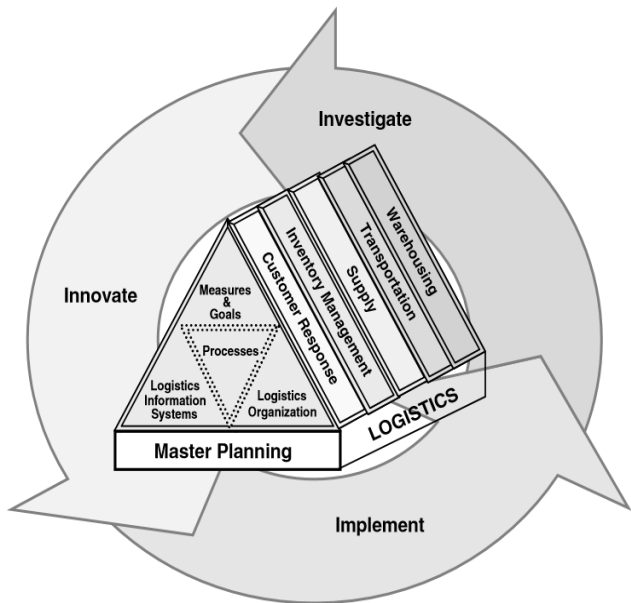


Figure 2.1: Logistics master planning methodology.

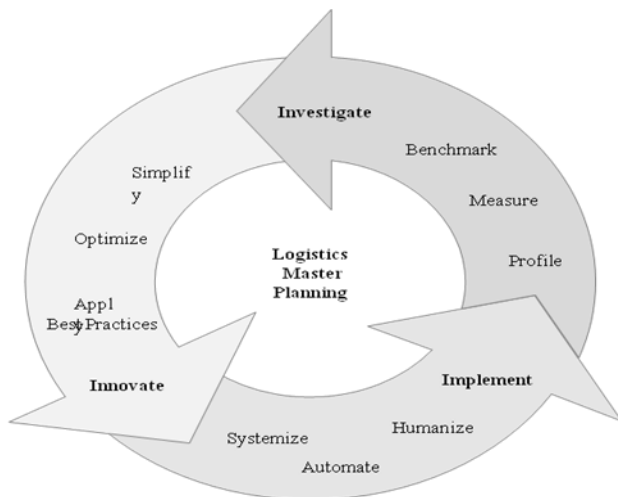


Figure 2.2: Investigate, innovate, and implement.

Investigation

In the investigation there are phases, as follows:

Profile current logistics activity

Measure current logistics performance

Benchmark performance and practices versus world-class standards

In so doing, we utilize our logistics audit programs to assess the current performance, practices, and systems versus world-class standards developed over years of data collection and research.

The result is a logistics gap analysis revealing current strengths, weaknesses, and the financial opportunities available for closing the revealed gaps.

Innovation

In the innovation step, there are phases as well. They are:

- i. Simplify (eliminate and combine work activities)
- ii. Optimize (apply decision support tools to determine optimal resource requirements)
- iii. Apply world-class practices (tailor the world's best logistics practices to the particular setting and circumstance) to determine the most appropriate design for each logistics activity.

A variety of supply chain Imagineering and optimization tools are used to create and evaluate alternative plans of action.

Implementation

In the implementation, there are also phases,. These are:

- i. Systemize (develop and document detailed procedures)
- ii. Automate (justify, select, and implement appropriate systems)
- iii. Humanize (design, populate, and develop organization plans for human resources).

In so doing, we use a variety of logistics templates to develop detailed action plans and to choose appropriate vendors.

In addition to defining logistics and supply chain management and presenting world-class

practices for each logistics activity, this unit is a trip through the Logistics Planning methodology.

SELF ASSESSMENT EXERCISE

Identify and discuss the steps involved in logistics planning methodology

3.2 Shipment and Planning

Shipment means collection of orders that travel together. In the logistics and shipment planning, the terms load and shipment will be used interchangeably.

Shipment and logistics planning is the process of choosing shipment frequencies and deciding for each shipment the orders which should be assigned to the shipment, mode of transport, appropriate carrier, route, logistics process and shipping schedule.

Shipment management includes the assignment of shipments to containers and the tracking of the shipment in process. The shipment and logistics planning practices include:

1. Planning shipment frequencies,
2. Choosing modes and carriers,
3. Routing and scheduling individual shipments,
4. Planning loads,
5. Rating potential shipments, and
6. Tracking outbound shipments.

Shipment Frequency Planning

Shipping frequencies are a primary determining factor in total transportation costs, inventory carrying costs, transportation administration costs, and customer satisfaction.

During the shipment frequency planning, if the organisation ships less material more frequently, the following will be achieved:

- i. Overall in-transit, lot-quantity, and safety stock inventory levels and costs are reduced because there is typically less inventory in-transit at any one time, the recipient is receiving smaller lot quantities, and there are more opportunities to react to shifts in demand or supply streams.

- ii. Transportation administration costs are greater because we have to incur the one-time expense of setting up a shipment for its accompanying paperwork and loading more often.
- iii. Transportation costs are typically higher since we are moving smaller volumes per shipment and not benefiting from transportation discounts associated with large loads.
- iv. Customer satisfaction is enhanced since customers are receiving goods more reliably more often.

Mode and Carrier Selection

A transportation mode and carrier must be selected for each shipment. The decision impacts transportation and inventory carrying costs, in-transit times, delivery reliability, and overall customer service.

The cube, weight, value, commodity, and chemical composition of each individual order and group of orders assigned together in a shipment all affect the selection of the proper mode and carrier.

The ideal mode selection best matches the requirements of the shipment with the characteristics of the chosen transportation mode.

Routing and Scheduling

Most of us are familiar with vehicle routing and scheduling problems from personal experience: bus routes, taxi routes, paper routes, travelling salesman problems, and even the neighbourhood pure water distribution vehicle follows a route. Most of us have tried to plan efficient routes for vacation trips or errand runs.

In shipping and logistics planning, there are familiar challenges faced with during planning and how to minimize left-hand turns, avoiding pockets of traffic congestion, visiting the locations in a logical sequence, such as following a strict schedule in house to house distribution (that is bringing in supply chain management into the system) of finished product during supplies. What helps such activity during routing and scheduling is the use of routing software such as Tora; it makes the work very perfect in terms of delivery.

Backhauling and Continuous Moves

Good routing solutions also incorporate backhauling, the practice of interleaving pickups and deposits on a single route to maximize the vehicle utilization. Some of the most advanced routing solutions identify continuous move programs, which essentially keep each vehicle in operation continually, moving between pickup and deposit locations throughout a country or region, much like a taxi cab.

Vehicle Scheduling

Scheduling is an even more complex and interesting problem than routing because it involves precedent relationships and time windows in addition to routing. Advanced scheduling solutions should also avoid hub times, those times when major transportation hubs are clogged.

Inbound/Outbound Consolidation Scheduling requirements are becoming increasingly more complex as more and more consignees consolidate and schedule inbound deliveries. Intelligent transportation management systems should reveal and suggest opportunities for inbound and outbound consolidation. The consolidated loads are typically shipped directly to a sorting centre or hub for the parcel handler of choice. Deconsolidation and loading for local delivery takes place at the hub.

A major third-party logistics company in joint venture with a major material handling systems supplier recently developed an entire logistics infrastructure to support zone skipping practices and economies in the Internet catalogue retailing industry.

Load Planning and Management

The objective of load planning is to maximize the outbound container utilization while not exceeding the cubic or weight capacity restrictions of the container, loading in reverse order of the delivery locations for the load, and balancing the weight of the load across the floor of the container.

The problem is complicated by many factors:

- i. The mix of product dimensions and weights
- ii. Inconsistency in container dimensions and usability
- iii. Double-faced loading capacity constraints for cube and weight.

Shipment Rating

In addition to frequency planning, routing and scheduling, and load planning for each shipment, shipments must also be rated. Rating is the process of estimating the freight charge associated with any given shipment.

Rating capability should be incorporated in the online transportation management system (TMS) and linked with the order entry system so that freight charges and estimated arrival times may be provided to the customer online and in real time.

Shipment Tracking

The final issue that needs to be addressed in shipment and logistics planning and management is shipment tracking and visibility. This capability is critical in inventory management and customer response.

Tracking is responsible for picking up goods or shipment at any point where they are during transit. It helps the management of the company to know exactly where the product is, when they are being shipped and as well make logistics services to be trusted during operation.

In inventory management, we often order additional inventory to cover any blind-spot places where shipment visibility is lost.

SELF ASSESSMENT EXERCISE

- i. Carefully Identify the shipment and logistics planning practices in logistics management
- ii. Why is shipment tracking important in shipment and management of logistics planning?

3.3 Strategic Planning in Logistics

Logistics is by nature a fire fighting business. Unfortunately, many organizations reward fire fighting at the exclusion of long-range planning. With logistics playing an increasingly important role in corporate growth, in determining competitive advantage, and in creating shareholders value, we have a lot of ground to make up in overcoming the historical neglect of logistics as a strategic focus for the corporation.

Our experience has revealed that effective logistics strategic planning and project

management is characterized by;

- i. Dedicated planning resources and programs
- ii. Formal methodology for logistics strategic planning process.

Dedicated Planning Resources and Programs: If the proper resources (money, time, staff, and systems) are not set aside for long-range planning, it will not be carried out to the level of detail necessary to truly assess the ways in which changes in the economic, technological, competitive, demographic, and regulatory environments are affecting long-range logistics requirements.

The logistics planning team should include the analytical and operational backgrounds required to resolve complex issues in supply chain engineering, customer service policy design, inventory planning, transportation operations design, warehouse engineering, and logistics performance metrics.

Formalized Logistics Planning Methodology: Logistics is fraught with interdependencies between its activities (customer response, inventory planning, supply, transportation, and warehousing) and the activities it impacts in other areas of the corporation (sales and marketing, regulatory compliance, human resources, research and development, and finance). There is therefore a need for formal methodology for planning to avoid an implosion of the planning process that may frustrate the planning team, and/or end up with the most forceful member of the team driving the plan toward his/her objectives.

4.0 CONCLUSION

Logistics Planning is an important function in logistics management. It helps the logistics operator to achieve his target and measure deviations from targets. Mode selection, routing and vehicle schedule and load planning and management are important functions to be performed. A clear understanding of the above functions is very important for a logistics officer.

5.0 SUMMARY

In this unit, we looked at the overview of logistics planning. We identified the following shipment and logistics practices:

1. Planning shipment frequencies,
2. Choosing modes and carriers,
3. Routing and scheduling individual shipments,
4. Planning loads,
5. Rating potential shipments, and
6. Tracking outbound shipments.

We learnt about shipment frequency planning and its implications, mode and carrier selection routing and scheduling practices, vehicle scheduling, load planning and management, shipment rating and shipment tracking are important things you must understand clearly. You should also understand logistics strategic planning.

6.0 TUTOR-MARKED ASSESSMENT

- i. Clearly identify load planning process in logistics
- ii. Load planning is complicated by many factors. Identify the factors.

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UNIT 4: LAYERS OF LOGISTICS SERVICES

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Layers of Logistics Services
 - 3.2 Logistics as a Competitive Edge
 - 3.3 The Seven ‘Rights’ of Customer Service
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In this unit we shall learn that Logistics operates at different layers. The Components of these layers will be revealed. We will be able to identify the different layers of logistics. The importance of logistics as the main stay of organization as a competitive edge will be explained. In this unit we will learn that, through efficient logistics Management, activities that add time and no value in the supply chain are eliminated. The unit will lead us to the aim of logistics which is customer satisfaction..

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Know the different layers of logistics
2. Explain logistics as a competitive edge tool
3. Identify the seven Rights of customer’s service in logistics

3.0 MAIN CONTENT

3.1 Layers of Logistics Services

There are five main inter-related layers of logistics services that involve increasing levels of service and supply chain integration:

- i. First Party Logistics (1PL)
- ii. Second Party Logistics (2PL)
- iii. Third Party Logistics (3PL)
- iv. Fourth Party Logistics (4PL)
- v. Fifth Party Logistics (5PL)

First Party Logistics (1PL) or Own account transport.

It concerns beneficial cargo owners who are the shippers (such as a manufacturing firm delivering to customers) or the consignee (such as a retailer picking up cargo from a supplier). They dictate the origin (supply) and the destination (demand) of the cargo with distribution being an entirely internal process assumed by the firm. With globalization and the related outsourcing and offshoring of manufacturing, distribution services that used to be assumed internally tend to be contracted to external service providers.

Second Party Logistics (2PL)

It concerns the carriers that provide transport service over a specific segment of a transport chain. It could involve a maritime shipping company, a rail operator or a trucking company hired to haul cargo from an origin (e.g. a distribution centre) to a destination (e.g. a port terminal).

Third Party Logistics (3PL)

It concerns freight forwarders that could have stakes in a specific transport segment and its physical assets, but who offer comprehensive freight distribution services along transport chains. These services can involve warehousing, transloading, terminal operations and even forms of light manufacturing such as packaging and labelling (Rodrigue n.d.). A 3PL thus tries to organize the tasks related to physical distribution, so that parts and finished goods can be carried from their origin to their destination. It provides multiple logistics services for its clients and customers (Langley, Allen & Dale, 2004).

Fourth Party Logistics (4PL)

Fourth Party Logistics creates value by redesigning everything from the business perspective to processes as it manages logistics for carriers, forwarders or warehouses

(Deloitte, 2013). These often involve agreements (subcontracting) with 3PLs and 2PLs (Rodrigue n.d.).

4PL (also sometimes called a lead logistics provider) is a non-asset based company (i.e. they don't own their own trucks or warehouse facilities) but provide logistics consulting services to fully manage, design, and build supply chains. While the logistics and supply chain industry continues to be confused about the exact role and definition of 4PLs, emerging few categories of logistics consulting and management firms are emerging that are invaluable in managing large scale, complex supply chain functions from the top and overseeing innovative technology solutions (Logistics List, 2011).

Fifth Party Logistics (5PL)

A fifth party logistics provider (5PL) will aggregate the demands of the 3PL and others into bulk volume for negotiating more favourable rates with airlines and shipping companies. Non asset based, it will work seamlessly across all disciplines (Logistics management, 2011). These are firms who are mainly logistics service providers that plan, organize and implement logistics solutions on behalf of a contracting party by using the appropriate technologies as needed (Deloitte,2013). Fifth party logistic is often linked to E-business (logistics glossary n.d.).

SELF ASSESSMENT EXERCISE

1. Identify the different layers of logistics management.
2. How would you differentiate between third and fourth party logistics firms?

3.2 Logistics as a Competitive Edge

The importance of logistics as the main driver of competitiveness in the present knowledge economy can be identified as follows:

- i. Logistics is important, strategically and tactically in order to gain competitive advantage. It is now a tool employed by cutting edge managers in order to gain competitive advantage
- ii. Business is increasingly aware that well-managed logistics system can provide the

organization with a sustainable competitive advantage.

iii. Growing demand for time based logistics management has brought about

a. Streamline the flow of goods from supplier to customer

b. Reducing or eliminating activities that add time but not value

i. Appreciation of the importance of logistic is a relatively recent phenomenon in lower labour cost, large captive market and technical advantage and expertise. (Gourdin, 2010)

3.3 The Seven ‘Rights’ of Customer Service

Logistics is aimed at providing efficient customers services in an Organization. To achieve this Logistics aims at:

i. Right product

ii. Right quantity

iii. Right place

iv. Right customer

v. Right time

vi. Right condition

vii. Right cost

The above constitute the seven rights of customer service in the organization

The above is also called the fundamentals of logistics services

SELF ASSESSMENT EXERCISE

Clearly identify the seven Rights of customer service in logistics management

4.0 CONCLUSION

This unit provides knowledge of the different layers of logistics management. It clearly identifies the differences in each layer and functions performed. This unit presents logistics as a competitive edge for sustainability in the industry. We also learnt about the seven Rights of customer service in the logistics industry.

5.0 SUMMARY

The five main inter-related layers of logistics services that involve increasing levels of service and supply chain integration were identified to include the following:

- i. First Party Logistics (1PL)
- ii. Second Party Logistics (2PL)
- iii. Third Party Logistics (3PL)
- iv. Fourth Party Logistics (4PL)
- v. Fifth Party Logistics (5PL)

Key benefits of logistics and supply chain management were identified

They are as follows:

- i. Develops better customer relationship and service.
- ii. Creates better delivery mechanisms for products and services in demand with minimum delay.
- i. Improvises productivity and business functions.
- ii. Minimizes warehouse and transportation costs.
- iii. Minimizes direct and indirect costs.
- iv. Assists in achieving shipping of right products to the right place at the right time.
- vi. Enhances inventory management, supporting the successful execution of just-in time stock models.
- vii. Assists companies in adapting to the challenges of globalization, economic upheaval, expanding consumer expectations, and related differences.
- viii. Assists companies in minimizing waste, driving out costs, and achieving efficiencies throughout the supply chain process.

Logistics was identified as a driver of competitiveness for sustainability in the industry.

We equally identified the seven Rights of customer service in the logistics industry

6.0 TUTOR-MARKED ASSESSMENT.

As a main driver of competitiveness, logistics can make or break an Organization in today's globalized world. Discuss third statement.

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MODULE TWO
LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Unit 1: Logistics and Supply Chain Management

Unit 2: Supply Chain Synchronization

UNIT 1: LOGISTICS AND SUPPLY CHAIN MANAGEMENT

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

 3.1 Logistics and Supply Chain Management

 3.2 Objectives of supply Chain Management

 3.3 The Need for Supply Chain Management

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0 Reference/Further Reading

1.0 INTRODUCTION

In this unit, you will learn about logistics and supply chain management, its operations that are involved in supply chain service of raw materials and the flow of finished products in the industry. Supply Chain Management is involved in integrating the three key flows between the different stages, across the boundaries of the companies. They are; products/raw material flows, information flows and fund flows. You will learn about the objectives of supply chain management. You will know the needs for supply chain management.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

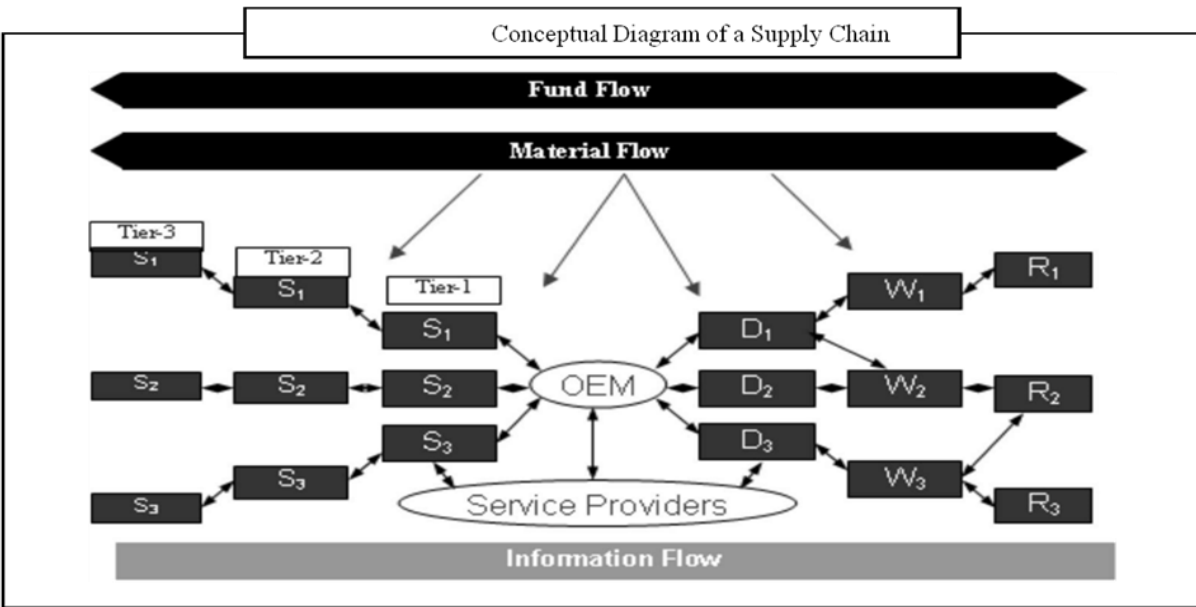
1. Understand and know logistics and supply chain management
2. Identify the various objectives of supply chain management
3. Identify the need for supply chain management operations and services.

3.0 MAIN CONTENT

3.1 Logistics and Supply Chain Management

One of the main functions of logistics is to make the goods and services available to the place where there is demand for the product. Supply chain is the process that is involved from the procurement of raw materials till the outcome as finished products. The logistics and the supply chain management are like two sides of a coin. They are interrelated and they function on their own simultaneously. Some experts distinguish supply chain management and logistics while others consider the terms to be interchangeable. From the point of view of an enterprise, the scope of supply chain management is usually bounded on the supply side by your supplier's suppliers and on the customer side by your customer's. Logistics plays an important role between sources of demand and sources of supply. The supply chain management is the planning and management of all activities involved in sourcing and procurement, conversions, and logistics management activities, including coordination and collaboration with suppliers, intermediaries, third party service providers and customers to facilitate integration of supply and demand management within and across companies.

Supply chain management is used in filling the gaps and the logistics is used in closing the gaps. Thus, we can say that the supply chain management and logistics are part and parcel of a solution to the same purpose. Overall productivity of the organization increases if the supply chain management and logistics goes hand in hand.



Source: Upendra Kachru, (2010), "Exploring the Supply Chain," Excel Books

Supply Chain Management is involved with integrating three key flows, between the different stages, across the boundaries of the companies:

- i. Product/Materials: This is the most obvious and visible part of the supply chain. Physically, the flow manifests itself in the form of goods and services. This is also called the 'value flow'. Goods and service flows follow a similar sequence. Example: Goods flows constitute raw materials (including material being transported), work in process, finished goods, and spares, and reverse flows due to returns, rework or recycling of the goods. The vendor side of these flows is called 'upstream' and the flows towards the customer are referred to as 'downstream'.
- ii. Flow of information: Information flows allow the various supply chain partners to coordinate their long-term plans, and to control the day-to-day flow of goods and material to the supply chain. It consists of flows both from vendor to the customer and from the customer to the vendor. The downstream flow of information has important components like capacity estimates for plans, stocks available, dispatch advices, stock transfer notes, quality assurance reports, warranties, etc. The upstream components of information flow are inputs for forecasts, marketing plans, dispatch plans, production plans and procurement quantities and timing, orders from customers and dealers, quality feedback,

and warranties.

iii. Funds: This is the commercial part of the supply chain, and runs counter to the direction of the value flow. It reflects the money paid with respect to the transfer of title and/or service delivery in the supply chain. Other features of cash flow are credit periods/advances for payments from customers/dealers, and to vendors. The cash flow determines how the value flow is financed by the various actors in the supply chain.

SELF ASSESSMENT EXERCISE

Supply Chain Management is involved with integrating three key flows. Name and discuss them

3.2 Objectives of Supply Chain Management

The following are the major objectives of supply chain management that are implemented by various organisations to enhance their competitiveness.

Logistics: “Keeping the cost of transporting materials as low as possible consistent with safe and reliable delivery.” Here the supply chain management system enables a company to have constant contact with its distribution team, which could consist of trucks, trains, or any other mode of transportation.

The system can allow the company to track where the required materials are at all times. It may as well be cost effective to share transportation costs with a partner company if shipments are not large enough to fill a whole truck. This again allows the company to make good decisions

Fulfilment: Ensuring the right quantity of parts for production or products for sale arrive at the right time. This is enabled through efficient communication, ensuring that orders are placed with the appropriate amount of time available to be filled. The supply chain management system also allows a company to constantly see what is on stock and making sure that the right quantities are ordered to replace stock.

Production: Ensuring production lines function smoothly because high-quality parts are available when needed.” Production can run smoothly as a result of fulfilment and logistics being implemented correctly. If the correct quantity is not ordered and delivered at the requested time, production will be halted, but having an effective supply chain

management system in place will ensure that production can always run smoothly without delays due to ordering and transportation.

Costs: “Keeping the cost of purchased parts and products at acceptable levels.” Supply chain management reduces costs by increasing inventory turnover on the shop floor and in the warehouse controlling the quality of goods thus reducing internal and external failure costs and working with suppliers to produce the most cost efficient means of manufacturing a product.

Revenue & profit: “Ensuring no sales are lost because shelves are empty. Managing the supply chain improves a company’s flexibility to respond to unforeseen changes in demand and supply. Because of this, a company has the ability to produce goods at lower prices and distribute them to consumers quicker than companies without supply chain management thus increasing the overall profit.

Cooperation: “Among supply chain partners ensures 'mutual success.’” Collaborative planning, forecasting and replenishment (CPFR) is a “longer-term commitment, joint work on quality, and support by the buyer of the supplier’s managerial, technological, and capacity development.” This relationship allows a company to have access to current, reliable information, obtain lower inventory levels, cut lead times, enhance product quality, improve forecasting accuracy and ultimately improve customer service and overall profits. The suppliers also benefit from the cooperative relationship through increased buyer input from suggestions on improving the quality and costs and through shared savings. Consumers can benefit as well through the higher quality goods provided at a lower cost.

3.3 Need for Supply Chain Management

The need of supply chain management has been identified as follows:

- i. Improve operations
- ii. Increasing levels of outsourcing
- iii. Increasing transportation costs
- iv. Competitive pressures
- v. Increasing globalization

- vi. Increasing importance of e-commerce and
- vii. Manage inventories

SELF ASSESSMENT EXERCISE

Identify and discuss the major objectives of supply chain management which when implemented by an Organization enhance its competitiveness

4.0 CONCLUSION

Logistics and supply chain management are the main functions that make goods available where there are demand for the product by the customer. Supply chain is the process involved from the procurement of raw materials from the producer to final consumer. Logistics enables supply chain to actualise more efficiently.

5.0 SUMMARY

In this unit, we have discussed logistics and supply chain, how they have aided supply chain service of materials and the finished product in the industry. We looked at how supply chain management is used in filling the gaps and how logistics is used in closing the gaps along the supply chain. The main purpose of logistics and supply chain management is to increase the overall productivity of an organization if the supply management and logistics are harmonized. We noted that supply chain management is involved with integrating three key flows between the different stages across boundaries of the companies. The factors are products/ materials, flow of information and funds. We identified key objectives of supply chain management that enhance competitiveness in the organization to include logistics, fulfillment, production, cost, revenue and profit, and corporation. We identified the challenges of supply chain management in an organization. They are:

- i. Improved operations
- ii. Increasing levels of outsourcing
- iii. Increasing transportation costs
- iv. Competitive pressures
- v. Increasing globalization
- vi. Increasing importance of e-commerce and

vii. Management of inventories

viii. We equally discussed supply chain synchronization and its impact on procurement performance cycles.

6.0 TUTOR-MARKED ASSESSMENT

Discuss the activities required to facilities an orderly flow of materials and finished inventory.

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UNIT 2: SUPPLY CHAIN SYNCHRONIZATION

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Supply Chain Synchronization

3.2 Performance Cycle Structure of Supply Chain Synchronization

3.3 Market Distribution Performance Cycle of Supply Chain Synchronization

3.4 Manufacturing Support Performance Cycle of Supply Chain Synchronization

3.5 Procurement Performance Cycle of Supply Chain Synchronization

3.6 Performance Cycle Uncertainty of Supply Chain Synchronization

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0 Reference/Further Reading

1.0 INTRODUCTION

In this unit, you will learn about supply chain synchronization and its importance in the achievement and management of end-to-end supply chain flows. You will learn about performance cycles structure of supply chain synchronization, market distribution performance cycles of supply chain, manufacturing supply cycle, procurement performance cycle and performance cycle uncertainty of supply chain synchronization.

2.0. OBJECTIVES

At the end of this Unit, you will be able to:

1. Understand the meaning of supply Chain Synchronization
2. Identify Performance Cycle Objectives of Supply Chain Synchronization
3. Explain the Market Distribution of Performance Cycle of Supply Chain Synchronization

4. Understand Manufacturing Support Performance Cycle
5. Explain the Procurement Performance Cycle of Supply Chain Synchronization
6. Understand Performance Cycle Uncertainty of Supply Synchronization

3.0 MAIN CONTENT

3.1 Supply Chain Synchronization

Synchronization is the ability to coordinate, organize and manage end-to-end supply chain flows – products, services, information, and financials – in such a way that the supply chain functions as a single entity. Supply chain synchronization is the ability to coordinate, organize and manage end-to-end supply chain flows – including products, services, information and financials – in such a way that the supply chain functions as a single entity.

In other words, it is a shared objective for supply chain members who are willing to work together to determine how best to perform the overall activities and tasks that are required to meet customer demand. With synchronized supply chains, the overall goal is the same as with traditional supply chain management.

There are three key differences, however. One is that companies work with their vendors in order to coordinate their processes and to achieve simultaneous production. Another difference is that the Internet and other types of technology are incorporated into the process to make those processes run smoother and more efficiently.

Finally, the buying organization will need to hire, train, and restructure their workforce in order to be able to accommodate this type of supply chain management.

3.2 Performance Cycle Structure of Supply Chain Synchronization

The performance cycle represents the elements of work necessary to complete the logistics related to marketing distribution, manufacturing, or support procurement. It consists of specific work ranging from identification of requirements to product delivery. aspects of work, the performance cycle is the primary unit of analysis for logistical synchronization because it integrates various aspects of work.

At a basic level, information and transportation must link all firms functioning in a supply chain. The operational locations that are linked by information and transportation

are referred to as nodes. In addition to supply chain nodes and links, performance cycles involve inventory assets.

Inventory is measured in terms of the asset investment level allocated to support operations at a node or while a product or material is in transit. Inventory committed to supply chain nodes consists of base stock and safety stock. Base stock is inventory held at a node and is typically one-half of the average shipment size received. Safety stock exists to protect against variance in demand or operational lead time. It is at and between supply chain nodes that work related to logistics is performed. Inventory is stocked and flows through nodes, necessitating a variety of different types of materials handling and, when necessary, storage. While a degree of handling and in transit storage takes place within transportation, such activity is minor in comparison to that typically performed within a supply chain node, such as a warehouse. Performance cycles become dynamic as they accommodate input/output requirements.

The input to a performance cycle is demand, typically in the form of a work order that specifies requirements for a product or material. A high-volume supply chain will typically require a different and wider variety of performance cycles than a chain having fewer throughputs.

When operating requirements are highly predictable or relatively low-volume throughput, the performance cycle structure required to provide supply chain logistical support can be simplified.

Supply chain output is the level of performance expected from the combined logistical operations that support a particular arrangement. To the extent that operational requirements are satisfied, the combined logistical performance cycle structure of the supply chain is effective in accomplishing its mission.

Efficiency of a supply chain is a measure of resource expenditure necessary to achieve such logistical effectiveness. The effectiveness and efficiency of logistical performance cycles are key concerns in supply chain management.

3.3 Market Distribution Performance Cycles of Supply Chain Synchronization

Market distribution operations are concerned with processing and delivering customer

orders. Market distribution is integral to sales performance because it provides timely and economical product availability. The overall process of gaining and maintaining customers can be broadly divided into transaction-creating and physical-fulfilment activities. The transaction-creating activities are advertising and selling.

The physical fulfilment activities include:

- i. order transmission,
- ii. order processing,
- iii. order selection,
- iv. order transportation, and
- v. customer delivery.

From a logistical perspective, market distribution performance cycles link a supply chain with end customers.

3.4 Manufacturing Support Performance Cycles of Supply Chain Synchronization

Manufacturing is the node in a supply chain that creates and forms value. To a significant degree, manufacturing efficiency depends on logistical and supply chain support to establish and maintain an orderly and economic flow of materials and work-in-process inventory as required by production schedules.

The high level of specialization required in market distribution and procurement can overshadow the importance of positioning and timing inventory movement to support manufacturing. This is because customers and suppliers are not involved; manufacturing logistics is less visible than its counterparts. The identification of manufacturing logistical support as a distinct operating area is a relatively new concept.

The justification for focusing on performance cycles to support production is found in the unique requirements and operational constraints of flexible manufacturing strategies. To provide maximum flexibility, traditional manufacturing practices related to economy of scale are being re-evaluated to accommodate quick product switchover and shorter production runs. Exacting logistical support between supply chain participants is required to perfect such time sensitive manufacturing strategies.

It is important to once again stress that the mission of logistical manufacturing support is

to facilitate the what, where, and when of production, not the how. The goal is to support all manufacturing requirements in the most efficient manner.

3.5 Procurement Performance Cycles of Supply Chain Synchronization

Several activities or tasks are required to facilitate an orderly flow of materials, parts, or finished inventory along a supply chain:

1. Sourcing,
2. Order placement and expediting,
3. Transportation, and
4. Receiving.

These activities are required to complete the procurement processes.

Once materials, parts or resale products are received, the subsequent storage, handling and transportation requirements to facilitate either manufacturing or market distribution are appropriately provided by other performance cycles. Because of the focus on external supplies, this facet of procurement is referred to as inbound logistics.

3.6 Performance Cycle Uncertainty of Supply Chain Synchronization

A major objective of logistics in all operating areas is to reduce performance cycle uncertainty. The dilemma is that the structure of the performance cycle itself, operating conditions, and the quality of logistical operations all combine randomly to introduce operational variance. The performance cycle is limited to finished goods inventory delivery. The time distributions statistically reflect performance history for each task of a typical performance cycle. The minimum to maximum time historically is required to complete each task and the related time distribution for the overall performance cycle.

SELF ASSESSMENT EXERCISE

Identify the physical fulfillment activities involved in gaining and maintaining customers

4.0 CONCLUSION

Synchronization is the ability to coordinate, organize and manage end- to-end supply chain flows- product, services, information and financials in a single way that the supply chain function as an entity. Procurement Performance cycle of supply chain synchronization involves several activities required to facility orderly flow of materials,

parts or finished inventory along a supply chain. These activities are needed in order to complete the procurement processes. You also learnt about performance cycle uncertainty of supply chain synchronization.

5.0 SUMMARY

In this unit you have learnt that supply chain synchronization is the activity that enables us to coordinate, organize and manage end-to-end supply chain flows. These activities include products, services, information and financial transactions in such a way that the supply chain functions as a single entity. Supply Chain synchronization activities include:

- a. Performance cycle structure
- b. Market distribution performance cycle
- c. Manufacturing support performance of cycles
- d. Procurement performance cycles and
- e. Performance cycle uncertainty supply chain synchronization

6.0 TUTOR-MARKED QUESTION

- i. The overall process of gaining and maintain customers can be broadly divided into two. Identify them.
- ii. Carefully identify the physical fulfillment activities involved in gaining and maintaining customers.

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MODULE THREE

ORGANIZATION AND MATERIALS FLOWS IN LOGISTICS

Unit 1: Organization and Operation of Materials

Unit 2: Warehousing and storage

Unit 3: Distribution Chemicals

UNIT 1: ORGANIZATION AND OPERATION OF MATERIALS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content:

3.1 Inventory Flow

3.2 Planning and coordination flow

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0 References/Further Reading

1.0 INTRODUCTION

Organization and coordination of material flow is important in the logistics system. The aim of organization and coordination is to manage inventory flow in logistics operation which comprises of physical distribution, manufacturing support and procurement. Planning and coordination of flows is very important for the achievement of efficient material flows.

2.0 OBJECTIVES

At the end of this unit, you should be able to;

1. Understand the inventory flow of materials in the logistics system.
2. Identify the main components of logistical operation in material flow.

3. Understand the importance of planning and coordination in material flow.

3.0 MAIN CONTENT

3.1 Inventory Flow

The operational management of logistics is concerned with movement and storage of materials and finished products. Logistical operations start with the initial shipment of a material or component part from a supplier and are finalized when a manufactured or processed product is delivered to a customer.

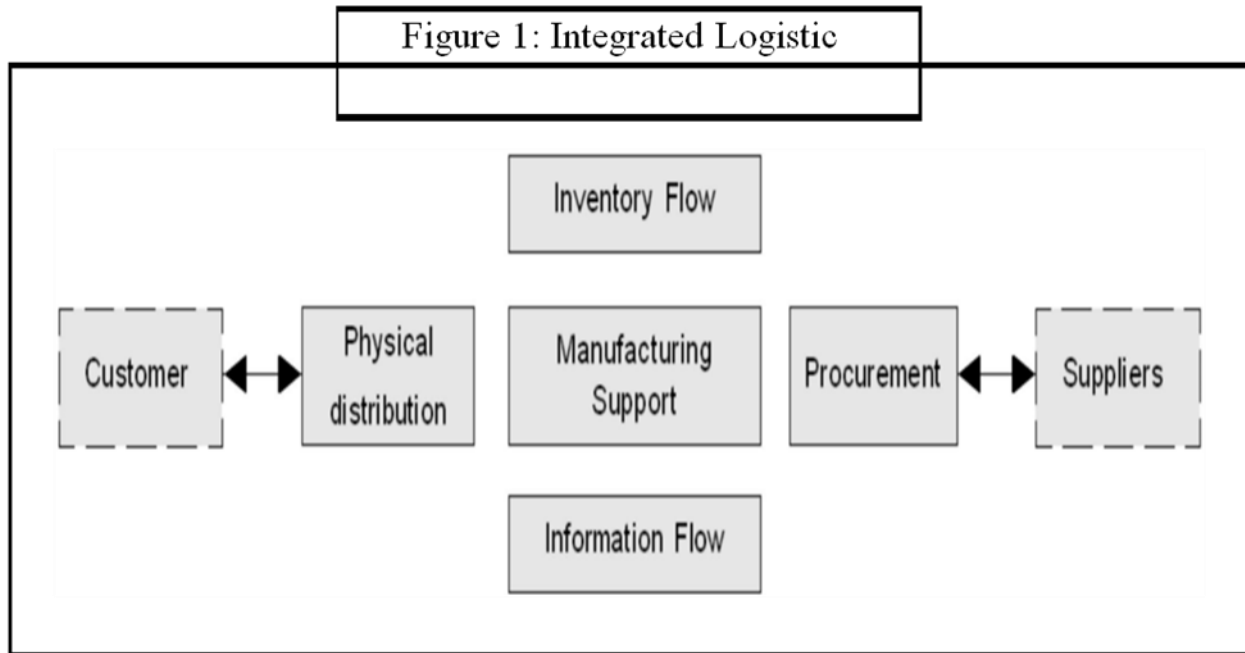
From the initial purchase of a material or component, the logistical process adds value by moving inventory when and where needed. Provided all went well, a material gains value at each step of transformation into finished inventory.

In other words, an individual part has greater value after it is incorporated into a machine. Likewise, the machine has greater value once it is delivered to a buyer. To support manufacturing, work-in-process inventory must be moved to support final assembly.

The cost of each component and its movement becomes part of the value added process. The final or meaningful value that is added occurs only with final ownership transfer of products to customers when and where specified.

For a large manufacturer, logistical operations may consist of thousands of movements, which ultimately culminate in the delivery of products to an industrial user, retailer, wholesaler, dealer, or other customer. The significant point is that regardless of the size and type of enterprise, logistics is essential and requires continuous management attention.

For better understanding, it is useful to divide logistical operations into three areas: physical distribution, manufacturing support, and procurement. These components are illustrated in the centre of Figure 1 below as the combined logistics operational units of an enterprise.



Source: Reji Ismail (2008), "Logistics Management," Excel Books

Figure 1: Integrated Logistics

Source: Reji Ismail (2008), "Logistics Management," Excel Books

Physical Distribution

The area of physical distribution concerns movement of a finished product to customers. In physical distribution, the customer is the final destination of a marketing channel. The availability of the product is a vital part of each channel participant's marketing effort. Even a manufacturer's agent, which typically does not own inventory, must depend on inventory availability to perform expected marketing responsibilities.

Unless a proper assortment of products is efficiently delivered when and where needed, a great deal of the overall marketing effort can be jeopardized. It is through the physical distribution process that the time and space of customer service become an integral part of marketing. Thus, physical distribution links a marketing channel with its customers.

To support the wide variety of marketing systems that exist in a highly commercialized nation, many different physical distribution systems are utilized. All physical distribution systems have one common feature: they link manufacturers, wholesalers, and retailers

into marketing channels that provide product availability as an integral aspect of the overall marketing process.

Manufacturing Support

The area of manufacturing support concentrates on managing work-in-process inventory as it flows between stages of manufacturing. The primary logistical responsibility in manufacturing is to participate in formulating a master production schedule and to arrange for timely availability of materials, component parts, and work-in-process inventory.

Thus, the overall concern of manufacturing support is not how production occurs but rather what, when and where products will be manufactured. Manufacturing support has one significant difference when compared with physical distribution. Physical distribution attempts to service the desires of customers and therefore must accommodate the uncertainty of consumer and industrial demand.

Manufacturing support involves movement requirements that are under the control of the manufacturing enterprise. The uncertainties introduced by random customer ordering and erratic demand accommodated by physical distribution are not present in most manufacturing operations.

From the viewpoint of overall planning, the separation of manufacturing support from outbound (physical distribution) and inbound (procurement) activities provides opportunities for specialization and improved efficiency.

Procurement

Procurement is concerned with purchasing and arranging inbound movement of materials, parts, and/or finished inventory from suppliers to manufacturing or assembly plants, warehouses, or retail stores. Depending on the situation, the acquisition process is commonly identified by different names. In manufacturing, the process of acquisition is typically called purchasing.

In government circles, acquisition has traditionally been referred to as procurement. In retailing and wholesaling, buying is the most widely used term. In many circles, the process is referred to as inbound logistics. Although differences do exist concerning

acquisition situations, the term procurement is used here to include all types of purchasing.

The term material is used to identify inventory moving inbound to an enterprise, regardless of its degree of readiness for resale. The term product is used to identify inventory that is available for consumer purchase.

In other words, materials are involved in the process of adding value through manufacturing, whereas products are ready for consumption. The fundamental distinction is that products result from the value added to material during manufacturing, sorting, or assembly.

Procurement is concerned with availability of the desired material assortments where and when needed. Whereas physical distribution is concerned with outbound product shipments, purchasing is concerned with inbound materials, sorting or assembly. Under most marketing situations involving consumer products, such as a grocery manufacturer that ships to retail food-chain, the manufacturer's physical distribution is the same process as a retailer's procurement operations. Although similar or even identical transportation requirements may be involved, the degree of managerial control and risk related to performance failure varies substantially between physical distribution and procurement.

Information Flow

Information flow identifies specific locations within a logistical system that have requirements. Information also integrates the three operating areas. The primary objective of developing and specifying requirements is to plan and execute integrated logistical operations. Within individual logistics areas, different movement requirements exist with respect to size of order, availability of inventory, and urgency of movement. The primary objective of information sharing is to reconcile these differentials.

In the discussion that follows it is important to stress that information requirements parallel the actual work performed in physical distribution, manufacturing support, and procurement. Whereas these areas contain the actual logistics work, information facilitates coordination of planning and control of day-to-day operations. Without

accurate information the effort involved in the logistical system can be wasted.

Logistical information involves two major types of flows: coordination flows and operational flows. The objective at this point is to provide an introductory overview of the information requirements necessary to drive an integrated logistics system.

SELF ASSESSMENT

1. Identify the various components of logistical operation in inventory flow.
2. Carefully explain them

3.2 Planning and Coordination Flows

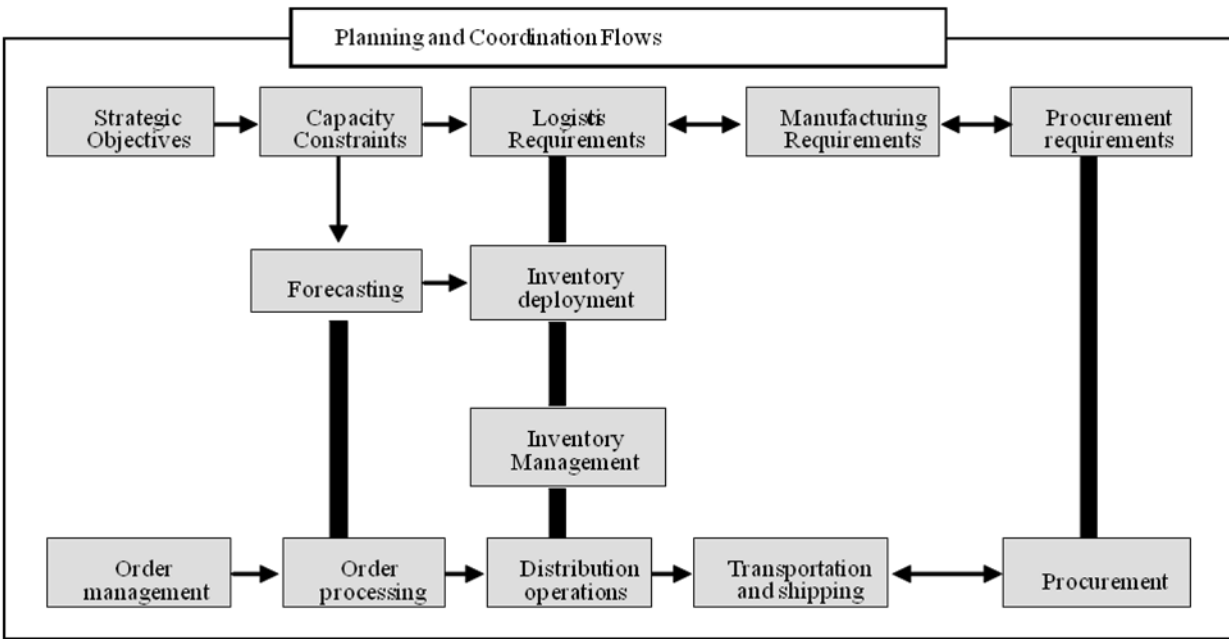
Coordination is the backbone of overall information system architecture among value chain participants. Coordination results in plans specifying:

1. Strategic objectives,
2. Capacity constraints,
3. Logistical requirements,
4. Inventory deployment,
5. Manufacturing requirements,
6. Procurement requirements, and
7. Forecasting.

The primary drivers of the overall value chain are the strategic objectives that result from marketing and financial goals. Strategic objectives detail the nature and location of customers, which are matched to the required products and services to be performed.

The financial aspect of strategic plans detail resources required to support inventory, receivables, facilities, equipment, and capacity. Capacity constraints coordinate internal and external manufacturing requirements.

For nonmanufacturing participants in the value chain, this form of capacity planning is not required. Given strategic objectives, capacities constraints identify limitations, barriers, or bottlenecks within basic manufacturing capabilities and determine appropriate outsource requirements.



Source: Reji Ismail, (2008), "Logistics Management," Excel Books

Logistics requirements specify the work that distribution facilities, equipment, and labour must perform to implement the capacity plan. Using inputs from forecasting, promotional scheduling, customer orders, and inventory status, logistics requirements specify value chain performance.

Inventory deployments are the interfaces between planning/coordination and operations that detail the timing and composition of where inventory will be positioned. A major concern of deployment is to balance timing and consolidation to create efficiency as inventory flows through the value chain. Inventory is unique in that it is an integral part of the planning/coordination and operational flows involved in logistics. From an information perspective, deployment specifies the what, where, and when of the overall logistics processes

Procurement requirements schedule material and components for inbound shipment to support manufacturing requirements. In retailing and wholesaling situations, procurement involves maintaining product supplies.

In manufacturing situations, purchasing must facilitate inbound materials and component parts from suppliers. Regardless of the situation, purchasing coordinates decisions concerning supplier qualifications, degree of desired speculation, third-party

arrangements, and feasibility of long-term contracting.

Operational Requirements

The second aspect of information requirements is concerned with directing operations to receive, process, and ship inventory as required supporting customer and purchasing orders. Operational information requirements deal with

1. Order management,
2. Order processing,
3. Distribution operations,
4. Inventory management,
5. Transportation and shipping, and
6. Procurement.

i. Order management refers to the transmission of requirements information between value chains members involved in finished product distribution. The primary activity of order management is accurate entry and qualification of customer orders. This transfer of requirements between value chain participants is typically achieved by phone, mail, facsimile (fax), or electronic data interchange. The impact of information technology on order management is extensive. The availability of low-cost information transfer has revolutionized the order management process.

ii. Order processing allocates inventory and assigns responsibility to satisfy customer requirements. The traditional approach has been to assign available inventory or planned manufacturing to customers according to predetermined priorities. In technology-rich order processing systems, two-way communication linkage is maintained with customers to generate a negotiated order that satisfies customers within the constraints of planned logistical operations.

iii. Distribution operations involve information flows required to facilitate and coordinate performance within logistics facilities. The primary purpose of a logistical facility is to provide material or product assortments to satisfy order requirements.

Emphasis is placed on scheduled availability of the desired assortment with minimal duplication and redundant work effort. The key to distribution operations is to store and

handle specific inventory as little as possible while still meeting customer order requirements.

iv. Inventory management is concerned with using information to implement the logistics plan as specified. Using a combination of human resources and information technology, inventory is deployed and then managed to satisfy planned requirements. The work of inventory management is to make sure that the overall logistical system has appropriate resources to perform as planned.

v. Transportation and shipping information directs the movement of inventory. To achieve efficiency, it is important to consolidate orders so as to fully utilize transportation capacity. It is also necessary to ensure that the required transportation equipment is available when needed.

vi. Finally, because ownership transfer often results from transportation, supporting documentation is required. Procurement is concerned with the information necessary to complete purchase order preparation, modification, and release while ensuring overall supplier compliance.

In many ways, information related to procurement is similar to that involved in order processing. Both forms of information exchange serve to facilitate operations that link a firm with its customers and suppliers.

The primary difference between procurement and order processing is the type of operation that results from requirements transfer. The overall purpose of operational information is to provide the detailed data required for integrated performance of physical distribution, manufacturing support, and procurement operations.

Whereas planning/coordination flows provide information concerning planned activities, operational requirements are needed to direct the day-to-day logistics work. Within the context of information and inventory flows, the managers within an enterprise must achieve some specific objectives to fully exploit logistical competency.

SELF ASSESSMENT EXERCISE

Coordination in material flow results in planning which specifies certain objectives. Identify the objectives.

4.0 CONCLUSION

The management of inventory flow in logistical operation comprises of three main functions namely; physical distribution, procurement and manufacturing support. The efficient achievement of inventory flow organization depends on planning and coordination of information flows in the logistical operation.

5.0 SUMMARY

The operational management of logistics is concerned with movement and storage of materials and finished products. This deals with inventory flow whose main activity are procurement, manufacturing support and physical distribution. The management of information flow is very important in organization and coordination of material flows in inventory management in logistics operation, planning and coordination is very important in inventory flow. Coordination in inventory flow results in plan to specify the following; strategic objectives, capacity constraints, logistical requirements, inventory deployment, manufacturing requirements, procurement requirements and forecasting. Also, operational information requirements deal with the following; order management, order processing, distribution operations, inventory management, transportation and shipping and procurement.

6.0 TUTOR MARKED ASSIGNMENT

Identify and discuss the operational information requirements in logistical operation of inventory flow operation in logistics,

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UNIT 2: WAREHOUSING AND STORAGE

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content:

3.1 Warehousing

3.2 Storage operations

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0 References/Further Readings

1.0 INTRODUCTION

The purpose of warehousing and storage in logistics and supply chain is to keep raw materials needed for operation, and hold partially completed assemblies and products alone the production and hold inventory used to balance and buffer the variation between production schedules and demand. There are different types of warehouses namely; distribution warehouses and distribution centers and local warehouses used to shorten transportation distances to permit rapid responses to consumer demands. The different functions of warehouse will be known in this unit. You will be able to know warehouse activity profiling and what constitutes the activity profile in warehousing operation. Receiving principles and the activities involved in receipt will be learnt. Put away which is order picking in reverse and the principles of put away will also be learnt.

This unit will also cover storage operations and the four basic techniques for optimizing storage operations. You will learn what constitutes order picking operation in warehousing and the different ways to improve order picking productivity. You must pay attention to this unit in order to understand warehousing and storage operations in logistics and supply chain management.

2.0 OBJECTIVES

At the end of this unit, students should be able to :

1. Understand the Warehousing fundamentals in production and operation
2. Identify the functions in the Warehouse and warehouse Activity profiling
3. Know the receiving principles and Put-way in warehouse and storage operations
4. Understand storage operations in the logistics services
5. Identify the order picking operations in warehouse and storage
6. Understand the travelling and Extracting Items principles
7. Identify the picking and sorting logistics services.
8. Understand the shipping principles from Warehouse to the consumer

3.0 MAIN CONTENT

3.1 Warehousing Fundamentals

The warehouse and its operational activities falls within four walls mission of the warehouse. The Missions of a Warehouse in a distribution network is that it plays the following roles:

i. Raw material and component warehouses: Hold raw materials at or near the point of induction into a manufacturing or assembly process.

ii. Work-in-process warehouses: Hold partially completed assemblies and products at various points along an assembly or production line.

iii. Finished goods warehouses: Hold inventory used to balance and buffer the variation between production schedules and demand.

For this reason, the warehouse is usually located near the point of manufacture and is often characterized by the flow of full pallets in and full pallets out assuming that product size and volume warrant pallet-sized loads. A warehouse serving only this function may have demands ranging from monthly to quarterly replenishment of stock to the next level of distribution.

iv. Distribution warehouses and distribution centres: Accumulate and consolidate products from various points of manufacture within a single firm or from several firms for combined shipment to common customers. Such a warehouse may be located central

to either production locations or the customer base. Product movement may be typified by full pallets or cases in and full cases or broken case quantities out. The facility is typically responding to regular weekly or monthly orders. Fulfilment warehouses and fulfilment centres: Receive, pick, and ship small orders for individual consumers.

v. Local warehouses: Distributed in the field in order to shorten transportation distances to permit rapid response to customer demand. Frequently, single items are picked, and the same item may be shipped to the customer every day.

Functions in the Warehouse

No matter the name or role, warehouse operations have a fundamental set of activities in common. The following list includes the activities found in most warehouses.

The functions may be defined briefly as follows:

1. Receiving is the collection of activities involved in
 - a. the orderly receipt of all materials coming into the warehouse,
 - b. providing the assurance that the quantity and quality of such materials are as ordered, and
 - c. Disbursing materials to storage or to other organizational functions requiring them.
2. Pre-packaging is performed in a warehouse when products are received in bulk from a supplier and subsequently packaged singly, in merchandisable quantities, or in combinations with other parts to form kits or assortments. An entire receipt of merchandise may be processed at once, or a portion may be held in bulk form to be processed later. This may be done when packaging greatly increases the storage-cube requirements or when a part is common to several kits or assortments.
3. Put away is the act of placing merchandise in storage. It includes the material handling, location verification, and product placement.
4. Storage is the physical containment of merchandise while it is awaiting a demand. The storage method depends on the size and quantity of the items in inventory and the handling characteristics of the product or its container.
5. Order picking is the process of removing items from storage to meet a specific demand. It is the basic service a warehouse provides for customers and is the function

around which most warehouse designs are based.

6. Packaging and/or pricing may be done as an optional step after the picking process. As in the pre-packaging function, individual items or assortments are boxed for more convenient use. Waiting until after picking to perform these functions has the advantage of providing more flexibility in the use of on-hand inventory. Individual items are available for use in any of the packaging configurations right up to the time of need. Pricing is current at the time of sale. Pre pricing at manufacture or receipt into the warehouse inevitably leads to some repricing activity as price lists are changed while merchandise sits in inventory. Picking tickets and price stickers are sometimes combined into a single document.

7. Sortation of batch picks into individual orders and accumulation of distributed picks into orders must be done when an order has more than one item and the accumulation is not done as the picks are made.

8. Packing and shipping may include the following tasks:

- a. Checking orders for completeness
- b. Packaging merchandise in an appropriate shipping container
- c. Preparing shipping documents, including the packing list, address label, and bill of lading
- d. Weighing shipments to determine shipping charges
- e. Accumulating orders by outbound carrier
- f. Loading trucks (in many instances, this is a carrier's responsibility).

Warehouse Activity Profiling

A warehouse activity profile is made up primarily of an order activity profile and an item activity profile. The order activity profile includes the:

- a. Order mix distributions
- b. Lines per order distribution
- c. Cube per order distribution
- d. Lines and cube per order distribution

Item Activity Profile

The item activity profile is used primarily to slot the warehouse, to decide for each item

1. what storage mode the item should be assigned to,
2. how much space the item should be allocated in the storage mode, and
3. where in the storage mode the item should be located.

The item activity profile includes the following activity distributions:

- a. Item-popularity distribution
- b. Cube-movement/volume distribution
- c. Popularity-volume distribution
- d. Order completion distribution.

Receiving Principles

Receiving is the setup for all other warehousing activities. If we don't receive merchandise properly, it will be very difficult to handle it properly in put away, storage, picking, or shipping. If allow to be damaged or inaccurate deliveries in the door, we are likely to ship damaged or inaccurate shipments out the door. The world-class receiving principles presented here are meant to serve as guidelines for streamlining receiving operations. They are intended to simplify the flow of material through the receiving process and to insure the minimum work content is required.

Minimizing work content, mistakes, time, and accidents is accomplished in logistics by reducing handling steps. The world-class receiving practices are as follows:

- a. Direct shipping: For some materials, the best receiving is no receiving. In direct (or drop) shipping, vendors bypass our warehouse completely and ship directly to the customer. Hence, all the labour, time, and equipment normally consumed and all the mistakes and accidents that often occur in the warehouse are eliminated.
- b. Cross-docking: When material cannot be shipped directly, the next best option may be cross docking. In cross-docking, there are:
 - Loads are scheduled for delivery into the warehouse from vendors
 - Inbound materials are sorted immediately into their outbound orders
 - Outbound orders are transported immediately to their outbound dock
 - There is no receiving staging or inspection

- There is no product storage

In so doing, the traditional warehousing activities involving receiving inspection, receiving staging, put away, storage, pick location replenishment, order picking, and order assembly are eliminated.

- Receiving scheduling

It is true that premeditated cross-docking requires the ability to schedule inbound loads to match outbound requirements on a daily or even hourly basis.

In addition, balancing the use of receiving resources—dock doors, personnel, staging space, and material handling equipment—requires the ability to schedule carriers and to shift time-consuming receipts to off peak hours. Through Internet, EDI, and/or fax links, companies have improved access to schedule information on inbound and outbound loads.

- Pre-receiving

The rationale for staging at the receiving dock, the most time and space intensive activity in the receiving function, is often the need to hold material for location assignment, product identification, and so on.

This information can often be captured ahead of time by having the information communicated by the vendor at the time of shipment via the Internet, EDI link, or via fax notification. In some cases, the information describing an inbound load can be captured on a smart card, enabling immediate input of the information at the receiving dock.

- Receipt preparation

The most time we ever have available to prepare a product for shipment is at the moment it is received. Once the demand for a product has been received, there is precious little time available for additional preparation of the product prior to shipment. Hence, any material processing that can be accomplished ahead of time should be accomplished.

Those preparatory activities include:

- i. Pre-packaging in issue increments. At a large office supplies distributor, quarter, and half-pallet loads are built at receiving in anticipation of orders being received in those quantities.

ii. Customers are encouraged to order in those quantities by quantity discounts.

iii. Applying necessary labels and tags.

- Cubing and weighing for storage and transport planning.

i. Product cube and weight information is used to make a myriad of key warehouse design and operating decisions, yet few organizations have reliable cube information on their products.

Put away

Put away is order picking in reverse. Many of the principles that streamline the picking process work well for put away. In order, the world-class principles for put away are:

- Direct put away: One of our large healthcare clients does not allow staging space in their warehouse layouts. They force warehouse operators to put goods away immediately upon receipt as opposed to the delays and multiple handlings that are characteristic of traditional receiving and put away activities. When material cannot be cross-docked, material handling steps can be minimized by bypassing receiving staging and putting material away directly to primary picking locations, essentially replenishing primary locations from the receiving dock.

- Directed put away: Left to their own devices, most put away operators naturally choose put away locations that are easiest to locate nearest the floor, nearest their friend, nearest the break room using any criteria except where the put away should be located to maximize storage density and operating productivity. The warehouse management system (WMS) should direct the put away operators to place each pallet or case in the location that maximizes location and cube utilization, insures good product rotation, and maximizes retrieval productivity batched and sequenced put away sort inbound materials for efficient put away. Just as zone picking and location sequencing are effective strategies for improving order picking productivity, inbound materials can and should be sorted for put away by warehouse zone and by location sequence.

- Interleaving and Continuous Moves: Combine put away and retrievals when possible

SELF ASSESSMENT EXERCISE

Identify the activities you would find in most warehouses in logistics operations

3.2 Storage Operations

Because there are still good reasons to hold inventory, we still need efficient means for storing inventory. The four basic techniques for optimizing storage operations by maximizing storage density and retrieval productivity are

- Storage mode optimization

Assign each item to its least cost storage mode. Based on each item's demand and dimensional characteristics, each storage mode's capabilities and costs, and general planning parameters, each item should be housed in the storage mode that minimizes the cost of storage and handling for the item. For pallet storage, a decision must be made for each item as to whether to assign it to positions in floor storage, single-deep rack, double-deep rack, drive in/thru rack, push-back rack, or mobile rack

- Storage space optimization

Assign each item its optimal allocation of space. One of the key decisions in storage system design is whether or not to establish a forward picking area separate from the reserve picking area. Because a minority of the items in a warehouse generate a majority of pick requests, a condensed picking area containing some of the inventory of popular items should normally be established.

- Storage location optimization

Assign the most popular items to the most easily accessed locations in the warehouse. A minority of the items (the A's or fast movers) in a warehouse generate a majority of the picking activity. They prefer that most of the picking activity take place in the picking locations that are easiest to pick from and yield the highest picking productivity (the golden zones). Hence, to maximize picking productivity and to minimize picking costs, the A items should be assigned to locations in the golden zone.

- Storage layout optimization

This is a situation whereby the storage layouts in the warehouse are fully utilized thereby meeting the optimal allocation of every layout in the warehouse to have a maximum picking and storing of products.

Order Picking Operations

A recent survey of warehousing professionals identified order picking as the highest priority activity in the warehouse for productivity improvements. There are several reasons for their concern. First, order picking is the most costly activity in a typical warehouse. Second, the order picking activity has become increasingly difficult to manage.

The difficulty arises from the introduction of new operating programs such as just-in-time (JIT), cycle time reduction, quick response, and new marketing strategies such as micromarketing and megabrand strategies. A variety of ways to improve order picking productivity in light of the increased demands now placed on order picking systems are described in the following:

- Issue pack optimization

Encourage and design for full-pallet as opposed to loose case picking and full-case as opposed to broken case picking. By encouraging customers to order in full-pallet quantities, or by creating quarter- and/or half-pallet loads, much of the counting and manual physical handling of cases can be avoided both in your warehouse and also in your customers' warehouses.

- Pick-from-storage

Because a majority of a typical order picker's time is spent travelling and/or searching for pick locations, one of the most effective means for improving picking productivity and accuracy is to bring storage locations to the picker, preferably reserve storage locations.

A large cosmetics distributor recently installed systems that bring reserve storage locations to stationary order picking stations for batch picking of partial case quantities and direct induction into a cross-belt sortation system

- Pick task simplification

Eliminate and combine order picking tasks when possible. The human work elements involved in order picking may include

- Travelling to, from, and between pick locations
- Extracting items from storage locations

- Reaching and bending to access pick locations
- Documenting picking transactions
- Sorting items into orders
- Packing items
- Searching for pick locations

Travelling and Extracting Items

Stock-to-picker (STP) systems such as carousels and the mini load automated storage/retrieval system are designed to keep order pickers extracting while a mechanical device travels to, from, and between storage locations bringing pick locations to the order picker

Travelling and Documenting

The order picker is free to document picking transactions, sort material, or pack material while the storage/retrieval machine is moving. This is because a person-aboard storage/retrieval machine is programmed to automatically transport the order picker between successive picking locations.

Picking and Sorting

If an order picker completes more than one order during a picking tour, picking carts equipped with dividers or totes may be designed to allow the picker to sort material into several orders at a time.

Picking, Sorting, and Packing

When the cube occupied by a completed order is small, say less than a shoe box, the order picker can sort directly into a packing or shipping container.

Packing or shipping containers must be setup ahead of time and placed on picking carts equipped with dividers and/or totes.

- Order batching

Batch orders to reduce total travel time. By increasing the number of orders (and therefore items) picked by an order picker during a picking tour, the travel time per pick can be reduced. Single line orders are a natural group of orders to pick together.

Single line orders can be batched by small zones in the warehouse to further reduce travel

time. A profile of the number of lines requested per order helps identify the opportunity for batching single line orders.

- Single Order Picking

In single order picking, each order picker completes one order at a time. For picker-to-stock systems, single order picking is like going through the grocery store and accumulating the items on your grocery list into your cart.

- Pick sequencing

A second operating strategy for order picking is batch picking. Instead of an order picker working on only one order at a time, orders are batched together.

Order pickers take responsibility for retrieving a batch of orders during a picking tour.

- Zone Picking

In zone picking, an order picker is dedicated to pick the line items in his or her assigned zone, one order at a time or in batches. In the grocery store context, zone picking can be thought of as assigning one individual to each aisle in the grocery store.

Shipping Principles

Many of the world-class receiving principles apply in reverse in shipping, including direct loading (the reverse of direct unloading), advanced shipping notice preparation (perceiving), and staging in racks.

To those we add the following practices in defining a world-class shipping activity:

- Container optimization

Container Optimization Select cost and space effective handling units. The impact of the design and selection of shipping containers throughout the entire supply chain is one of the most neglected areas of opportunities for increasing logistics efficiencies. Containers of all kinds cartons, totes, pallets, trailers, 20- and 40-foot ocean containers, rail cars, and air containers are the building blocks of the supply chain

- Automated loading

Eliminate shipping staging and direct load outbound trailers. As was the case in receiving, the most space and labour intensive activity in shipping is staging activity. To facilitate the automated loading of pallets onto outbound trailers, pallet jacks and

counterbalance lift trucks can serve as picking and loading vehicles enabling a bypassing of staging.

- Dock management

Automate and optimize dock assignments and route on-site drivers through the site with minimum paperwork and time. A variety of systems are now in place to improve the management of shipping and receiving docks and trailer drivers.

Inbound trailers should be assigned to the dock closest to the centroid of the put away locations on-board.

SELF ASSESSMENT EXERCISE

1a. List two warehouse activity profiles

1b. State the items involved in order activity profile in storage operations.

1c. State the activities involved in item activity profile in storage operation

4.0 CONCLUSION

The activities discussed in this unit are very important in the distribution network of logistics and supply and supply chain management, the challenge here is how to optimize operations and increase productivity, the different activity involved in warehousing and storage operations must be known to you if you must improve your productivity in logistics operations.

5.0 SUMMARY

In this Unit, you have learnt about warehouse and storage operations. You have learnt that the main purpose of a warehouse in a distribution network is to play the following roles

1. Raw Material and component warehouses:
2. Work in progress warehouses
3. Finish goods warehouses.

Consequently, Warehouse performs the following functions in the distribution network.

They are:

1. Receiving
2. Pre-packing

3. Put-away
4. Storage
5. Other picking
6. Packaging
7. Sortation of batches
8. Packaging and shipping

We noted that warehouse activity is made up of two things, namely;

1. Order activity profile
2. Item activity profile

Order activity profile activities include

1. Order meets distribution
2. Lines per order distribution
3. Cubes per order distribution
4. Lines and cubes per order distribution.

On the other hand, Item activity profile, provides answers to the following questions;

1. What storage mode the Item should be assigned to
2. How much space the item should be allocated in the storage mode
3. And where is the storage mode the item should be allocated, while the item activity profile includes the following activity distribution
 - a) Item-popularity distribution
 - b) Cube-movement / volume distribution
 - c) Popularity- volume distribution
 - d) Order completion distribution

Furthermore, this unit thought you about receiving principles in warehouse operations. Receiving is the setup for all other warehousing activities. We noted the following World class receiving practices.

- a) Direct Shipping
- b) Cross-docking
- c) Receiving scheduling

- d) Pre-receiving
- e) Receipt preparation
- f) Put-away and
- g) Interleaving and continuous moves

Finally, we learnt about storage operations. In this activity, we learnt about the four basic techniques for optimizing storage operation that would maximize storage density and retrieval productivity to include storage mode optimization, storage location optimization, storage space optimization and storage layout optimization. Furthermore, we learnt about order picking operations. The different ways to improve other picking productivity include,

- a) Issue Pack Optimization
- b) Pick-from-storage
- c) Pick task simplification

We also learnt that the human work elements involved in other picking include;

- a) Travelling to from and between pick locations
- b) Extracting items from storage locations
- c) Receiving and bending to access pick location
- d) Documentation picking transactions
- e) Sorting items in orders
- f) Packing items
- g) Searching for picks location

In this unit, you have learnt about warehousing and storage operations. You have learnt that the main purpose of a warehouse in a distribution network is playing the following roles:

- 1) Raw material and component houses,
- 2) work-in-progress warehouses, and
- 3) finished goods warehouses,

6.0 TUTOR-MARKED ASSESSMENT

List four basic techniques for optimizing storage operations that maximizes storage

density and retrieval productivity.

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UNIT 3: DISTRIBUTION CHANNELS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Distribution and its Channels

3.2 Concepts of the Distribution Channel

3.3 Distribution Channels – Marketing Channels, Supply Chain and Value Networks

3.4 The Distribution Channel and the Customer

3.5 Channel strategy

3.6 Channel decisions

3.7 Physical distribution management (PDM)

3.8 Electronic distribution channels

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

1.0 References/further Readings

1.0 INTRODUCTION

Distribution encompasses a system of all activities that are related to the transfer of economic goods between manufacturers and consumers. The structure and integration of distribution channels could take almost any form, but the form it actually takes depends on several issues. In general, distribution includes all activities that enable the transfer of material and/or economic power over tangible and/or intangible goods from one economic subject to another.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Explain the Distribution and its Channels
2. Understand various Concepts of the Distribution Channel

3. Understand the Distribution Channels – Marketing Channels, Supply Chain and Value Networks
4. Understand the Distribution Channel and the Customer
 1. Explain the Distribution Channel strategy
 2. Understand the Distribution Channel decisions
 3. Explain the Physical distribution management (PDM)
 4. Understand the Electronic distribution channels

3.0 MAIN CONTENT

3.1 Distribution and its Channels

Concepts of the supply chain and of supply chain management are attracting management focus in many industries.

Driven by the concept and development of SCM there is an ongoing realization that companies need to establish relationships with their suppliers and customers in order to assure their own competitiveness in an industry.

In its broadest sense, when it refers to the whole economic system, distribution is the allocation of income and assets within one society.

In business economics, distributions relates to the allocation of goods to the recipients.

In general, distribution includes all activities that enable the transfer of material and/or economic power over tangible and/or intangible goods from one economic subject to another.

“Distribution encompasses a system of all activities that are related to the transfer of economic goods between manufacturers and consumers.

The structure and integration of distribution channels could take almost any form, but the form it actually takes depends on several issues.

The most important factor is the consumers' demand for service output. In order to work with the design of the distribution channel several steps are needed, such as; examining products/services that are sold, end-user segmentation, investigating external and internal constraints and opportunities, and confronting the constraints/objectives.

It includes such a coordinated preparation of manufactured goods according to their type and volume, space and time, so that supply deadlines can be met (order fulfillment) or estimated demand can be efficiently satisfied (when producing for an anonymous market)”).

Distribution systems are usually divided into:

- (a) Acquisition distribution system
- (b) Logistics, i.e. physical distribution system.

Acquisition distribution system management includes the management of distribution routes, i.e. distribution channels.

Logistic distribution system is focused on bridging the space and time by transportation and storage, as well as order processing and shipment, supply logistics, i.e. the movement of materials.

The term “distribution channels” can at the moment be replaced by the term “marketing channel”.

“Marketing channel” as a more complex term has been used in the USA since the 1970s, because the intermediaries include not only those who participate in the physical flow of a product from the manufacturer to the end user, but also those that have a role in the transfer of product ownership, as well as other intermediary institutions that participate in the value distribution from production to consumption.

Distribution or marketing channels are systems of mutually dependent organizations included in the process of making goods or services available for use or consumption.

SELF ASSESSMENT EXERCISE

1. Discuss the term distribution channel.
2. Briefly discuss the two distribution systems

3.2 Concepts of the Distribution Channel

‘Channel of distribution: This is the route along which goods and services travel from producer/manufacturer through marketing intermediaries (such as wholesalers, distributors, and retailers) to the final user’.

Channels of distribution provide downstream value by bringing finished products to end users.

This flow may involve the physical movement of the product or simply the transfer of title to it.

It is also known as a distribution channel, a distribution chain, a distribution pipeline, a supply chain, a marketing channel, a market channel, and a trade channel.

Distribution channel: Is the process where one or more companies or individuals participate in the flow of goods and services from the manufacturer to the final user or consumer.

Channel of distribution consists of one or more companies or individuals who participate in the flow of goods, services, information, and finances from the producer to the final user or consumer.

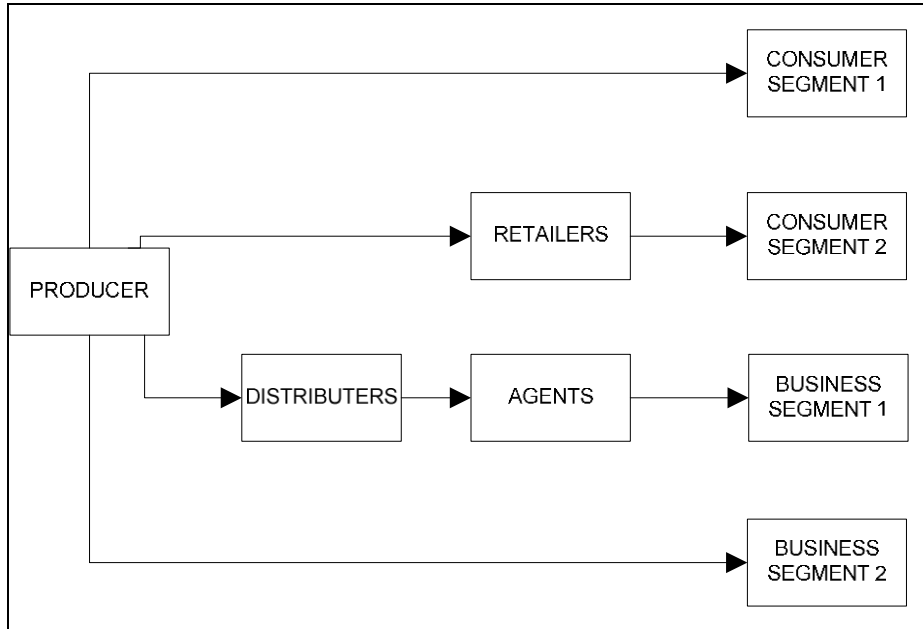
Consumer marketing channels: The marketing channel system usually includes the following operators: producer/manufacturer, wholesaler, intermediary, and retailer.

On the other hand, when it comes to business marketing channels, the following are included: producer/manufacturer, representative or sales subsidiary of manufacturer, business distributor and business client.

Hybrid marketing channels show that the use of only one channel is not sufficient.

Multichannel architecture optimizes channel coverage, adjustability and control, while at the same time minimizes cost and conflict.

Therefore, various channels for different sized clients should be developed.



Source: Kotler, P. H., Wong, V., Saunders, J. Armstrong, G (2006)

Hybrid distribution channels are of utmost importance at the moment, since they represent the possibilities of various innovations, especially for small, fast-growing companies.

On the other hand, multichannel retail trade refers also to the types of complete Internet trade (or just the enrichment of certain variables of retail mix) within the retail systems with shops in the physical sense.

SELF ASSESSMENT EXERCISE

1. Identify various concepts of distribution channels.
2. With the aid of diagram, briefly explain the hybrid distribution channel

3.3 Distribution Channels – Marketing Channels, Supply Chain and Value Networks

The analyses of distribution channels – marketing channels usually cover the analyses of the aggregate supply (logistics) channels at the present time.

Therefore, in the contemporary conditions, different concepts of cooperation and correlation between economic operators have been developed.

They refer to entire economic flows, from the raw material producer, across all levels of production and distribution and finally to consumption.

This means that relationships need to be built not only with clients but also with key suppliers and middlemen when producing and delivering goods or services. Therefore, the whole so-called “supply chain” is important for a company.

It consists of both “upstream” and “downstream” partners.

Suppliers and intermediaries, as well as intermediaries’ clients are included in it and so-called delivery value networks are created.

Therefore, this approach is important, since the success on markets can be ensured only by creating the whole value networks, not only by its downstream part, i.e. by distribution channels.

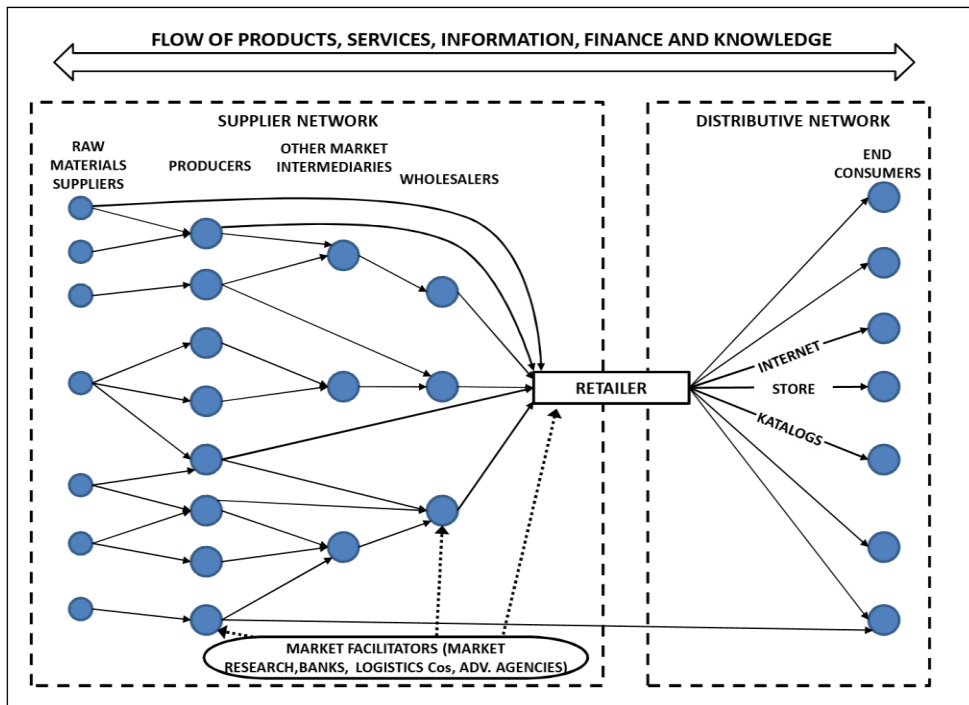
Large corporations, therefore, manage their value creation chains. Supply chain management (SCM) has been developed for the purpose.

Before defining SCM, it is necessary to define the supply chain itself.

A supply chain consists of the series of activities and organizations that materials move through on their journey from initial suppliers to final customers.

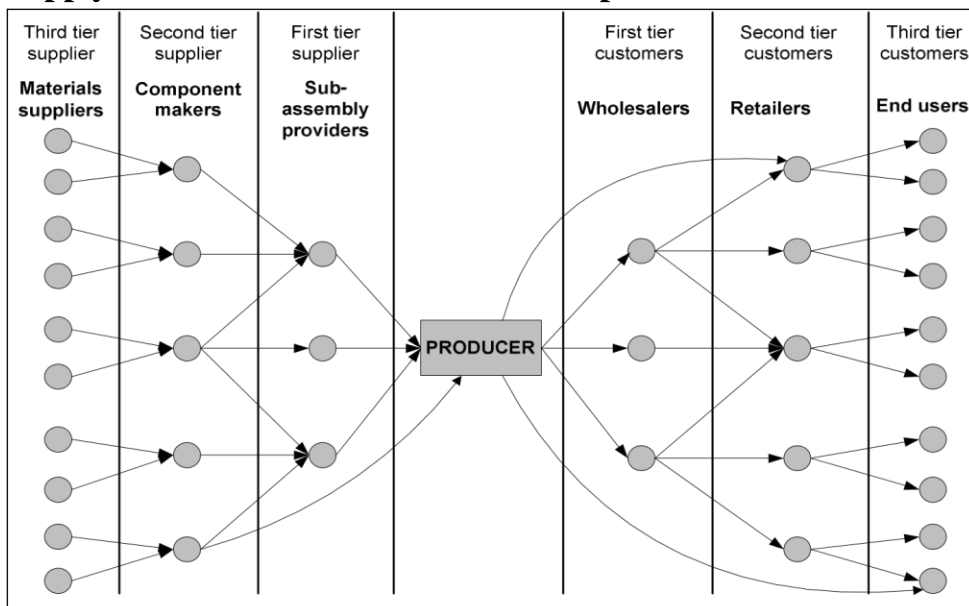
Consequently, SCM is the strategic management of all the traditional business functions that are involved in any flows, upstream or downstream, across any aspect of the supply chain system.

Retailing supply network



Source: developed based on Handfield, R.B., Nichols, E. L.Jr., (2002), **Supply Chain**

Supply network around manufacturer / producer



Source: according to Waters, Donald (2003): *Logistics: An Introduction to Supply Chain*

The importance of large distribution channel and retail chains that are internationally spreading is reflected in the fact that they are able to integrate all levels before them (producers/manufacturers and market intermediaries) and thus direct and develop the production/manufacturing itself.

SELF ASSESSMENT EXERCISE

1. Critically discuss distribution Channels – Marketing Channels, Supply Chain and Value Networks
2. With the aid of diagrams explain retailing supply network and Supply network around manufacturer / producer

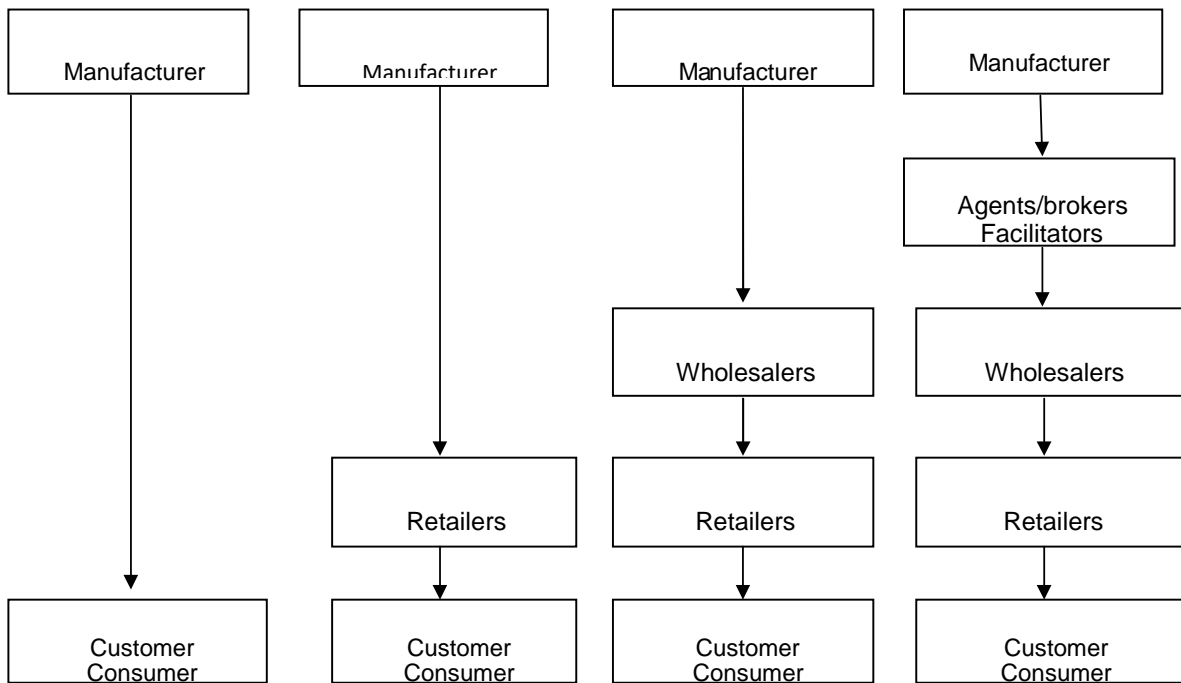
3.4 The Distribution Channel and the Customer

There are many variations in respect of the distribution channel structure. However, intermediaries are deemed as appropriate in the business environment. The following channel structures will be available to you:

1. Passing of goods and services direct from the manufacturer to the consumer
2. Passing of goods and services via a retailer and then on to a consumer
3. Passing of goods and services from the manufacturer via a wholesaler and then directly on to the consumer
4. Passing of goods and services from manufacturer via a wholesaler, then on the retailer and consequently on to the consumer
5. Additionally, the manufacturer can distribute the products and services via an agent to a wholesaler and then follow the route shown in points 3 and 4.

Quite often the types of channels of distribution used by organizations will depend upon

6. The structures of the market, the size of the market, the complexity of the market and the geographical dispersion of the market, among the factors.



A typical range of channels of distribution adapted from Armstrong and Kotler (2010)

Selecting the channels of distribution

For manufacturer to select a channel, they must consider the following:

- The product characteristics and how they affect methods of distribution
- Customers and their requirements
- Location of the customers
- How, when and where customers want to buy the products
- The cost of distribution
- The legal and regulatory constraints of the distribution

These are important issues and require significant levels of analysis in order to gain an understanding of the situation.

Clearly some of these issues will form the basis of the marketing audit.

Ideally the marketing mix has a clear focus on achieving customer satisfaction and achieving the profit objectives of the organization.

SELF ASSESSMENT EXERCISE

1. Identify six channel structures of distribution channel and customers
2. What factors must be considered in selecting the channels of distribution?

3.5 Channel strategy

There are three types of market coverage:

1. Intensive
2. Selective
3. Exclusive

Intensive distribution means that as many available outlets as possible hold this product, e.g. chocolate, newspapers, bread, etc.

Intensive distribution will mean convenience to the customer and increase customer satisfaction.

The sale of groceries in petrol and service stations is an example of how intensive distribution has grown.

Key characteristics include:

- Maximum number of outlets covered to maximize availability
- Target outlets in as many as geographical regions as possible
- Consumer convenience products
- High number of purchasers
- High purchase frequency
- Impulsive purchase
- Low price

Selective distribution is different in that some products are only available from some outlets, e.g. electrical appliances, certain brands of clothes and fashion products.

Key characteristics include:

- Medium level of customers – but likely to be significant

- Less intensive distribution of outlets
- Retailers may require specialist knowledge
- Shopping based products
- Medium number of shoppers
- Purchase is occasional

SELF ASSESSMENT EXERCISE

1. In channel strategy, discuss three market strategies.
2. Highlight the key characteristics of Intensive distribution and Selective distribution

3.6 Channel decisions

There are six basic channel decisions to make.

These are:

1. Whether to distribute direct to the customer or indirectly through middlemen.

The advantages of going direct are that it enables firms to exercise more control over marketing activities and it reduces the amount of time spent in the channel.

The disadvantages are that it is difficult to obtain widespread distribution and more resources are required to maintain distribution.

Going direct is the method widely used by industrial goods producers.

In the case of consumer goods, examples of going direct to the customer are to be found in marketing cosmetics and encyclopedias.

2. Whether to adopt single or multiple channels of distribution

The advantages of using a single channel are that it guarantees a minimum level of sales and the exclusivity of using a single channel guarantees attention to the product.

In the first case, intermediaries can be asked to accept a minimum non-returnable order quantity.

In the second case, the fact that a product is only available from very specific outlets suggests that it is difficult to obtain because it is exclusive.

The harder it is to get, the more people will want to know about it or so the argument goes.

On the other hand, the disadvantage of using exclusivity is that it does limit sales.

3. How long the channel of distribution should be?

In determining the best channel length to adopt, the following factors have to be taken into account:

- (a) The financial strength of the producer those in a strong position can carry out the functions provided by intermediaries.
- (b) Size and completeness of the product line the costs of carrying out the distribution function can be spread across the various items in the product line. The more items, the more economical it might be to consider a shorter distribution channel.
- (c) The average order size large orders may be distributed direct to customers.
- (d) The geographical concentration of customers geographically dispersed customers merit a longer distribution channel since servicing them requires substantial investment of resources.
- (e) The distance of the distributor from the market—geographical distance makes it less attractive for the producer to want to supply direct.

The above are guidelines and of course exceptions may be encountered in practice.

4. The types of intermediaries to use.

This effectively means choosing between different types of retailer in the case of consumer goods, e.g. supermarkets as opposed to cash and carry, and different types of distributor in the case of industrial goods, e.g. whether to use franchised dealerships or not.

5. The number of distributors to use at each level.

In principle, more distributors are required if:

- (a) The unit value of the product is low and/or the physical quantity of stock held is likely to be high.
- (b) The product is purchased frequently.
- (c) There is a high degree of technological complexity in the product.
- (d) The service requirement is high.
- (e) The inventory investment is high.
- (f) Geographic concentration is low.
- (g) Total market potential is high.
- (h) The market share of the producer is high.
- (i) Competition is intense.

6. Which intermediaries to use

This is a qualitative decision and reflects whether the image of the particular outlet, the way in which it performs and the deals which can be struck with the distributor are satisfactory.

Even when strategies have been selected they have to be implemented and this involves producers and intermediaries working together in the most effective manner.

SELF ASSESSMENT EXERCISE

Discuss the six basic distributions channel decisions

3.7 Physical distribution management (PDM)

Physical distribution management (PDM) is the term used to describe the management of every part of the distribution process. PDM can be contracted out to a specialist or is best developed as a specialist function within the organization. It is the process which ensure

that the correct customer within a given timescale, as cost-effectively as possible (Little and Marandi 2003).

Part of PDM would include being aware of what your competitors are offering, as suggested above. Elements for consideration include:

- Costs involved
- Methods of transport – road, rail, plane, shipping, etc.
- Routes used Stock, storage and stock control
- Protection and delivery of stock
- Timing – a key element
- Evaluating the effectiveness of methods of distribution and being aware of other alternatives.

Distribution is an integral part of the marketing mix. With the right distribution strategy in place that is with the right mode of delivery the right speed of delivery to the appropriate place of purchase, customer satisfaction can be significantly increased. Failure to deliver these practical points will result in the loss of orders and income to the company and long-term customer loyalty will decline (Drummond and Ensor, 2001)

The key objective of PDM is to find the most cost-effective way of meeting customer needs in relation to purchasing their product, wherever they are and wherever they are.

Physical distribution management includes the following functions:

- i. Customer services
- ii. Order processing
- iii. Materials handling
- iv. Warehousing
- v. Stock/inventory management
- vi. Transportation

- vii. Product characteristics – how do they affect delivery requirements?
- viii. Packaging – can the product be transported?
- ix. Pricing – how much does distribution add to the cost of the product?
- x. Promotional campaigns – creating an awareness of the product and where and how it can be purchased.
- xi. Timing is a critical element of PDM, as many co
- xii. Companies work on the delivery of materials and components on a ‘Just in Time’ basis (JIT). JIT is just as it sounds; it means that the manufacturer of products, or the supplier of raw materials, must deliver the necessary material or components as and when required. For example, a window manufacturer, who makes windows for office buildings, will be making windows to order and will be require to deliver them at certain periodic times in the construction of the building. Because storing glass and the metal or plastic structures is difficult, the organization will deliver as and when the office block construction company needs it.

SELF ASSESSMENT EXERCISE

1. Highlight Physical distribution management functions
2. Discuss Physical distribution management

3.8 Electronic distribution channels

With the growth of B2C (business-to-consumer) model a new type of intermediary has become available: an electronic distribution channel — the Internet.

The availability of goods through the Internet does not mean physical access to them, but only their purchase.

In electronic distribution channels the flow of streams is being realized in two dimensions: electronic and physical.

A split of streams between these two dimensions depends on the type of products sold, channel participants and their technological capabilities and resources.

In the electronic sales the following forms of sales can be distinguished:

B2C (business-to-consumer) it is a relationship between the company and the final customer; it includes: preparation of offers, preparation and confirmation of orders, payments, realization of the transaction;

B2B (business-to-business) it is a relationship between companies and it includes: preparation of offers, preparation and confirmation of orders, payments, realization of the transaction;

B2A (business-to-administration) it is a relationship between businesses and public (government);

C2C (consumer-to-consumer) transactions between consumers.

The growth of an electronic distribution is strengthening by its global reach, reduction of distribution costs and sales, reduction of time and flexibility in data processing.

Main disadvantages of this type of distribution are increased costs of transportation of ordered goods and a delayed date of payment.

The increase in e-commerce turnover is caused by the lack of customer satisfaction with traditional forms of sales.

Companies increasingly use such forms of selling, because it saves both time and costs, and demonstrate innovation what improve its image.

E-commerce is a procedure that uses various types of electronic devices for financial transactions.

This trade includes sales of goods or services, acceptance and approval of contracts and support for cashless payment.

EDI (Electronic Data Interchange) the electronic exchange of documents is the process of data exchange between companies in a form of electronic documents according to agreed standards with minimal human intervention.

Key benefits from using electronic document exchange are: minimization of time spent and money, reduction of errors (the data are entered from a database, where previously have been reviewed and approved), inventory optimization (using software that monitors storage conditions) and to improvements of a payment process.

SELF ASSESSMENT EXERCISE

Explain the concept Electronic distribution channels in logistics management

4.0 CONCLUSION

This unit provides a basic knowledge of the physical distribution channels in logistics and supply chain management. The unit also provides various distribution and marketing channels and as well the decision and strategies that are involved in physical distribution channels in logistics and supply chain. Also, the new technologies that are involved in distribution channel are not left out in the unit that is the electronic distribution channel which discusses concepts like electronic data interchange and e-commerce.

5.0 SUMMARY

Distribution channel services or operations in logistics and supply chain management is one of the most important channels that enhances manufacturing of products, distribution of raw material and finished goods of companies to the final consumer of those products. The services of distribution channels act as a catalyst for product in terms of distribution to reach the final consumers or customers thereby increasing of profitability and survival of organizations.

6.0 TUTOR-MARKED ASSESSMENT

1. Explain the six basic channel decisions you would take in the distribution of goods and services in logistics management.

2. Discuss the main functions you would perform in the physical distribution of goods and services in logistics management.

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MODULE FOUR

TOTAL LOGISTICS

Unit 1: Concept of Logistics and supply chain Management

Unit 2: Logistics supply chain planning and strategy

Unit 3: Globalization and International logistics

Unit 4: Financial measures in Logistics performance

Unit 5: Customer service in Logistics and Supply Chains

UNIT 1: Concepts of Logistics and Supply Chain Management

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content:

 3.1 Concepts of Logistics and Supply Chain

 3.2 Concepts of Logistics and Supply Chain Management in manufacturing
 Companies

 3.3 Total Logistics Management

 3.4 Total Logistics Principles

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0. References/Further Readings

1.0 INTRODUCTION

Logistics Management concepts may serve as the basis to define the assumptions of Total Logistics Management (TLM) concept. The concepts related to the logistics management or supply chain management are currently frequently discussed. They are: lean (management, manufacturing, supply chain, logistics), agile (management, manufacturing, supply chain), leagile (manufacturing, supply chain), resilient (supply

chain), and green (manufacturing, supply chain, logistics). In this unit, you will learn the implications of the above concepts in logistics and supply chain management.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Identify the different concepts involved in the total logistics management.
2. Explain the concepts of Logistics and supply chain management
3. Identify the different Total Logistics Principles

3.0 MAIN CONTENT

3.1 Concepts of Logistics and Supply Chain Management

Concepts of Lean Management, including Lean Manufacturing (LM), Flexible Manufacturing Systems (FMS), and Just in Time method (JIT) had an enormous impact on companies operations at the end of the 20th century.

Simultaneously, the need for continuous quality improvement was acknowledged.

Total Quality Management (TQM), Six Sigma and quality management standards developed by the International Organization for Standardization (ISO) are the best examples.

The application of specific tools related to the above-mentioned concepts, such as waste reduction (Muda), Value Stream Mapping (VSM), 5S practices or the use of quality improvement methods and techniques, for example Quality Function Deployment (QFD), Failure Mode and Effect Analysis (FMEA) and Six Sigma (DMAIC - Define, Measure, Analyze, Improve, Control).

Excellent products have not been replaced, thus decreasing the demand in the market.

At the same time, facing the exceeding globalization process, many companies have realized the significance of the effective and efficient goods and information flow reflected in the Supply Chain Management (SCM) concept.

The evolving Supply Chain Management following the 7Rs principle - right product delivered at the right quantity and condition to the right place at the right time and price to the right customer, (Shapiro & Heskett, 1995, p. 6), at the turn of the centuries, had to

respond to the globalization consequences such as the offers to individualization or extended networks between supply chain participants.

It was an incentive to search for new organizational solutions which might rationalize and optimize the goods, materials, products and related information flow, which provided the ground for the new logistics concepts development.

3.2 Concepts of Logistics and Supply Chain Management in Manufacturing Companies

The concepts related to the logistics management or supply chain management are currently frequently discussed. They are:

- lean (management, manufacturing, supply chain, logistics),
- agile (management, manufacturing, supply chain),
- leagile (manufacturing, supply chain),
- resilient (supply chain),
- Green (manufacturing, supply chain, logistics).

In order to give an overview of the issues connected with the above-mentioned concepts and incorporate them adequately into the TLM philosophy, their key elements will be briefly discussed.

Lean Logistics

Lean Logistics is deeply rooted in Lean Management and Lean Manufacturing principles. Lean Thinking idea was developed by Womack and Jones in their book of the same title (Womack & Jones, 2001, p. 27).

Toyota Production System, based on TQM philosophy, and JIT method (transferred to any production type, including unit and low-volume production) provided the foundation for their considerations.

They also highlighted concepts such as: value (value stream), flow, waste and excellence/perfection.

Another Lean concept key element is the change from “push” production system based on forecasts to “pull” production system based on actual customer needs.

On that basis, a number of “lean thinking” elements have been transferred to logistics.

According to Hones, Jones and Rich, Lean logistics is based on TPS, implementing extended TPS principles throughout the whole supply chain from the customer to the raw materials and materials necessary for production.

As the authors point out, Lean Logistics key words are identical as the above-mentioned TQM philosophy key concepts: value, value stream, flow, pull system and excellence (Jones et al., 2004, p. 153).

Total Logistics Management concept assumptions should include selected TQM elements.

Additionally, the same authors, referring to the book by Womack and Jones (1996, p. 12, 129, 134) developed an idea of lean thinking in logistic processes, i.e. lean manufacturing, lean storage, lean orders handling, which could be naturally followed by lean packaging or lean transport.

Swamidass (2000, p. 346) defines Lean Logistics as the Lean Management philosophy principles implementation into supply chain processes.

The statement could be extended to functional and phase logistics division. Therefore, Lean Logistics philosophy is an implementation of principles connected with waste reduction, value creation, flow improvement, pull production system, striving for perfection in all logistics phases (supply, manufacturing, distribution, disposal and returns) and functions (transport, storage, inventory management, orders handling, packaging) in the enterprise.

Lean Logistics refers to the idea of Lean Supply Chain, which focuses on the waste reduction at every supply chain phase.

In many cases Lean Supply Chain is presented as the logistics chains strategy (Goldsby et al., 2006, p. 58), however, having analyzed the above-mentioned facts, one might challenge this approach. In any case Lean-based management concentrates on generating maximum output value while reducing any waste.

Agile management

Agile management focuses on increasing efficiency, flexibility to adjust to the customer needs as quickly as possible.

Agile management or manufacturing is strongly related to the supply chain flexibility.

The concept of Agile Supply Chain was defined by Harrison and van Hoek (2010, p. 273). They indicated four basic agile supply chain dimensions:

- client orientation (market sensitivity),
- understood as the ability to identify and satisfy the actual customer needs,
- partnership in relations (partnership cooperation) among all supply chain participants understood as joint and compliant cooperation of the supply chain participants,
- process approach to supply chain (processes integration),
- interpreted as combining and integrating all supply chain business processes into one coherent system,
- IT use in supply chain (virtuality),
- Promptness, accuracy and efficiency of the information transferred becomes the key to the whole system flexibility.

Saadoon Al. Samman (2014, p. 1093) claims that agile manufacturing, the basis for agile supply chain, should indicate the following features:

- high quality and high adjustment level to the customer needs (customization),
- high information availability related to the products and services and added value maximization,
- key competences absorption,
- sensitivity to social and environmental issues,
- use of numerous technologies combination,
- capability to respond to a volatile and multidimensional demand,
- internal and external enterprise integration

Leagile supply chain concept

This was accurately defined by Mason-Jones, Taylor and Towill (2000, p. 4064).

They define Leagile concept as a combination of lean and agile concepts in supply chain management.

It is based on material decoupling point, the furthest in material flow to which the customer orders can reach.

In other words, it is the place where the orders handling-related activities (demand) meet manufacturing-related and forecasting activities.

Saadoonet al, Samman (2014, p. 1094) claims the decoupling point is a place where manufacturing efficiency and effectiveness are more important than other supply chain elements.

Mason-Jones, Taylor and Towill indicate that demand-driven processes should follow Agile philosophy principles, forecasting activities should rely on Lean philosophy principles, thus creating Leagile idea.

The authors also highlight the Lean processes direction which, according to pull production system concept, should be opposite to materials flow pulling in the goods from the system in a way that the agile concept processes follow the same direction as the materials flow.

This should ensure meeting the diversified market needs.

Leagile concept is a lean, flexible response with a given product to volatile customer needs at the turbulent market acquired by lean processes used to manufacture the product.

Resilient Supply Chain (RSC) Concept

Resilient Supply Chain (RSC) Concept: Christopher and Peck (2002, p. 2-3) describe it as constantly developing branch in management studies.

They define resilience as the system ability to return to its initial state or new, desired state after the negative processes that influence the system have been eliminated.

The resilience is strongly related to risk. Deloitte (2013, p. 6) determines the need to create Resilient Supply Chains addressing the following risk types:

- macro environment risk (resulting from globalization and gaining access to new markets which increases the supply chains complexity and vulnerability to issues such as natural disasters,
- political turmoil or economic crises),e.g. Youth restiveness and June 12 crises.

- extended value chain risk (resulting from outsourcing and core competences issues dependence on suppliers and sharing outsourcing and commissioning risks),
- operational risk (resulting from enterprise internal processes and their risk development, planning, manufacturing, distribution, returns and resources),
- functional risk (relating to the business functions that support supply chains, such as Finance, Human Resources or IT).

Green Logistics (GL) or Green Supply Chain Management (GrSCM): Green Logistics (GL) or Green Supply Chain Management (GrSCM) is a pro-ecological logistics management concept.

According to Srivastava (2007, p. 53) the increased significance of GrSCM directly stems from the deteriorating environment condition reflected in lower supply of raw materials, excessive waste and increased pollution levels.

The GrSCM is seen as a natural consequence of the evolutionary change in manufacturing companies which replaced a reactive approach to environment management based on developed programs with a more pro- active approach reflected in ‘‘various Rs’’ principles.

- Reduce,
- Re-use,
- Rework,
- Refurbish,
- Reclaim,
- Recycle,
- Remanufacture

SELF ASSESSMENT EXERCISE

1. Discuss the concept of Total Quality Management
2. Identify four concept of supply chain. Carefully explain them

3.3 Total Logistics Management

Logistics Management concepts may serve as the basis to define the assumptions of Total Logistics Management (TLM) concept.

Bukowski is one of the Polish authors who cover the TLM issues and his findings are worth mentioning. According to him, the essence of Total Logistics Management concept should be based on a combination of three dominant concepts in Logistics Management, namely Lean, Agile and Resilient.

Logistically efficient product is defined as a material object in market exchange characterized by a set of properties and features which enable an effective and efficient internal and external flow of the product itself and the related information in the spheres of supply, manufacturing, distribution, disposal and returns.

The properties and features at the internal level allow for an effective and efficient integration of IT, transport, storage, packaging, inventory management, order handling processes within the framework of an Integrated Supply Chain Management concept.

Logistics product efficiency enforces an inquisitive product analysis and a selection of an appropriate strategy:

- Conceptual or adjustment and the use of relevant methods,
- Techniques and tools to adapt the chosen strategy to the market conditions.

Neither of the two options should, however, distract from the underlying assumptions of Total Logistics Management (Bielecki and Szymonik 2015, p. 31).

3.4 Total Logistics principles

The Total logistics principles are as follows:

- 1) Logistics quality guarantees full customer satisfaction and continuous logistics quality improvement and supply chain optimization should become a routine.
- 2) The pursuit of logistics partnership is based on professionalism and trust.
- 3) The safety and security assurance for people and goods and information flows
- 4) The pursuit of ‘‘one click’’ activities implementation based on flow processes automation and computerization.
- 5) Sustainable logistics development ensures an appropriate organizations’ impact on its environment.

6) Total Product Management based on product logistics efficiency is the foundation to secure effective and efficient goods and information flow.

Logistics quality is the first notion used in the TLM concept.

Naturally, logistics quality should be interpreted in the view of the previously mentioned 7Rs principle.

It seems, however, that logistics quality should be closely related with three basic Logistics or Supply Chain Management elements:

- product,
- processes,
- Relations.

SELF ASSESSMENT EXERCISE

1. List the principles of Total Logistics management
2. Write an essay on Total Logistics Management

4.0 CONCLUSION

In this unit, you have been acquainted with the various concepts of logistics and supply chain management and their implications in the achievement of efficient logistics management. You have also learnt the total logistics principles. These are important concepts you must know for you to be an efficient logistics officer

5.0 SUMMARY

In this unit, you have learnt the different concepts applied in logistics in the present globalized world. They are;

Lean (management, manufacturing, supply chain, logistics)

Agile (management, manufacturing, supply chain),

Leagile (manufacturing, supply chain),

Resilient (supply chain) and Green (manufacturing, supply chain, logistics).

You should know them and their implications in logistics and supply chain management.

Four basic agile supply chain dimensions were identified to include;

-Client orientation (market sensitivity)

- Partnership in relation (partnership cooperation)
- Process integration, and
- IT use in supply chain (virtuality). We also learnt about the total principles and six of such principles were identified. You should know them.

6.0 TUTOR-MARKED ASSESSMENT

1. Resilience in logistics management is related to risk.
2. Carefully discuss the different types of risks you are likely to encounter in resilient supply chain management.

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UNIT 2: LOGISTICS/SUPPLY CHAIN PLANNING AND STRATEGY

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Logistics and Value
 - 3.2 Strategy and Logistics
 - 3.3 Corporate Strategy
 - 3.4 Six Concepts of Logistics Strategy Formulation
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assessment
- 7.0 References/Further Readings

1.0 INTRODUCTION

The role of logistics has been increasingly highlighted as central to any contemporary business activity.

Logistics lie at the core of both operational and marketing processes.

It's actually logistics that provides companies with the ability to effectively and efficiently meet their customers' requirements.

Without appropriate configuration and implementation of the whole logistics function, companies are risking being rigid, disorientated and ultimately being driven out of the market.

However, such appropriate configuration and implementation of logistics have little chance of success without careful and detailed strategic planning.

Activities such as procurement, inventory management, warehousing, materials management, distribution and customer service, which are included in logistics, should be well-thought out in advance, well-coordinated and above all, should be facilitating the achievement of the overall goals of the company.

Although the importance of logistics strategic planning seems evident, not all companies in all countries approach this issue with the same sensitivity.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Understand Logistics as an important value adding process in an Organization
2. Explain the relationship between strategy and Logistics
3. Identify Logistics Strategic Planning Steps
4. Identify the concepts involved in Logistics Strategy formulation
5. Identify the Principle of Supply Chain Management

3.0 MAIN CONTENT

3.1 Logistics and value

The Council of Logistics Management (CLM) has given one of the most popular definitions of logistics, which suggests that the term includes the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information.

These processes take place from the point of origin to the point of consumption and its ultimate purpose is the conformation to customer requirements (Lambert et al., 1998).

Central to logistics is the notion of value. According to Ballou (1999) logistics is about creating value; value for customers and suppliers of the firm, and value for the firm's stakeholders.

Value in logistics is expressed in terms of time and place.

Products and services have no value unless they are in the hands of the customer when (time) and where (place) they wish to consume them.

Good logistics management views each activity in the supply chain as contributing to the process of adding value.

So, to many firms in many countries logistics has become an increasingly important value-adding process for a number of reason: underlying assumptions

- Costs are significant.
- Logistics costs are ranked second only to the cost of goods sold.

- Minimising these costs and passing the benefit on to the consumers and firm's shareholders can be seen as value addition.
- Supply and distribution lines are lengthening.

The trend is towards an integrated world economy which suggests that firms will or have developed global strategies where either their products are designed for a world market or they are produced locally and sold internationally.

For both options, logistics is an integral component of the supply chain.

Logistics is important to strategy.

And vice versa, strategy is important to logistics.

Logistics adds significant customer value, as explained above.

Customers increasingly want a quick customized response.

Consumers expect products and services to be made available in increasingly shorter times. In addition, information systems and flexible manufacturing processes lead the marketplace towards mass customisation.

Companies too have been applying the concept of quick response in their operations in order to meet customers' demands within their logistics function.

Cooper et al. (1994) have argued that it is the need for logistics optimization that led to the development of techniques that many firms consider crucial for achieving competitive advantage, such as Just-in-Time (JIT), Quality Management, Materials Requirements Planning (MRP), and Computer-Integrated Manufacturing (CIM).

But logistics cannot be considered simply as an outcome or a sum of technological developments.

Logistics is a crucial strategic function that might be implemented through specific tools but is by no means bounded by them.

3.2 Strategy and Logistics

When discussing strategy, direction is a central keyword.

A number of definitions of strategy emphasize this word in order to explain a strategy's function.

Where we are now, where we want to go, how we will get there and how we know if we have done it, are the four central questions that can be derived from this emphasis on strategy for the overall direction of a company.

So, strategy involves decisions regarding the long-term orientation of an organisation, and the configuration of already existing or new skills and resources in order for this direction to be realized.

Strategy, though, has to be managed, which leads us to strategic management and the subsequent strategic management process.

Strategic management

Strategic management is quite often defined as the process of forming visions and missions, setting specific objectives, choosing between different strategies, implementing them and finally evaluating their success and engaging in corrective actions .

This strategic management process actually includes more than one process. There are three types of strategic processes: general strategic management, strategy-formulation and strategy-implementation. Strategic business planning seems to be the obvious outcome of strategic management.

Mintzberg et al. (2003) showed that strategy is usually perceived, even equated, with a specific plan.

But is a strategy a plan?

The answer might be that the opposite of this statement is more appropriate than the statement itself.

A strategy is more than a plan but a plan is a strategy.

For example, a decision to diversify is a strategic one but not of a strategic business planning nature (Reading, 2004).

Put simply, you can have a strategy without a plan but you cannot have a plan without a strategy.

Key elements in the formulation of logistics strategy are

- facilities,
- transportation,

- inventory and information systems.

Therefore, logisticians need to portray how these elements will be developed, integrated and managed in order to support the overall business strategy.

However, the relationship between logistics and business strategy is not one-way.

There is an interplay which occurs both vertically, between top management and functions, and horizontally, between different functions.

This interplay leads to the need of an integrated strategy, which requires the existence of the principles of speed, learning, renewal, leadership, ownership, core capabilities and business modeling in order to be implemented successfully.

Information technology easily stands out in the discussion of logistics strategy due to its importance in the overall outcome.

Information technology is integral to logistics planning and implementation since it enables companies to achieve desirable results.

Electronic Data Interchange (EDI), bar-coding and scanning, data warehousing, decision support systems (DSS), electronic commerce enabling systems and various internet applications are considered as some of the most important technological developments that affect logistics strategic planning.

The point that emerges from the above is that on one hand, technologies contribute considerably to strategy implementation, but at the same time they also contribute to the formation of strategy itself since, through their capabilities, they can proactively alter or enhance future plans.

Of equal importance in logistics strategy is the issue of strategic alliances and networking.

On one hand, the focus on core competences and the subsequent use of outsourcing regarding all business functions, and on the other, the extensive use of third party logistics companies (3PL), has led to a compelling need for the incorporation of logistics issues in the strategic design of national and global networks (Fawcett, 1992).

Logistics itself is considered nothing more than the management of networks of actors and activities (Ballou, 1999).

Relationships in the supply chain are becoming complex, but if any positive outcome is to be achieved at the consumer-end of the chain then all participating companies need to cooperate by developing partnering mentalities and processes (Fernie, 1998).

Careful planning is the basis of a successful logistics project.

This is especially important for the concept phase in which the selection of a cost efficient and flexible solution is essential.

The logistics planning services are always involves in manufacturer- independent and neutral to find the economically most suitable solution.

For their customers, this means the maximum transparency concerning the system components – be it hardware or software – like a warehouse management system or logistics components.

With a strategic logistics planning, you can optimize an internal logistics from goods receiving to goods dispatched, with an independent and holistic approach.

Logistics Strategic Planning involves:

- Planning and implementation of overall logistics systems,
- Holistic planning– from the inside to the outside,
- Material flow, capacity and space planning,
- Elaboration of function requirements for logistics and IT systems,
- Project management in all implementation phases,
- Planning and support of the implementation and acceptance process

The organization would be glad to support all the necessary things needed in planning and executing a material flow and process analysis.

Afterwards, the operation will be at logistics department disposal as a competent, neutral and independent partner for the implementation of all the strategic planning involved in the logistics and supply chain.

When a new warehouse is planned, there are many factors to be considered.

Knowing these factors is important to be able to see them in context and optimally combine them in the future logistics system.

Together with the logistics strategic planning unit, the organization will determine the requirements concerning the storage of products as well as the material, process and information flow in the warehouse.

They will also consider external and limiting factors.

The most important basis for the planning process is the determination of the quantity structure.

Here, your items will be analyzed to determine stock and movement data.

Once the quantity structure has been determined, the planning phase can begin.

This phase includes the design of the future organizational, technological and economic system.

Different variants, for example for the storage and transport systems, will be analyzed and evaluated based on your requirements.

In addition, the future capacities will be planned based on the available space.

The possible extension of the systems and the building are always kept in mind.

After roughly planning and outlining your future warehouse, the detailed concept can be created.

The creation of the operational documents and the requirements documents for the storage, transport and IT systems takes place once the detailed concept is finished.

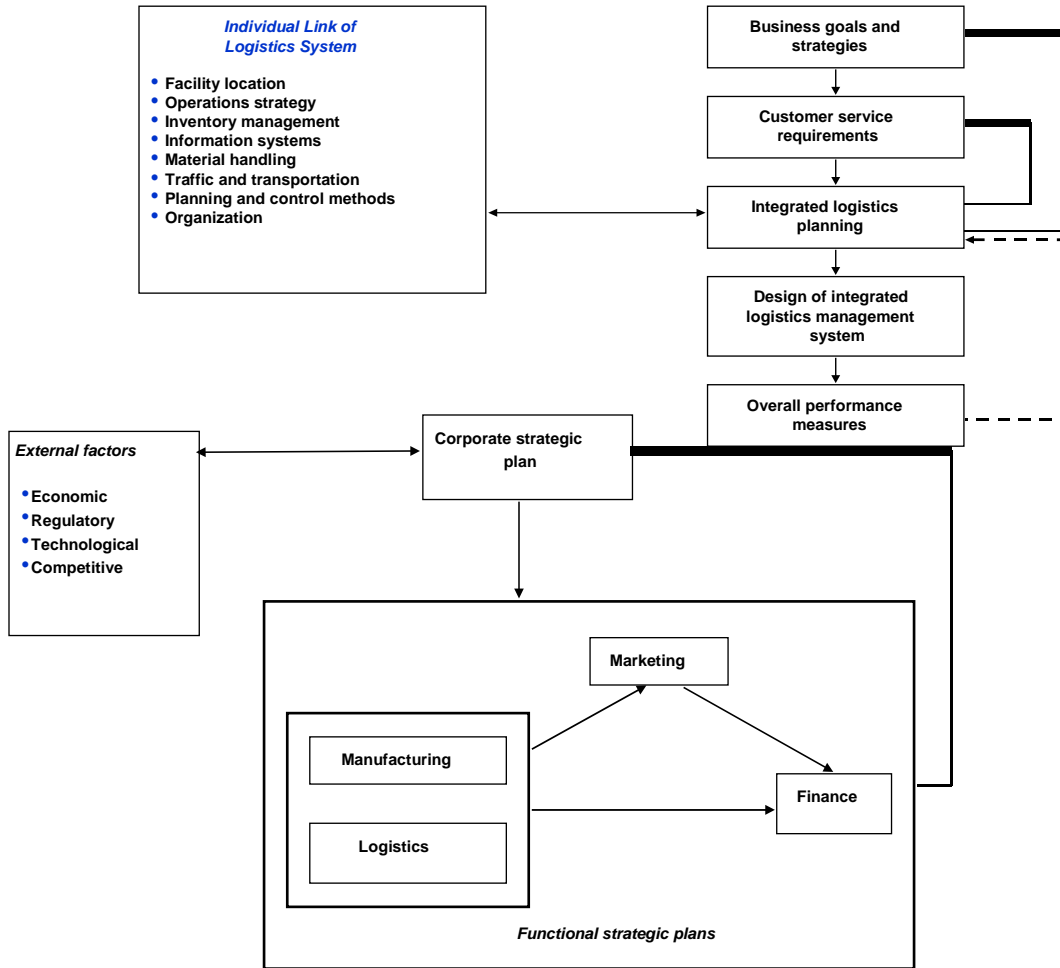
3.3 Corporate Strategy

- Strategy is the process whereby plans are formulated for positioning the firm to meet its objectives.
- Strategy formulation begins with defining a corporate strategy. This involves:
 - a. Assessing needs, strengths, and weaknesses of the 4 major components: - customers - suppliers - competitors - the company itself
 - b. "Visioning" where counter-intuitive, unheard of, and unconventional strategies are considered.
- Corporate strategies are converted to more specific strategies for the various functional areas of the firm such as logistics.
- The objectives of logistics strategy are:

- Minimize cost
- Minimize investment
- Maximize customer service
- Levels of logistical planning:
 - Strategic
 - Tactical
 - Operational
- The 4 problem areas of supply chain planning
 - Customer service levels
 - Facility location
 - Inventory decisions
 - Transportation decisions
- When to plan?
 - No distribution network currently exists.
 - There has been no re-evaluation in 5 years.
 - When costs are changing rapidly, especially transport & inventory.
 - When markets have shifted.
 - When current distribution economics encourage shifts.
 - When there has been a major policy shift in logistics such as in price, customer service, or investment level.

Corporate to Functional Strategic Planning

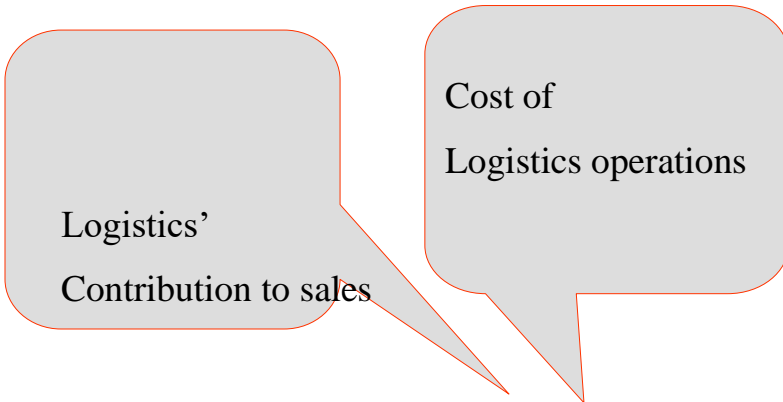
Flow of Logistics Planning



Flow of Logistics Planning

Logistics' Objective

Maximize return on logistics assets (ROLA)



$$\text{ROLA} = \frac{\text{Revenue} - \text{Cost}}{\text{Assets}}$$



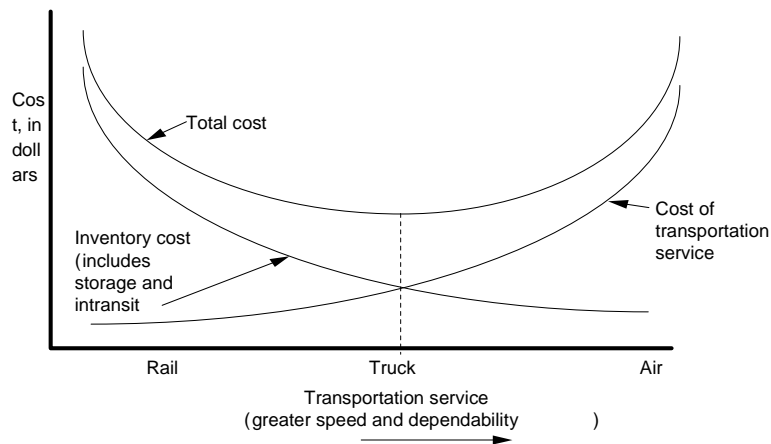
Strategic, Tactical, and Operational Decision Making

<i>Decision area</i>	<i>Strategic</i>	<i>Tactical</i>	<i>Operational</i>
Transportation	Mode selection	Seasonal equipment leasing	Concept of Logistics and Supply Chain Management Dispatching
Inventories	Location, Control policies	Safety stock	levels Order filling
Order processing	Order entry, transmittal, and processing system design	Processing orders, back orders	Filling
Purchasing	Development of supplier buyer relations	Contracting, Expediting	Forward buying
Warehousing	Handling equipment selection, Layout design	Space utilization, picking and restocking	Order
Facility location	Number, size, and location of warehouses		

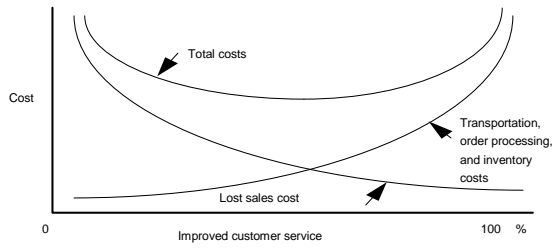
3.4 Six Concepts for Logistics Strategy Formulation

- Total cost concept- Tradeoff conflicting costs at optimum
- Differentiated distribution- Not all products should be provided the same level of customer service
- Mixed strategy- A pure strategy has higher costs than a mixed strategy
- Postponement- Delay formation of the final product as long as possible
- Shipment consolidation- Smaller shipment sizes have disproportionately higher transportation costs than larger ones
- Product standardization- Avoid product variety since it adds to inventory

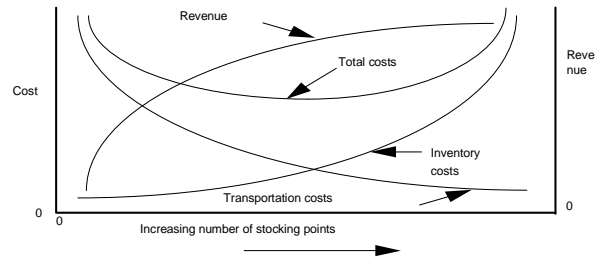
A Cost Conflict in Logistics



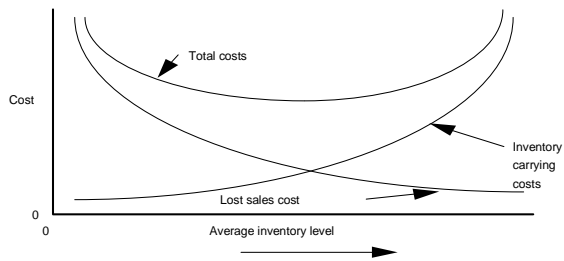
More Cost Conflicts



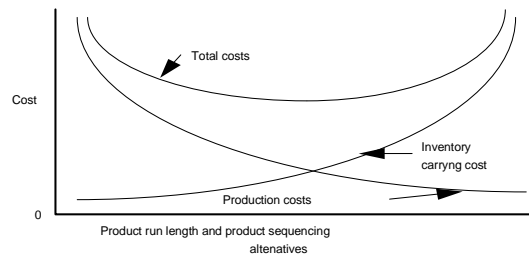
(a) Setting the customer service level



(b) Determining the number of warehouses in a logistics system

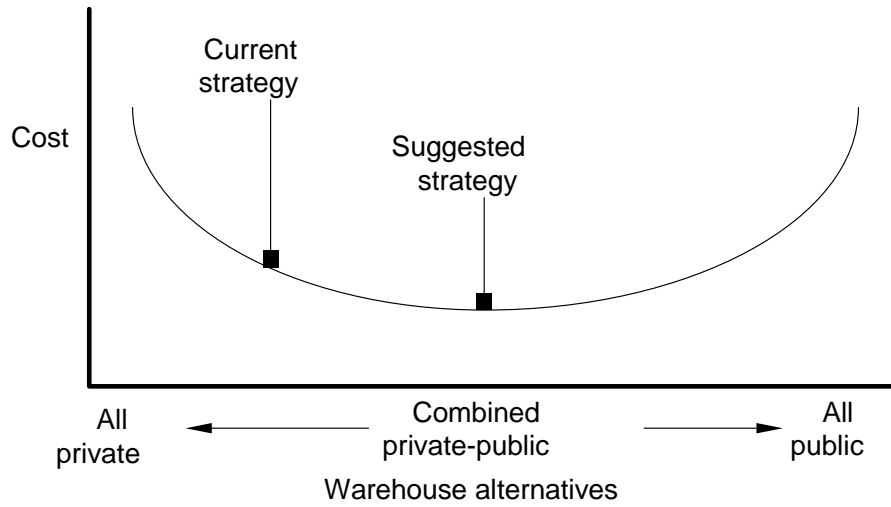


(c) Setting safety stock levels

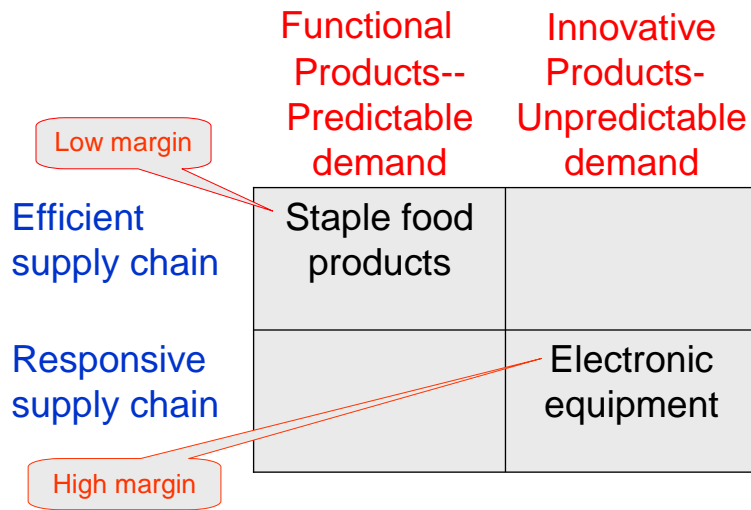


(d) Setting the sequence of production runs for

Pure vs. Mixed Strategy



Choosing the Right Supply Chain Strategy



2-12

Classification of Products

Unpredictable/Introductory Products

- New music recordings
- New computer games
- Fashion clothes
- Art works
- Movies
- Consulting services
- New product offerings of existing product lines

Predictable/Mature Products

- Golden Morn
- Corn Flakes
- Lawn fertilizer
- Ball point pens
- Light bulbs
- Auto replacement tyres
- Some industrial chemicals
- Tomato

Efficient supply chain Supply to-stock	④ Economical production runs ④ Finished goods inventories ④ Economical buy quantities ④ Large shipment sizes ④ Batch order processing
Responsive supply chain Supply to-order	Excess capacity Quick changeovers Short lead times Flexible processing Premium transportation Single order processing

Seven Principles of Supply Chain Management

- Segment customers based on service needs
- Listen to signals of market demand and plan accordingly
- Develop a supply-chain-wide technology strategy
- Customize the logistics network
- Differentiate product closer to the customer
- Source strategically
- Adopt channel-spanning performance measures

SELF ASSESSMENT EXERCISE

1. Critically discuss the logistics planning strategic involvement in a logistics operation or services.
2. Identify the seven principles of Supply Chain Management.

4.0 CONCLUSION

In this unit, you have learnt that logistics is important in an Organization since is about creating value, that is value for customers suppliers of firms and firms' stakeholders. Note that value in logistics is expressed in terms of time and place. To actual this value, organizations are involved in logistics strategic planning. You should know all about the process/steps involved in logistics strategic planning for you to achieve efficiency and create value in your organization

5.0 SUMMARY

In this unit, you have learnt that logistics is at the core of both operational and marketing processes because it creates value. Firms now see logistics as an important value adding process for number of reasons namely:

- ❖ Costs are significant
- ❖ Logistics costs are ranked second only to the costs of goods sold
- ❖ Minimizing these costs and passing benefits to consumers and firms stakeholders can be seen as value addition. Also, we should know that supply and distribution line lengthening. The trend is towards an integrated world economy which suggests that firms must develop global strategic where they produce for world economy. Produce locally and distribute internationally is a well known slogan. Logistics is important to strategy and strategy is important to logistics as well. We have learnt about logistics and strategy, key element of strategy and logistic planning. You have known that corporate planning deals with strategic, tactical and operation decision making, Six concepts for strategic formulation were identified in this unit. The seven principles of supply chain management were identified.

6.0 TUTOR-MARKED ASSESSMENT

Identify the service functions of a company that links it with logistics supply channels

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K. Rutkowski, *Logistyczne wyzwania globalnej wioski*, <http://ceo.cxo.pl/artykuly/51999>, 02.12.2012. 15 Cf. M. Sołtysik, *Zarządzanie logistyczne*, Akademia Ekonomiczna, Katowice 2000, pp. 27 – 30. 16 J.

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UNIT 3: GLOBALIZATION AND INTERNATIONAL LOGISTICS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Condition for Functioning and Development of Logistics in the Global World

3.2 Networks and Channels of International Logistics

3.3 International Logistics Channel Means

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assessment

7.0 Reference/Further Readings

1.0 INTRODUCTION

The current logistics operations, as a result overall globalization of economy has become multi-dimensional and multi-faceted with a tendency to cross state borders.

Managing such logistics needs to be focused on the integration of internationally dispersed activities and the units that are responsible for their implementation.

a. The areas which determine the efficiency of international logistics are processes taking place within operational, marketing and financial operations, resulting from the costs of logistics and information.

2.0 OBJECTIVES

At the end of this unit, you should be to:

1. Identify the conditions that promote the functioning and development of logistics in the global scale.
2. Identify the basic element of international logistics
3. Understand the International logistics Channel Means

3.0 MAIN CONTENT

3.1 Conditions for the functioning and development of logistics in the global scale

The social, economic, technical and political-legislative forces of globalization influence all fields of enterprise functions, including the growth in the complexity of managing the supply chain.

Globalization is (among other things):

contrast, meaning - on one hand - the desire to integrate, on the other - to differentiate (integration manifests itself in merging, collaboration and cooperation of various economic entities, differentiation is mainly the diversified economic development of respective countries);

- selectiveness manifesting itself in the fact that mainly the developed countries are involved in globalization, and some with middle GDP income;
- polarization – visible in the division of the world into the rich and developed part, and the predominant part that is poor and not much developed;
- development and liberalization of international trade;
- marketing of the economies, the liberalization and privatization;
- freedom of capital flow;
- integration of financial markets;
- standardization and internationalization of production, services and finance;
- the increasing role of international organizations and groups.

Globalization and internationalization are now such common phenomena that increasingly more often, when using the notion of a market, we mean the entire world, not just one particular economy.

Today, the real test of company management efficiency, for many businesses, is the ability to develop and implement an effective global strategy.

Many factors push companies around the world towards globalization, understood as expansion into foreign markets.

At the time when the company is transformed successively from the local (national) into an international one, and then a global one, it begins for instance, to import materials and components from around the world, manufactures its products in any country, and sells them on many markets, making certain amendments where necessary, to match the product to the local requirements.

The logistic processes carried out within the supply chain show a common tendency to cross national borders, which entails significant modifications of the relationships that occur within, for example

- expansion of mutual relations via tighter links within the information systems used by consignors and carriers of goods, customs offices and agencies;
- increasing emphasis on the need for constant monitoring of international flows of products in order to secure import supplies;
- Increasing the efficiency requirements for the links in order to provide deliveries for the markets located in the remote parts of the world.

Operational cooperation in international logistics is expressed by activities such as:

- implementation of the same (or similar) concepts (rules) of management by the participants, the companies being the supply chain links on the European scale (e.g. LM – Lean Management, AM- Agile Management, TBM – Time-Based Management);
- using one Shared Service Center, the objective of which will be to strengthen and facilitate functions in such areas as human resources management, IT support, logistics, operations between the customers and the supplier etc. (shared services make it possible to perform business processes in line with unified norms, with lowered risk and costs);
- building and use of partner undertakings with logistic companies, suppliers, recipients of the components and products;

- application of the same or similar concepts of inventory management (e.g. CMI, CoManaged Inventory, CPFR – Collaborative Planning Forecasting and Replenishment), VMI – Vendor Managed Inventory);
- using the same or similar methods of goods flow management in companies that are participants of the supply chain on the European scale, and not only (e.g. Just-in-Time).
- implementation of the latest transport technologies (e.g. transport navigation systems, warning systems, tracking systems, high-speed trains, trucks of maximum transport efficiency, that reach the lowest running costs in the industry with optimal performance of the vehicle, fuel-efficient engines, aerodynamic bodylines, modern and spacious inside of the vehicle, safe and economic aircraft);
- implementing the latest warehousing techniques – modern systems, machines, devices (e.g automatic identification, the “goods to man” systems, automatic monitoring, machine vision, automated high-bay warehouses, the WMS information systems- a programme for management of goods movement in warehouses, unmanned trolleys, robots, automatic machines);
- implementation of uniform measures to assess the logistics supply chain on its entire length;
- implementation of logistics packaging chains;
- construction of vast computer networks;
- implementation of modern communication systems, e.g. videoconferences, the Internet;
- standardization of production and inventory control methods and logistic processes;
- implementation of e-logistics (electronic stock exchange, electronic catalogues, freight exchange, electronic logistic platforms, corporation portals);
- standardization of operational costs balance in all supply chain participants;
- creating logistics centers;

- Joint financial management related to international logistics costs, narrows down to monitoring and control:
- freezing of working capital in inventories – this constitutes the answer to a question of how much it costs all chain participants (companies) to freeze the capital in inventories, as opposed to the possibility to use it in any other, more efficient way – the cost of lost opportunities (only good production planning, based on the orders, or well-prepared forecasts, along with the right information exchange, ensures the minimization of stocks);
- the costs of physical flow in international logistics channels (including the costs of: depreciation of fixed assets involved in logistics activities, work, media and materials consumption, external transport services, taxes and transport insurance etc.);
- warehousing costs in international logistics channels (including costs of storage and manipulation);
- costs of stock depletion (including lost sales and delayed orders);
- costs of international logistic channel deficiencies and mistakes in customer service (these include penalties for the breach of supply conditions and all costs resulting from mistakes in service);
- the costs of information flow (the level of customer service is closely related to the quality of information along the entire depth and width of the international logistics channel);
- implementation of effective logistics activity crediting policy.

The identification of logistics costs for particular links of an international logistic channel is extremely troublesome and difficult.

This is caused by the complexity of the problem resulting from the number of varying participants, different as regards their role and place within the channel.

Defining and understanding all logistic costs of each link, especially when changes are introduced into one of them, requires carrying out a simulation and detailed system analysis within the entire international logistic channel.

Helpful tools in defining logistic costs for all participants of logistic chains are:

- integrated management systems that support the ABC method – the balance of operational costs;
- an Excel spreadsheet that facilitates:
- identification of all participants within both upper and lower part of the international logistic channel, along with the costs incurred by logistic operations;
- carrying out simulations of changes and responses of all the links of the chain.
- services provided by specialized units (e.g. consulting companies, Accounting Service Centers –ASC, or Global Shared Services in Finance-Accounting).

The marketing cooperation in international logistics is about accomplishing tasks such as:

- creating the image of the company and brand consolidation for products and services, e.g. by participation in different kinds of rankings;
- realization of unanimous policy regarding the target strategy of logistic services via:
- working out a long-term program, among all participants, i.e. manufacturing, transport and distribution companies, that would indicate the areas for change which might be necessary in the long run;
- joint cost-reduction programs;
- monitoring of external factors that have impact on the price, i.e. customers, competition, distribution channel participants, regulatory, ethical and legal matters.
- using the so-called price positioning affecting the creation of added value for all participants in the supply chain;
- using expert advisory services;

- using integrated IT systems that support the decision making in the price policy area.
- training relevant staff that would be able to maintain the price regime of logistic products;
- finding and exploitation of market niches – among other ways, this may be done by a detailed analysis of:
 - substitution industries – in the broader meaning, the companies compete not only within their own field (e.g. transport industry), but also with the companies that provide substitutes, which would mean companies such as those belonging to the TFL sector (one needs to answer a question, whether there is a place for a new brand product);
 - strategic groups – the term “strategic group” describes a set of companies belonging to one sector and pursuing a similar strategy;
 - supply chain – in the sale of a product, it is crucial to define all supply chain participants until the moment of obtaining the materials, by all sub-contractors, to the final consumer;
 - complementary products and services – it is very rare that the products as such have a value to the customer, most often their price depends on considering the entire set of products and services complementary to one another (it is not enough to deliver a product, it needs to be installed, ran, serviced and withdrawn from exploitation),
 - functional and emotional preferences of the customers – in some industries the competition is based mainly on the price and the ratio of the price to the relevance of the product – such industries may be called oriented on the functional preferences of the customers,
 - time – in order to create a new market space, it is not enough to passively adjust the company to the appearing market trends, one needs to foresee the future needs

of the customer and assess, how the change in needs would influence the perception of products; this is particularly visible in the IT sector,

- systematic study of transfers of shares in the competitive environment (here one cannot forget to create the legislative possibility of moving the stock between pools offered for private and institutional investors as well as between domestic and foreign investors);
- periodic analysis of the size and structure of demand for logistics – the following types of analyses are usually carried out:
 - market absorption;
 - segmentation and selectiveness;
 - market capacity;
 - market development trends, with particular attention paid to e-commerce,
 - Sustainability and flexibility.
- the use of “mix” promotion strategy, depending on the phase of product lifecycle;
- marketing research on chosen European and African markets, which would inter alia answer the following questions:
 - How does the logistics potential shape on the new markets in the African region?
 - How to build a comparative analysis of a logistic company and the products or services it provides on several markets?
 - how to find new channels and markets, including e-markets, for logistic services

3.2 Networks and Channels of International Logistics

International logistics consists of two basic elements:

- supply chains in international dimension, the so-called international logistics channels.

The international logistics network configuration is a human-created system of basic, permanently located ones:

- routes for all modes of transport (i.e. road, rail, air, inland waterway and sea transport);

- Modal points of the logistics network, oftentimes called transport points (e.g. warehouses, independent container points, airports, seaports, logistic centers, etc.);
- ancillary equipment that facilitates the process of servicing roads and transport points;
- Transmission media, through which the logistics points flow to the sources of raw materials extraction, to the place where these products are supplied.

This system can be seen as a closed set, with the following formula:

$$IWC = D \cap P \cap U \cap M \cap R$$

where IWC is net international work configuration

D - Roads;

P - Modal points;

U - Ancillary equipment;

M - Transmission media;

R- Interrelations between elements.

The configuration of an international logistics network is subject to constant change, which is evoked, first of all, by modernization and development of the transport and logistics infrastructure.

3.3 International Logistics channel Means

optimal routes created purposefully and in a systematic way, most often within the confines of the already-existing international logistics networks (though in emergency logistics networks may be created individually, e.g. temporary landing sites or warehouses) to the recipient, along with accompanying information;

The physical network which begins with the supplier and ends with the ultimate client and embraces aspects related to product development, purchase, manufacturing, physical distribution, after-sale service and the circulation of information.

The analysis of the professional literature content and the presented definitions, from the perspective of the product/service added value, makes it justified to form a range of judgments and demands.

Firstly: in international logistics channels the subjects are linked by the physical movement of goods and sending information.

A good example may be the Singer sewing machine.

The basic components of these machines are produced on three continents: the housing - in the US, the drive shafts - in Italy, and the motors - in Brazil.

The final product is assembled in Taiwan, while the customers are spread all over the world.

The dispatch of supply, manufacturing and distribution-related functions between subjects located in various parts of the world is a huge challenge for logistics, which needs to unite and integrate the system.

Secondly - International logistics channels a network of companies established to develop a new product, exchange resources, gain advantages through its size, reduce costs, increase a competitive advantage etc.

They are divided into horizontal and vertical ones.

The former ones are networks established by manufactures of similar or same goods.

The latter are represented by a set of companies connected with one another in a „supplier – receiver“ relationship.

Thirdly – the subject structure of international logistics channels is created by mining companies, suppliers of materials and components, manufacturers, service providers, transport companies, warehouses and logistics centers, distributors and all the relationships between them.

Fourthly - an international logistics channel is a quick, flexible and interconnected system driven by the mechanism of the customers“ choice, aiming to achieve a high level of customer satisfaction, as well as, to gain the highest possible profit by the companies within this channel.

Fifthly - the international logistics channel can be described by means of the following characteristics: the process (the subject of the flow), the structure (the entity structure), and the objectives (the scope of action and the areas of cooperation of participating entities).

Sixthly – the range of international logistics channel consists of raw materials, auxiliary materials and cooperating elements, purchased on the supply market according to the need, passed on to the production process and finished products submitted for sale and delivered to the customer.

Seventhly - depending on the configuration of the international logistics channel, its links may consist of different kinds of mining, processing, service and trading companies.

Their position within the channel results from the division of work in the next stages of production and sales of goods.

Because of their role as senders and receivers of loads, as well as, the accompanying information and finance streams, their basic role in the functioning of the international logistics channel is unquestionable.

The service functions of a company are also important links in logistics and supply chains.

These may include, among others

logistics, transport and shipping companies;

information brokerage companies;

Reprocessing and waste storage plants.

The international logistics channels, just like all other logistics systems relate to ensuring the usability and utility of time availability of goods and services.

Their incorrect configuration leads to waste, generates unnecessary costs and lowers the level of customer service.

SELF ASSESSMENT EXERCISE

1. Identify the service functions of a company's important links in logistics and supply chains.

2. International logistics consists of two basic elements, discuss?

4.0 CONCLUSION

Globalization of International Logistics developed because of the various factors that globalization brought about which led to the growth in the complexity of managing

logistics and supply chain. The condition that led to the development of logistics was identified. The two basic elements of international logistics were identified. They are: The international logistic channels and route for all modes of transport

5.0 SUMMARY

In this unit, you have learnt that globalization and the associated benefits created the conditions for the development of logistics in the global scale because of the complexity of managing supply chain. Two basic networks and channels of international logistics were identify for supply chain in international dimensions that is the so called internal logistics channels and routes for all modes of transport

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UNIT 4: FINANCIAL MEASURES OF LOGISTICS PERFORMANCE

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Financial Measures of Logistics Performance
 - 3.2 Total Logistics Cost
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assessment
- 7.0. References/Further Readings

1.0 INTRODUCTION

In this unit, you will learn the various components of cost in logistics. The different financial ratios use in logistics will be known and what constitute each. Financial measures of logistics performance are important because its control would lead to the enhancement of the functions of logistics in value creation, revenue enhancement, capital consumption and expense control.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Explain the various indicators of logistics financial measures
2. Determine what constitute total logistics cost.
3. Know how to calculate the various logistics cost ratios.

3.0 MAIN CONTENT

3.1 Financial Measures of Logistics Performance

Logistics is playing an increasingly important role in value creation, revenue enhancement, capital consumption, and expense control. As a result, logistics financial performance is playing a bigger role in corporate financial performance.

Measuring and improving logistics financial performance is increasingly important in measuring and improving corporate financial performance.

In addition, since logistics is often in competition with other business processes for capital projects, the better the overall financial reporting we do in logistics, the better chance we have to justify our logistics projects

The most important principle to remember in developing and implementing logistics financial performance measures is that nearly every generally accepted corporate financial measure has a corresponding logistics financial measure.

Detailed descriptions of each indicator follow in the section below;

i. Logistics Expenses (LE)

Logistics expenses are dominated by labor expenses but also include telecommunications, inbound and outbound freight, fuel, fees to third parties, and leased or rented space.

ii. Logistics Profit (LP /R LE)

Logistics profits computed simply as revenue minus logistics expenses. The computation of logistics profit per item, per category, or per location is helpful in determining the business viability of an item, category, or location.

iii. Logistics Asset Value (LAV)

The logistics asset value is the sum total of the value of assets deployed in logistics including inventory, logistics facilities, transportation fleets, material handling systems, logistics information systems, and so on. The valuation is typically based on book value, replacement value, and/or the capitalization of logistics assets.

iv. Return on Logistics Assets (ROLA= P/LAV)

The return on logistics assets is computed simply as the ratio of corporate profit (P) to LAV. The ratio can demonstrate the difference between the return on logistics assets versus the return on overall corporate assets or the assets deployed in the other areas of the business.

v. Logistics Asset Turnover (LAT = R/LAV)

Logistics asset turnover measures the overall utilization of logistics assets and is computed as the ratio of corporate revenue to the investment in logistics assets.

vi. Logistics Capital Charges (LCC = LAV +ACR)

Logistics capital charges are computed as the product of the investment in logistics assets and the asset carrying rate (ACR). The ACR is used to annualize the holding cost of fixed assets.

3.2 Total Logistics Cost (TLC =LE + LCC)

Total logistics costs (TLC) is defined to include expense and capital costs in the five logistics processes: customer response, inventory planning and management, supply, transportation, and warehousing. The total logistics costs are made up of the following: total response cost (TRC), total inventory costs (TIC), total supply costs (TSC), total transportation costs (TTC), and total warehousing costs (TWC).

$$TLC = TRC + TIC + TSC + TTC + TWC$$

The TIC includes the inventory carrying cost and the cost of personnel, office space, and systems employed in managing inventory. Inventory carrying cost is computed as the product of the average inventory value (AIV) and the inventory carrying rate (ICR).

$$ICC = AIV \times ICR$$

The ICR is an annual percentage applied to the AIV to estimate inventory carrying charges.

The rate includes the opportunity cost of capital (every dollar or naira invested in inventory could theoretically be earning the opportunity interest rate), insurance, taxes, loss, and obsolescence.

With this definition, the ICR typically ranges between 10 and 30 percent per year.

In addition, storage and warehousing costs may also be included if they are not already being considered as a part of total logistics cost.

If warehouse operating costs are included, the ICR typically ranges between 15 and 40 percent.

In most cases, corporations underestimate their inventory investment and associated carrying charges.

Often, corporations do not even have a standard inventory carrying rate.

The AIV for an item, i , should be estimated as the product of the average inventory level (AIL) in units and the unit inventory value (UIV).

The UIV is the investment in or cost of creating each unit of inventory at its current status (raw material, work in process, or finished goods).

The UIV is typically the selling price less the margin.

The AIV is computed as follows:

Total supply costs (TSC) include the cost of labor, space, systems, and telecommunications used in planning, approving, executing, and tracking purchase orders.

Total transportation costs (TTC) include inbound and outbound transportation costs.

If the company operates a private fleet, the costs of fueling, maintaining, acquiring, and staffing the fleet must be included.

If carriers are used, the freight bills can be used to compute freight transportation costs.

Total warehousing costs (TWC) include the cost of labor, space, material-handling systems, and information-handling systems.

The cost of labor is simply the product of the annual working hours (AWH, hours/year) and the warehouse wage rate (WWR, dollars/hour with fringes).

The cost of space is the product of the total floor space (TFS, in square feet) and the space occupancy rate (SOR, naira/SF x year).

The cost of material handling systems is the product of the material handling systems investment (MHSI, Naira) and the systems capitalization rate (SCR, percent per year).

Similarly, the cost of information-handling systems is the product of the $AIV_i = AIL_i \times UIV_i$

i. Logistics Cost-Sales Ratio (LCSR TLC/R)

The logistics cost-sales ratio is the ratio of TLC to corporate revenue.

TLC as a percentage of sales is a popular measure of logistics cost performance. Some other helpful unit costs are the logistics cost per order (LCPO), the logistics cost per line (LCPL), and the logistics cost per item (LCPI).

The ratios are computed simply as the ratio of TLC to the orders shipped per year (OPY), the lines shipped per year (LPY), and the number of items (or SKUs) stocked (NIS).

The equations for each of these costs are shown here:

$$\text{LCPI} = \text{TLC} / \text{NIS}$$

$$\text{LCPL} = \text{TLC} / \text{LPY}$$

$$\text{LCPO} = \text{TLC} / \text{OPY}$$

ii. Logistics Value Added (LVA = P - LCC)

Logistics value added is computed in a similar fashion to the economic value added (EVA) of a corporation, subtracting logistics capital charges from after-tax profitability.

Since EVA is the most reliable predictor of future shareholder value (according to Stern-Stewart), LVA is an excellent measure of the contribution of logistics to future shareholder value.

In addition, by incorporating the impact on revenue, expenses, and capital charges, LVA is a good indicator of the overall value of logistics initiatives.

SELF ASSESSMENT EXERCISE

1. Highlight various performance measures of logistics and supply chain management
2. Logistics is playing an increasingly important role in value creation, revenue enhancement, capital consumption, and expense control, discuss?

4.0 CONCLUSION

In this unit, we have learnt the various components of logistics cost and the total logistics cost. We have also known the various financial ratios used to calculate logistics cost.

These measures are very important in order to remain relevant and competitive. You must all of them and what determines each cost component.

5.0 SUMMARY

Logistics is increasingly playing important roles in value creation, revenue enhancement, capital consumption and expenses control in an Organization. To play these important

roles, logistics financial performance measures has assumed prominent role in corporate financial performance. This is because measuring and improving logistics financial performance is now very important in measuring and improving corporate financial performance. We must remember one basic thing in developing and implement logistics financial measures that is nearly every corporate financial measures has a corresponding logistics financial measures. We discussed these financial indicators namely:

- ❖ Logistics expenses (LE)
- ❖ Logistics profit (LP/RLE)
- ❖ Logistics assess value (LAV)
- ❖ Return on logistics assess ($ROLA=P/LAV$)
- ❖ Logistics assess turnover ($LAT=R/LAV$)
- ❖ Logistics capital charges ($LCC=LAV+ACR$)
- ❖ Total logistics cost ($TLC=LE+LCC$)
- ❖ Logistics cost ratio ($LCSR=TLC/R$)
- ❖ Logistics value added ($LVA=P-LCC$)

The various cost concepts and indicators and their ratios are important.

6.0 TUTOR-MARKED ASSIGNMENT

Critically identify the various financial indicators you would use to measure logistics financial performance.

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UNIT 5: CUSTOMER SERVICE IN LOGISTICS AND SUPPLY CHAIN CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Overview of Customer Service in Logistics and Supply Chain Management

3.2 Definitions of Customer Service

3.3 Importance of Logistics Customer Service

3.4 Customer Response Fundamentals and Notations

3.5 Customer Service Policy Design

3.6 Customer Satisfaction Monitoring

3.7 Order Capture and Entry

3.8 Customer Response Systems

3.9 Logistics/Supply Chain Customer Service

3.10 Logistics through the prism of commercial-distributive understanding of the customer service

4.0 Conclusion

5.0 Summary

6.0 Tutor-marked Assessment

7.0 References/Further Readings

1.0 INTRODUCTION

Customer service is one of the key aspects of the offer to the customer of services, which essentially enables the company to differentiate its offers from competition. The main objective of the logistics management is to deliver the right product or service at the right time in the right place and in the desired amount, whereby it must always be taken into account and be careful so that the costs of organizing and conducting a high quality customer service do not threaten the profitability of the business.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

1. Explain the concept of Customer Service in Logistics and Supply Chain Management
2. Understand various definitions of Customer service
3. Identify the Importance of Logistics Customer Service
4. Understand the Customer Response Fundamentals and Notations
5. Understand Customer Service Policy Design and Customer Satisfaction Monitoring
6. Explain the Logistics/Supply Chain Customer Service
7. Understand the Logistics through the prism of commercial-distributive understanding of the customer service

3.0 MAIN CONTENT

3.1 Overview of Customer Service in Logistics and Supply Chain Management

In modern business conditions, managers must pay great attention to logistics activities that are best manifested through adequate customer service, which attracts new customers and retains old ones, therefore, it directly affects the competitive advantage of the company in the market (Melovic, Mitrovic, Djokaja & Vatinc, 2015).

Customer service is one of the key aspects of the offer to the customer of services, which essentially enables the company to differentiate its offers from competition.

The main objective of the logistics management is to deliver the right product or service at the right time in the right place and in the desired amount, whereby it must always be taken into account and be careful so that the costs of organizing and conducting a high-quality customer service do not threaten the profitability of the business.

On the other hand, the main task of the logistics management is to fulfill the function of an adequate customer service, primarily by defining goals and policies of the customer service and the implementation of the selected strategy.

In the last decade of the last century, logistics management has become one of the most attractive areas of strategic management in the world.

Top managers of large and medium-sized companies seek for a new and a very competitive tool in the logistics domain for differentiating their offers from other major competitors in the market (Acimovic, & Servis, 2003).

Customer logistics service is not an idea of these days.

More than 50 years, it has been defined as a research issue and it is under development, since that time.

It may present different view-points for various organizations great emphasis in one organization maybe placed on availability of a product at the time, at the place and in the quantities desired

SELF ASSESSMENT EXERCISE

1. With a case study discuss what you understand by customer service in logistics and supply chain management.
2. Customer service serves as a competitive tool in logistics and supply chain operational management. Discuss

3.2 Definitions of Customer Service

Customer service is the quality of performances of the distribution system, Delivery service represents different dimensions of the implementation of the process of ordering along with the sales promotion,

Customer service means adjusting a part of offers to a specific demand,

Customer service is a direct result of the connection between sales activities and the delivery process, which begins with the order and ends with the delivery, but in some cases it continues with the post-purchase stage of the product usage.

Customer satisfaction, service quality and relationship management are among measures of success in dealing with the customer point of view.

To achieve these, organizations must engage in practices that provide superior value and a service to their customers than the other competing organizations or channels provides, thus the level of customer satisfaction improves.

Customer service is seen as an output of the logistics system of the company which is positioned in the marketing mix.

Customer service represents a measure of the efficiency of the logistics system in creating time and space value for the product, including after-sales activities of the company.

According to them, the policy of the customer service is not created just for current customers, but it is a process which has the task to attract as many new customers as possible.

The level of the customer service is directly connected with the market share of the company, with total logistics costs and with the profitability of the company as well.

This term can be defined as follows: customer service indicates the willingness of manufacturers and merchants to deliver the right product at the right time, in an appropriate quantity and at the requested place, with acceptable costs - final price of goods.

This definition includes all the main items within customer service activities: provision of the required quantity of the demanded product at the requested time and place.

In this way, it represents the output of the system of the marketing logistics, or more precisely, the physical distribution of the final products of any company.

A well placed customer service and adjusted to market requirements, is indeed a product of the entire logistics operations and at the same time a reference through which users assess the validity of the entire system of marketing logistics of an enterprise.

Customer service is generally presumed to be a means by which companies attempt to differentiate their product, keep customers loyal, increase sales, and improve profits.

- Its elements are: – Price – Product quality – Service
- It is an integral part of the marketing mix of: – Price – Product – Promotion – Physical Distribution
- Relative importance of service elements – Physical distribution variables dominate price, product, and promotional considerations as customer service considerations – Product availability and order cycle time are dominant physical distribution variables

SELF ASSESSMENT EXERCISE

1. Highlight various definitions of customer service in logistics and supply chain management with examples.
2. Identify the elements that would help to differentiate products, and maintain customer loyalty in logistics.

3.3 Importance of Logistics Customer Service

- Service affects sales distribution, when it provides the proper levels of service to meet customer needs, can lead directly to increased sales, increased market share, and ultimately to increased profit contribution and growth.
- Service affects customer patronage - Service plays a critical role in maintaining the customer base:

On the average it is approximately 6 times more expensive to develop a new customer than it is to keep a current one.

SELF ASSESSMENT EXERCISE

Discuss the importance of customer service to a logistics operator.

3.4 Customer Response Fundamentals and Notations

Before developing the customer response master plan, each organization must make a clear distinction between the customers and consumers of its products and services.

The consumer is the last party in the logistics chain.

The consumer is the party who uses the product for the purpose it was ultimately designed for. The customer is the party who buys the product from us.

The customer may or may not be the last party in the logistics chain.

Depending on where you are in the supply chain, you may have no idea who is consuming your product, but you should always have a good relationship with the customer of the product.

For a retailer or mail-order company, the customer is almost always an end consumer.

There are five activities in customer response (CR):

- Customer service policy design
- Customer satisfaction monitoring

- Order entry
- Order processing
- Invoicing and collections

The customer response master plan must address short, middle, and long-term designs for CR measures and goals, processes, systems requirements, and organization requirements.

SELF ASSESSMENT EXERCISE

1. Highlight the five activities in customer response.
2. Briefly discuss customer response fundamental notation.

3.5 Customer Service Policy Design

There is always a saying that, “Either manage the customers or they will manage you.”

The customer service policy (CSP) is the first step in proactive customer and demand management.

The CSP is the contract between the logistics organization and the customer.

It defines the service targets and objectives for logistics.

The CSP sets the service requirements for each logistics process, including inventory management, supply, transportation, and warehousing.

The CSP is the foundation for logistics master planning.

Nonetheless, many of the companies do not have a CSP or the one they have is defective.

CSPs usually reflect the culture and logistics maturity of the company.

CSPs can be labeled as the following:

- Ad-hoc -There is no CSP (“We just do whatever the customer wants.”).
- Well-defined exuberance -The CSP is stated but not quantified (“Our service rolls our customers ‘socks down.’”).
- One-size-fits-all -There is a stated and quantified CSP but no segmentation (for example, “companies will provide 100 percent availability for 100 percent of our SKUs for 100 percent of our customers 100 percent of the time and make our customers so excited about us that they will tell their friends and neighbors.”).
- Mature- The CSP is stated, quantified, and segmented by customer and item classes.

SELF ASSESSMENT EXERCISE

1. Identify the way Customer Service Policies can be labeled in Customer services in logistics.

2. Explain Customer Service Policy Design

3.6 Customer Satisfaction Monitoring

Once the customer service policy has been established, monitoring the performance and overall customer satisfaction are keys to maintaining customer intimacy—keeping the pulse on the customer.

(The greatest business failures can be traced to companies losing step with customer requirements.)

Customer satisfaction monitoring is a key discipline of customer response organizations and can be used to prioritize logistics initiatives and to maintain constructive customer communications.

Customer satisfaction surveys can be implemented over the Internet, over the telephone, and/or in person.

In fact, some element of customer satisfaction should be monitored during each customer interaction.

The survey process should begin by having the customers decide and rank the factors that define customer satisfaction for them.

The survey should permit the customer to then rank our performance relative to expectations and relative to the competition with respect to the key factors identified by the customer.

Monitoring helps to measure the level of satisfaction of the customer on the level of service offered. Customer satisfaction score (CSAT) is the most commonly used method. You ask your customers to rate their satisfaction on a linear scale. It can be 1-1, 1-5 or 1-10. No universal measure available. However, customer satisfaction can be measured through the following methods.

1) Customer satisfaction score. This is the time tested metric.

2) Net promoter score.

- 3) Customer effort score.
- 4) In-app customer surveys
- 5) Post-service customer surveys.
- 6) Customer surveys via Email
- 7) Volunteered feedback, and
- 8) Survey best practices.

SELF ASSESSMENT EXERCISE

1. What do you understand by the word Customer Satisfaction Monitoring?
2. How would you measure the level of customer service satisfaction in a typical logistics Company?

3.7 Order Capture and Entry

Order capture and entry is the activity of capturing customer demand and entering it into our own systems for processing.

The main principle is to make order entry as customer-friendly as possible.

There is nothing more frustrating for a customer than to have to work hard to order our products; in fact, to make it so is downright arrogant.

The order entry activity is the interface point with the customer, and it often makes the overall impression to the customer.

The order entry experience should be pleasantly memorable.

For example, the best CSRs in call centers know who is calling before they answer the phone and have extensive customer information on file and on the screen to prepare the CSR for the order entry conversation.

Order Processing

Order processing is the set of activities occurring between order entry and order release to the warehouse.

Order processing activities include

- Order pattern recognition
- Credit verification
- Order status communication and order changes

- Order batching and assignment for efficient transport and picking

SELF ASSESSMENT EXERCISE

1. Write a short note on order capture and entry
2. Highlight order processing as a working concept

3.8 Customer Response Systems

Modern vernacular for a customer response system (CRS) is customer relationship management (CRM).

For all the reasons outlined previously, CRM software is one of the hottest software in the market.

The CRS is one of five subsystems in a logistics information system.

The functionality in a customer response system includes

- Order entry
- Order processing

Contact management

- Customer activity profiling
- Order pattern recognition
- Customer transaction databases
- Open order databases
- Customer service policy maintenance
- Customer service performance measurement
- Call/customer transaction management systems
- Customer satisfaction monitoring
- Infrastructure sufficient to provide real-time order and inventory status information even in peak demand periods
- Embedded CSP guidelines to maintain CSP disciplines
- Automated, single-point order entry
- Online order assignment to optimal shipments and pick waves.

SELF ASSESSMENT EXERCISE

1. Briefly discuss the term Customer Response Systems

2. Highlight the functionality in a customer response system

3.9 Logistics/Supply Chain Customer Service

“Logistics is no longer the ‘last frontier of cost reduction,’ it is the new frontier of demand generation”.

The most important customer service elements are:

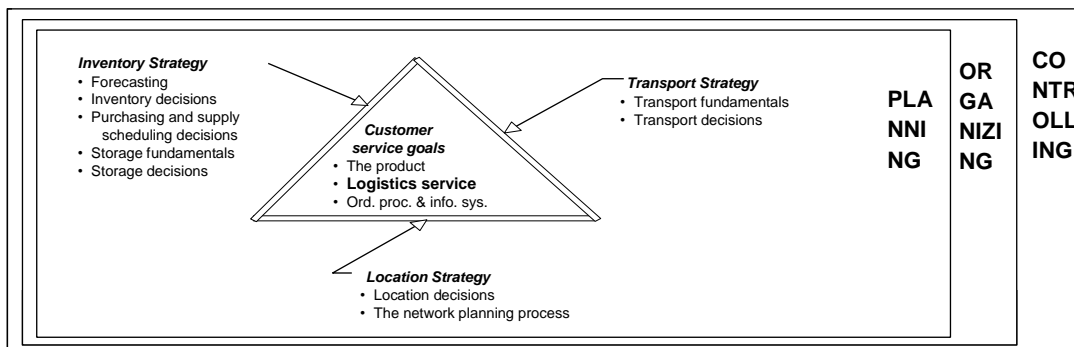
- On-time delivery
- Order fill rate
- Product condition
- Accurate documentation

Order Cycle Time

Order cycle time contains the basic elements of customer service where logistics customer service is defined as: the time elapsed between when a customer order, purchase order, or service request is placed by a customer and when it is received by that customer.

Order cycle elements - Transport time - Order transmittal time - Order processing and assembly time - Production time - Stock availability

Customer Service in Planning Triangle



Order cycle time is expressed as a bimodal frequency distribution

Constraints on order cycle time - Order processing priorities - Order condition standards (e.g., damage and filling accuracy) - Order constraints (e.g., size minimum and placement schedule)

SELF ASSESSMENT EXERCISE

1. With the aid of a diagram discuss customer service in planning triangle.
2. Briefly discuss Order cycle time in customer service in logistics

3.10 Logistics through the prism of commercial-distributive understanding of the customer service

Customer service is present in the field of marketing research and the creation of the marketing strategies of a company, but it is also more than relevant to the field of distribution and logistics management.

Leading theorists in the field of trade (and marketing) management, Berman and Evans, point out that the customer service involves in itself a set of recognizable, but as a rule, intangible activities undertaken by sellers.

In addition, the customer service is seen as a supportive activity to basic activities of the company-production or sale of products and/or services

In the highly competitive market of final products, the level of customer service can help firms get new and/or retain old customers. Customers require the meeting of their needs in two levels:

Satisfaction with the product (e.g., purchased car) or service (e.g., rent-a-car), based which depends on what represents a basic activity of the company, and

Satisfaction with the quality of the customer service -for example, sellers' kindness, knowledge of sales, delivery competency, working time, etc.

Putting all types of services that are offered to customers in strategic dimensional level, we can categorize all segments of the customer service in four large groups:

Basic aspects of the customer service -these are those services that are nowadays very common, such as parking for customers, possibility for customers to take their basket from the store to the car, toilet, restaurant etc. These are services that do not indicate any additional value to the customer, but also costs that are related to their production are not

big and are calculated in advance in the construction and equipping of commercial shopping centers.

Inevitable customer service activities -represent tasks of receiving, sorting and handling goods in the store. These tasks require a lot of work, and at the same time they cause additional costs for the company, while the value of these activities in the eyes of consumers minimizes. This means that company cannot avoid these group of working activities, but it can modernize them (e.g. high bay warehouse), which will reduce the costs of servicing customers. Customers pay these service costs through the purchasing price of goods.

The supporting customer service -represents works and activities in implementing services that require high costs, but in the eyes of customers the value of these works is highly ranked. This applies to the activities of sorting orders, free home delivery, storage of products in special boxes until the customer returns, care for children while parents are buying, sending wedding and birthday cards to their customers, etc. Practically, these aspects of the customer service have a direct impact on sales.

Additional service for customers -primarily, it means the computerization of systems in stores, which, nowadays is not a big expense, but it represents a significant value for customers. This enables, for example, phone and computer orders, electronic payments and keeping various records that are in the domain of logistics or other information systems in the enterprise.

SELF ASSESSMENT EXERCISE

Highlight segments of the customer service in four large groups

4.0 CONCLUSION

This unit provides a basic knowledge of the customer service in logistics and supply chain management. It provides various information about customer services, including customer satisfaction, customer response, customer service policy and the importance of customer service in logistics.

5.0 SUMMARY

Customer service in logistics and supply chain management is very important, both in manufacturing and distribution of raw material and finished goods. This is because customer service enhances customer's competition and as well increase market share in the organization.

6.0 TUTOR-MARKED ASSIGNMENT

Discuss logistics strategic planning with a practical example of local manufacturing industry in Nigeria.

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