

**2nd**  
EDITION

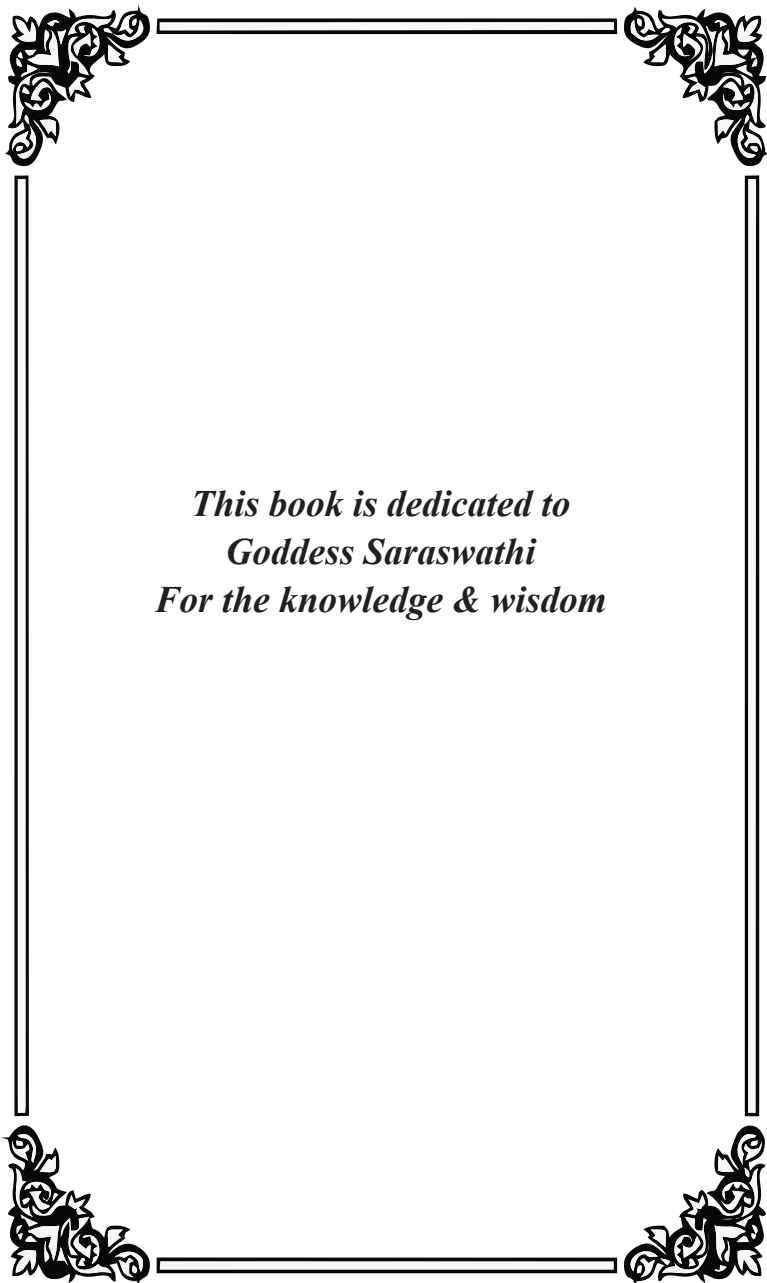
# LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Saikumari V. • S. Purushothaman



**SULTAN CHAND & SONS**

# Logistics and Supply Chain Management



*This book is dedicated to  
Goddess Saraswathi  
For the knowledge & wisdom*

# LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Fax : 011-23266357; Website : www.sultanchandandsons.com

**ISBN: 978-93-91820-41-1 (TC-1254)**

**Price: ₹ 325.00**

First Edition : 2022; Reprint : 2023

Second Edition : 2023

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**Author's Acknowledgement:** The writing of a Textbook always involves creation of a huge debt towards innumerable author and publications. We owe our gratitude to all of them. We acknowledge our indebtedness in extensive footnotes throughout the book. If, for any reason, any acknowledgement has been left out we beg to be excused. We assure to carry out correction in the subsequent edition, as and when it is known.

## Preface of the Second Edition

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In continuation with the success of our first edition among students across India, now the second edition is revised with more content related to Logistics and Supply Chain Management covering all Indian Universities.

This book is written in simple and easy language covering the fundamental concepts on logistics, which assists in quick learning for students. Also different tables, diagrams and examples are included in this book for making the subject easy to understand. This book is definitely helpful resource not only for Management students but also for professionals from logistics domain for gaining theoretical and practical knowledge about Logistics Management.

The objective of this book is to convey the basic functions and activities of logistics to the readers and make them to understand the process associated with logistics activity. This book also highlights that the logistics act as an important support function to generate revenue by delivering goods at right time and right place. This book not only elaborates the contents related to logistics, it also helps the students to equip with needed skills to execute a logistics activity such as Communication skills, Decision making skills, Analytical skills, Organizing skills and Time Management Skills. This book also motivates the students to take up the job in logistics sector, as the Logistics field is booming in India

### Preface of First Edition

This book is written in simple and easy language covering the fundamental concepts on logistics, which assists in quick learning for students. Also different tables, diagrams and examples are included in this book for making the subject easy to understand. This book is definitely helpful resource not only for Management students but also for professionals from logistics domain for gaining theoretical and practical knowledge about Logistics Management.

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*Saikumari. V.  
S. Purushothaman,*

## Acknowledgments

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I express my sincere gratitude to our Honourable Chairman Dr. R. Shivakumar, SRM Group of Institutions, Ramapuram & Trichy campuses for being a great source of inspiration!

I thank all my colleagues of SRM Easwari Engineering College for providing their valuable support. I also want to acknowledge the staff at Sultan Chand & Sons on behalf of this book, Ms Shikha Vaish, for the specific suggestions regarding the manuscript. I appreciate Dr. Sharon Sofia, Professor, VIT Chennai. I appreciate the co-author Mr. S. Purushothaman. For his interest and efforts.

I thank all my friends from Industry and Academia for providing a detailed review and for offering numerous suggestions for improving presentation. Special note of thanks to my entire students community.

I express my sincere gratitude to my parents Er.Veeraraghavan. K, Mrs. Susila. V. I am also grateful to my entire family for their support and motivation towards successful completion of this book.

**Dr. Saikumari V.**

I express sincere gratitude to my Head of the Department Dr. Saikumari. V, Professor & Head –MBA, Easwari Engineering College for providing the opportunity to publish the book on Logistics and Supply Chain Management and extending necessary support in writing this book jointly. I thank all my colleagues in the Department for providing their valuable support.

I am glad to thank my parents Mr. K. Srinivasan & Mrs. S. Bharathi, my wife Mrs. R. Gayathri and my son master P. Lakshan Raj as a pillar of support for all my efforts in my career. I thank my friends Dr. Guru, Dr. Vimal Samsingh and Mr. Umesh and all my relatives for their warmth and continuous encouragement. Finally, I thank my student Mr. Vishnu Durgha Prasad for inspiring to publish the book and thanks to all my students and well wishers.

**Dr. S. Purushothaman**

## Expert Review

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This book will help logisticians and MBAs to put their thoughts and words together to explain various aspects of logistics to anyone they come across. Logistics is about action and motion and this book is all about it.



**Mr. Naveen Prakash,  
Director,  
Global Logistics Solutions India Private Limited,  
Chennai.**

I take this time to appreciate the book by name 'Logistics & Supply Chain Management' and the efforts taken by the authors to elaborate the various concepts of logistics with suitable examples from industrial perspective.



**Mr. C. Sharath Babu-CEO,  
TPRS Enterprises Private Limited,  
Puducherry.**



The Book on ‘Logistics & Supply Chain Management’ authored by eminent Management Educators fulfills the vacuum in this domain. It is a treasure both for Management students as well as industry professionals.



**Dr. M. Ramanan, Director,  
BHU Dheen Dayal Institute of Management Kanchipuram, Tamil Nadu.**

This book gains significance during this pandemic time as Logistic and Supply Chain has become a buzzword and Equity Market shown their robust support for “Zomato – A new employment generation” subject for students. I appreciate the authors for bringing out this book at the appropriate time.



**Dr. P.R. Ramakrishnan, Dean – cum Professor,  
School of Management and Commerce  
Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu.**

“I appreciate the efforts taken by the author to elaborate the various concepts of Logistics & Supply Chain Management with suitable examples from an industrial perspective. I am sure that this book would be of great help for the students”.



**Prof. Bholanath Dutta, Founder & President: MTC Global (R)  
Chairman- Global Entrepreneurs Grid (GEG) Bangalore, India**

Appreciation to the authors who have come out with this useful book to help both the students and people who foray into the logistics industry, to gain theoretical and practical knowledge about logistics and supply chain management. It is an easy read and the questions given at the end of each chapter will create more interest and enable the students to get a better understanding of each subject. This book will be a valuable resource for the reader.



**Mr. S Jayaraam**  
**Region Head**  
**Business Standard**

I appreciate the efforts taken by the authors to explain the various concepts of Logistics & Supply Chain Management in a simple way with relevant examples from business perspective.



**Prof. AVR Pandian**  
**Professor of Management**  
**College of Business and Economics**  
**Dire Dawa University,**  
**Dire Dawa, Ethiopia.**

## Brief Contents

| <i>S.N.</i> | <i>Chapter Name</i>                             | <i>Pages</i> | <i>Short Answers</i> | <i>Long Answers</i> | <i>Critical Thinking Questions</i> |
|-------------|---|--------------|----------------------|---------------------|------------------------------------|
|             | Prelims   | <i>i-xl</i>  |                      |                     |                                    |
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| 3.          | Transportation and Packaging                    | 60-108       | 23                   | 15                  | 4                                  |
| 4.          | Logistics Performance Measurement and Costs     | 109-126      | 15                   | 10                  | 3                                  |
| 5.          | Current Trends in Logistics                     | 127-157      | 20                   | 15                  | 3                                  |
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|             | Question Bank                                   | 191-229      | 237                  |                     |                                    |
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# Syllabus

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## **Anna University, Tamil Nadu**

BA5025, LOGISTICS MANAGEMENT

(Regulation 2017 /Operations Elective)

### **Unit I – Introduction**

Definition and Scope of Logistics – Functions & Objectives – Customer Value Chain – Service Phases and attributes – Value added logistics services – Role of logistics in Competitive strategy –Customer Service.

### **Unit II – Distribution Channels and Outsourcing Logistics**

Distribution channel structure – channel members, channel strategy, role of logistics and support in distribution channels. Logistics requirements of channel members. Logistics outsourcing – catalysts, benefits, value proposition. Third and fourth party logistics. Selection of service provider.

### **Unit III – Transportation and Packaging**

Transportation System – Evolution, Infrastructure and Networks. Freight Management – Vehicle Routing – Containerization. Modal Characteristics, Inter-modal Operators and Transport Economies. Packaging- Design considerations, Material and Cost. Packaging as Unitisation. Consumer and Industrial Packaging.

### **Unit IV – Performance Measurement and Costs**

Performance Measurement – Need, System, Levels and Dimensions. Internal and External Performance Measurement. Logistics Audit. Total Logistics Cost – Concept, Accounting Methods. Cost – Identification, Time Frame and Formatting.

### **Unit V – Current Trends**

Logistics Information Systems – Need, Characteristics and Design. E-Logistics – Structure and Operation. Logistics Resource Management

e-LRM. Automatic Identification Technologies. Reverse Logistics – Scope, design and as a competitive tool. Global Logistics – Operational and Strategic Issues, Ocean and Air Transportation. Strategic logistics planning. Green Logistics.

## **University of Madras, B.Com. (General) Degree Course**

Syllabus with effect from 2020-2021

BGE-CSC15 Core–XV: Logistics and Supply Chain Management

**Credits:** Core 4/Elective 5, Year: III, Semester: V

### **Outcome**

On completion of syllabus student will understand the basic concepts of logistics and supply chain management and student prepare them self to work in logistics and allied industries.

**Unit I: Concepts of Logistics** – Evolution – Nature and Importance – Components of Logistics Management – Competitive advantages of Logistics – Functions of Logistics Management – Principles – Logistics Network – Integrated Logistics system, Supply Chain Management – Nature and Concepts – Value Chain – Functions – Supply chain effectiveness – Outsourcing – 3PLs and 4PLs – Supply Chain relationships – Customer services.

**Unit II: Elements of Logistics and Supply Chain Management** – Inventory carrying – Warehousing, Technology in the ware house: Computerisation, Barcoding, RFID and WMS – Material handling, Concepts and Equipments: Automated Storage and Retrieval Systems – Order Processing – Transportation – Demand Forecasting – Impact of Forecasts on Logistics and Supply Chain Management – Performance measurements.

**Unit III: Transportation** – Position of Transportation in Logistics and Supply Chain Management – Road, Rail, Ocean Transport – Ships – Types – Measurement capacity of Ships – Shipping Information, Air, Transport – Multi Model Transport – containerization – CFZ – ICDS – Cross Docking – Selection of Transportation Mode – Transportation Network and Decision – Insurance Aspects of Logistics.

**Unit IV: Logistical Information System (LIS)** – Operations – Integrated IT solution for Logistics and Supply Chain Management – Emerging Technologies in Logistics and Supply Chain Management. Components of a logistic system – transportation – Inventory carrying – Warehousing – Order Processing – Distribution Channels – Difference between Warehouse and Distribution Centre.

**Unit V: Performance** – Bench marking for Supply Chain Improvement – Dimensions and Achieving Excellence – Supply Chain Measures – SCOR Model – Logistics Score Board – Activity Based Costing – Economic Value Added Analysis – Balance Score Card Approach – Lean Thinking and Six Sigma Approach in Supply Chain.

### **University of Mumbai (MBA programme)**

Alkesh Dinesh Mody Institute for Financial and Management Studies

Semester - III OPERATIONS (CORE) Semester: III Core

Course: Supply Chain Management

### **Learning Outcomes**

1. Understanding the supply chain. What is a supply chain? Decision phases in a supply chain. Evolution of SCM, SCM integration, Linkages and Decisions in SCM. Difference of Supply Chains in Product (Mfg.) Industry and Service-based Industry. Supply Chain and Demand chain, Value creation. Delivery and Value addition through supply chain. Process view of a supply chain. The importance of supply chain flows. Competitive Supply Chain Strategies. Achieving strategic fit.
2. Logistics Competitive advantage and three C, Competitive advantage through logistics. Logistics–A system concept, Customer value chain, Logistics functions. Logistics Mission, Objectives, Goals, Decisions. Reverse Logistics.
3. Warehousing and Distribution Role of warehouse in Logistics, Lecture and discussion. Understanding of Warehousing function S, No Content Activity Learning outcomes Warehousing functions, Types of warehouses, Warehouse site selection, Layout design, Warehouse Decision model. Warehouse automation, strategies, performance, costing. Distribution, Role, Importance, Levels, Channels, Structure, Functions. Channel partners, functions, Tasks,

Flows, Strategy. Free trade zones and special economic zones and distribution channel.

4. Order Processing and Logistics Information system Order Preparation, Transmittal, Order entry, Order filling, Order status reporting Industrial order processing and Retail order processing. Web based order processing. Processing priorities.
5. Performance Measurement and Controls in Supply Chain Management Pre-transaction, Transaction, Post-transaction elements, Service attributes Value added customer service, Importance of Logistics Customer service Sales and Service relationship, Cost and Service relationship. Objective, Levels, Parameters of performance measures – Cycle time, Fill Rate. Inventory Turnover, On-time Shipping and Delivery, Perfect Order, Stock out. Transportation measurements, Customer perception measure, Audit. Gap Analysis Concept of Benchmarking, Benchmarking for Best Practices SCOR and DCOR.
6. Transportation Infrastructure, road, rail, air water, pipeline. Freight Management, Freight cost. Transportation Network Route planning, Containerization, Packing. Effective / Cost Optimizing Distribution strategies – Direct shipment, Cross-docking, Milk run, transshipment.
7. Designing Logistics and distribution network in a supply chain. Applications to Online Sales Network Design in the SC the role of distribution in the supply chain. Importance of Smart Transportation Distribution Center Concept, Modern DC's, Robotics Usage for pick and pack. Factors influencing distribution network design. Supply Chain, Integration Design option for a distribution network. Distribution network in practice.
8. The value of Information Bullwhip effect. Effective forecasts. Information for the coordination of systems. Collaborative Planning Forecasting Replenishment (CPRF) concept. Locating desired products. Lead time reduction. Information and supply chain trade-off. Designing the supply chain for conflicting goals. Inventory Management and Risk pooling, Logistics Information System Function, OMS, WMS, TMS. Internal Operations – Input, Database management, Output.

9. Strategic Alliances A framework for strategic alliances. Third party / fourth party logistics. What are 3PL/4PL, advantages and disadvantages of 3PL, 3PL issues and requirements? Retailer supplier partnership. Types of RSP, Requirements of RSP Inventory ownership in RSP, Issues and steps in RSP implementation Advantages and disadvantages of RSP. Distribution Integration Types of and issues in Distribution integration. Customer Value.
10. E-procurement and outsourcing. Outsourcing benefits and risks. A framework for Buy/Make decisions E-procurement. A framework of E-Lecture and discussion. Understanding procurement through Internet and impact.
11. Designing Global Supply Chain Networks Global market / Technological/ Cost/ Political and Economic Forces. Risks and advantages of international supply chain. International versus Regional products. Local autonomy versus central control. Regional differences in Logistics- Cultural differences/ infrastructure/ performance expectation and evaluation Information systems availability, human resources. Global business logistics.
12. Performance Measurement and Controls in Supply Chain Management Measurement of a Robust Supply Chain. Cost / Quality / Service Measurement Introduction and concept of Benchmarking. Gap Analysis. Key actions in benchmarking for best practices. Overview of Supply Chain Operations Reference (SCOR) Modeling. Balance scorecard for SCM. Lean Manufacturing and Mass Customisation.
13. Ethical issues in SCM Supply chain vulnerability. Conformance to applicable laws such as contract and commercial laws, trade regulation, Government procurement regulations, patents copyrights, trademark laws, transportation and logistics laws and regulations Environmental laws. International practices. Confidentiality and proprietary information.
14. Current Trends in Supply Chain Goldratt Supply Chains Sustainable Supply Chain Resilient supply chains Green Supply chain Lean supply chain.



**Vels University, Chennai**  
**(MBA – Logistics and Supply Chain Management)**  
(Elective Courses – Logistics)  
Logistics Concepts and Planning

**Unit I – Introduction Logistics**

Introduction – Scope of logistics in business, Logistics and Supply Chain Management, Core and support activities of logistics; Logistical integration hierarchy; Integrated Logistics; Operating objectives; Barriers internal integration; Logistical performance cycles; Supply chain relationships – Channel participants, Channel structure, Basic functions, Risk, power and leadership.

**Unit II – Logistics System Design**

Logistics reengineering, Logistical environmental assessment, Time based logistics, Anticipatory and Response based strategies, Alternative strategies, Logistical operational arrangements, Time based control techniques; Integration theory – Location structure, Transportation economies, Inventory economies, Formulating logistics strategy.

**Unit III – Logistics Strategy and Planning**

Logistics planning triangle, Network appraisal; Guidelines for strategy formulation – total cost concept, Setting customer service level, Setting number of warehouses in logistics system, Setting safety stock levels, Differential distribution, Postponement, Consolidation, Selecting proper channel strategy.

**Unit IV – Inventory and Purchasing**

Review – Inventory and purchasing decisions; Multi facility location problems – Exact method, Heuristic methods, other methods; Logistics planning and design – Feasibility analysis, Project planning, Assumptions and data collection, Analysis, Development of recommendation, Implementation.

**Unit V – Location Decisions**

Planning and design techniques – Logistics adhoc analysis, Location analysis, Inventory analysis, Transportation analysis.

**Vels University, Chennai**  
(MBA – Logistics and Supply Chain Management)  
Transportation and Distribution Management  
(Elective course-Logistics)

**Unit I – Distribution**

Role of Distribution in Supply chain, Distribution channels – Functions, resources, Operations in Distribution, Designing Distribution network models, its features, advantages and disadvantages.

**Unit II – Planning**

Distribution network planning, Distribution network decisions, Distribution requirement planning (DRP).

**Unit III – Transportation**

Role of Transportation in Logistics and Business, Principle and Participants-Scope and relationship with other business functions, Modes of Transportation - Mode and Carrier selection, Routing and scheduling.

**Unit IV – Transportation**

International transportation, Carrier, Freight and Fleet management, Transportation management systems-Administration, Rate negotiation, Trends in Transportation.

**Unit V – Information Technology (IT)**

Usage of IT applications -E commerce – ITMS, Communication systems-Automatic vehicle location systems, Geographic information Systems.

**Bharatiyar University, Coimbatore, Tamil Nadu.**

Programme: MBA (Logistics and Supply Chain Management)  
II Year 2.1. Logistics Management

**Unit I:** Introduction to logistics management- Definition, scope, functions, objectives - Integrated logistics management, role of logistics in the Supply chain - Logistics & customer service, Role of logistics in competitive strategy, Logistics organization & performance measurement, ERP – SAP – ORACLE.

**Unit II:** Inventory planning, inventory costs, classifying inventory, Nature & importance of warehousing, types of warehouses, warehousing

functions, warehouse layout & design. Material handling objectives, guidelines & principles, selection of material handling equipments. Packaging-role of packaging, packaging materials, consumer & industrial packaging, material handling efficiency.

**Unit III:** Transportation – role of transportation in logistics, transportation selection decision, basic modes of transportation – Rail, Road, Water, Air, Pipeline - characteristics of different modes- transport economics - Inter modal operations .

**Unit IV:** Containerization-concept, types, benefits, Types of carriers-indirect & special carriers, Role of intermediaries – shipping agents, brokers, freight management- route planning Role of ports, ICDs, CONCOR - Global shipping options.

**Unit V:** Reverse logistics- scope, design, e-logistics- logistics information system-application of IT in logistics – automatic identification technologies- bar coding, RFID, Logistics outsourcing – 3PL & 4PL, Global logistics- operational & strategic issues

### **Periyar University, Salem, Tamil Nadu (MBA)**

Programme: MBA – Logistics and Supply Chain Management

#### **2.5 Logistics Management (2nd Year)**

**Unit I:** The Logistics of Business – The Logistical Value Proposition – The Work of Logistics – Logistical Operating Arrangements – Flexible Structure – Supply Chain Synchronization.

**Unit II:** Transport Functionality, Principles and Participants – Transportation Service – Transportation Economics and Pricing – Transport Administration – Documentation.

**Unit III:** International Logistics and Supply Chain Management: Meaning and objectives, importance in global economy, Characteristics of global supply chains: Global Supply Chain Integration – Supply Chain Security – International Sourcing – Role of Government in controlling international trade and its impact on Logistics and Supply Chain.

**Unit IV:** International Insurance – Cargo movements – water damage – Theft – Privacy pilferage – Other risk – perils with air shipments – Risk Retention – Risk Transfer – Marine Cargo Insurance – Coverage A,B,C classes – Elements of air freight Policy – Commercial Credit Insurance

– Size of Vessels, Tonnage, Types of vessels- Container, Combination ships – Non vessel operating carriers.

**Unit V:** International Air transportation – Types of aircrafts – Air cargo Regulations – Truck and Rail Transportation – Inter model – pipe lines – Packaging objectives – TCL, LCC – Refrigerator – goods – customs duty – Non Traffic barriers – customs cleaning process – International logistics Infrastructure.

## **Gujarat Technical University, Gujarat (MBA)**

Master of Business Administration (Part-Time),  
5th Semester (Sectoral Elective)

Logistics and Supply Chain Management (LSCM)

[Effective from Academic Year 2018-19]

### **I. Logistics and Supply Chain Management – An Overview:**

- Logistics, SCM and the difference between logistics and SCM.
- Supply chain and value chain • Mission of logistics management
- Value addition by logistics • Drivers of supply chain performance
- Supply Chain Strategy and Performance Measures: • Customer service and cost trade-offs • Impact of out-of-stock • Setting customer service objectives and priorities • Supply chain performance measures
- Enhancing supply chain performance Outsourcing: Make versus Buy.

**II. Logistics Management:** • Role of Logistics in Supply Chain Management • Logistics Service Providers 3PL's & 4PL's • Logistics Activities • Marketing and logistics interface • Logistics cost analysis and total cost analysis • Reducing logistics lead time • Packaging and materials handling Designing Transportation Network: • Drivers of transportation decisions • Modes of transportation • Design options • Direct shipment network • Direct shipping via milk run • Distribution centre • Cross docking • Shipping via DC using milk runs • Tailored network • Routing, scheduling and sequencing in transportation. • Vehicle Routing Problems. • Route sequencing procedure • Farthest insert, nearest insert, nearest neighbor, Sweep • Route improvement procedure • 2-OPT and 3-OPT. Reverse Logistics: • Definition, reasons, benefits • Elements of reverse logistics • Closed loop supply chain.

**III. Network Design:** • Define the network design process • Perform a LSCM Audit • Examine the LSCM network alternatives • Conduct a

Facility Location analysis • Make decisions regarding network and facility locations • Develop an implementation plan. • Modeling Approaches: • Optimization and simulation models • Facility Location Supply Chain Integration: • Internal and External Integration Supply Chain Restructuring.

**IV. Synchronous Supply Chain:** • Virtual supply chain and the extended enterprise • Quick response logistics • Role of information, Agile Supply Chains. Introduction to use of Technology in SCM • Role of Technology in Supply Chain Management • Key Application Tools Strategic Challenges for supply chains. Sustainable Supply Chain Management.

### **Ganapat University, Gujarat**

#### **(MBA- Logistics and Supply Chain Management)**

**Specialization:** International Business/Logistics and Supply Chain Management

GLOBAL LOGISTICS MANAGEMENT (60hrs)

#### **Unit Contents**

- 1. Overview of Logistics Nature-** Concept- Evolution- Components of Logistics Management- Logistics in India- Functions, Value Chain of supply chain management- Concept of 3PLs- 4PLs- Green Logistics- Reverse Logistics- Contemporary trends in International Logistics.
- 2. Information System and Services Logistics Information system-** Operational LIS- IT Solutions for Logistics- Emerging technologies in Logistics Customer Service- Concept- Components- Customer service costs- Gap Analysis for customer service measurement- customer service strategic management- Impediments to an effective customer service strategy.
- 3. Inventory Management,** Ware housing and Material Handling Introduction, concept, types, functions of inventory in logistics. Elements of Inventory costs, Just in time system, Quick response logistics. Warehousing- Concept, Types, Warehouse Strategies, Recent Trends. Material Handling- Concept, Guiding Principles, Devices. Containerization- Introduction, History, classification, Container Standards, Problems. Packaging – Concept, Functions, Issues, Emerging Trends.

4. **Transportation, Shipping and Logistic Network Design**  
**Transportation-** Introduction, Different Modes of Transport, Importance, Elements of transportation cost, Multi Model transport. **Shipping-** Liner Conference, Chartering- types and Charter Party Principles, freight Structure and Practices, Types of Ships, Inland Container Depot/ Dry Ports, Shipping and World Sea borne Trade, Recent trends in shipping Policy, Incoterms, Indian Shipping Industry Logistics Network Design Concept, Design options for a distribution network, Impact of distribution network design, Various distribution network.
5. **Port System Introduction**, Major Ports in India, IPA, Port Community System, Traffic handled at Indian Ports, Major developments in ports, Major problems with Indian ports, Productivity of Indian ports, Policy initiatives for development of ports, Dredging policy, AISC, Maritime Fraud, International Maritime bureau.

**Tamil Nadu Open University, Tamil Nadu**

MBA Logistics Management I year (Fundamentals of Logistics)

**Course Outcome:**

**Block I:** Introduction to Logistics Origin of Business Logistics – Logistics organization and its role in a manufacturing unit – Role of Logistics in Economy/Organisation – Functions of the Logistics system – Inbound Logistics – Outbound logistics – In plant logistics.

**Block II:** Procurement and Outsourcing Procurement and Outsourcing - Integrated Logistics Management - Routing of materials from origin to destination - role of physical delivery - Importance of Packaging- Principles of Packaging - Role, Cost, Economics - Packaging Materials - Customer Service functions in logistics.

**Block III:** Global Logistics Global Logistics scenario - Logistics hubs and distribution Strategy - Role of Information Systems in improving the efficiency – Containerisation as an enabler of logistics strategy - Cargo security - Logistics strategy for perishables / Dangerous.

**Block IV:** Logistics Performance Financial aspects in Logistics performance - Role of 3 PL and 4 PL - Logistics infrastructure for 3PL - Types and functions of warehouses -Expectations & Fulfilment levels for E-business - Retail Supply Chain Administration - Vendor Managed Inventory.

**Block V:** Logistics Planning and Design Techniques Logistics Planning and Design Techniques - Organisation structure for improving the effectiveness Goods – (Automobile components) - Reverse logistics.

**Allagappa University, Tamil Nadu**

Programme: MBA Logistics Management

Semester I Course Code: 643104

Principles of Logistics and Supply Chain Management

**Contents:**

**Unit I** – Logistics management and supply chain management - Definition, Evolution, and Importance. The concepts of logistics. Logistics relationships. Functional applications – HR, Marketing, Operations, Finance, IT. Logistics Organization - Logistics in different industries.

**Unit II** – Logistics Activities: – functions, objectives, solution. Customer Service, Warehousing and Material Storage, Material Handling, order processing, information handling and procurement Transportation and Packaging. Third party and fourth party logistics – Reverse Logistics – Global Logistics.

**Unit III** – Fundamentals of Supply Chain and Importance, Development of SCM concepts and Definitions Supply chain strategy, Strategic Supply Chain Management and Key components. Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

**Unit IV** – Modelling logistics systems – Simulation of logistic systems – Dimensions of Logistics & SCM – The Macro perspective and the macro dimension – Logistic system analysis strategy, Logistical Operations Integration, Customer service – Supply Chain Relationships.

**Unit V** – Framework and Role of Supply Chain in e-business and b2b practices. Value of information in logistics & SCM – E-logistics, E-Supply Chains – International and global issues in logistics – Role of government in international logistics and Principal characteristics of logistics in various countries and regions.

**Unit VI** – Dynamic Component for Continuous Internal Assessment only: Contemporary Developments Related to the Course during the Semester concerned.

**Dr. A.P.J. Abdul Kalam Technical University, Lucknow**

Programme: MBA Logistics and Supply Chain Management

I Year /I Sem. – Basics of Supply Chain & Logistics Management Course

**Course Contents:**

**Unit 1 (6 Hours) Supply Chain Concepts:** Objectives of a Supply Chain, Stages of Supply chain, Value Chain Process, Cycle view of Supply Chain Process, Key issues in SCM, logistics & SCM, Supply Chain Drivers and obstacles, Supply chain strategies, strategic fit, Best practices in SCM, Obstacles of streamlined SCM.

**Unit 2 (6 Hours) Logistics:** Evolution, Objectives, Components and Functions of Logistics Management, Distribution related Issues and Challenges; Gaining competitive advantage through Logistics Management, Transportation- Functions, Costs, and Mode; Network and Decision, Containerization, Cross docking.

**Unit 3 (8 Hours) Supply Chain Performance:** Bullwhip effect and reduction, Performance measurement: Dimension, Tools of performance measurement, SCOR Model. Demand chain management, Global Supply chain – Challenges in establishing Global Supply Chain, Factors that influences designing Global Supply Chain Network.

**Unit 4 (12 Hours) Warehousing:** Concept and types, Warehousing strategy, Warehouse facility location & network design, Reverse logistics, Outsourcing- Nature and concept, Strategic decision to Outsourcing, Third party logistics(3PL), Fourth party logistics(4PL). Supply Chain and CRM- Linkage, IT infrastructure used for Supply Chain and CRM, Functional components for CRM, Green supply chain management, Supply Chain sustainability.

**Delhi University, Delhi**

Programme: MBA (International Business)

Electives: International Supply Chain Management and Logistics

Master of Business Administration (International Business) Semester III

Course 235: International Supply Chain Management and Logistics

**Contents:**

**Section A: Supply Chain Management**

**Unit I – Basic Framework:** Concept of supply chain management (SCM); SCM and trade Logistics; Business view of SCM; Push and pull



of SCM; Decision phases; Impellers and drivers in SCM Process views of SCM, planning and operations.

**Unit II – Integrated SCM:** Concept, span and process of integrated SCM; Competitive strategy and strategic fit; Demand forecasting, Methods of demand forecasting; Risk management in demand forecasting; Supply chain metrics (KPIs), performance measurement and continuous improvement; Supply chain modeling; Challenges to achieving and maintaining strategic fit.

**Unit III – Managing Relationship:** Role of Relationship marketing in SCM; Managing relationships with suppliers and customers; Role of on-line sales and supply chain, Designing strategic distribution network. Factors influencing distribution network.

**Unit IV – Supply Chain and Information Management Systems:** Purchasing Process-Strategic role of purchasing in the supply chain and total customer satisfaction; Types of purchases; Purchasing cycle; Supplier selection and evaluation; Vendor development.

Importance of information management; Distribution and sharing of information; Information technology as a platform for effective and efficient supply chain management; Functional application of traditional ERP, special ERP, MR, DRP, PDM, EIP, CPFR, WMS, TMS, RFID, GPS, GIS; Reengineering the supply chain: Future directions.

## **Section B: Trade Logistics**

**Unit V – Logistics System:** Concept objectives and scope of logistics; Systems elements; Inbound and Outbound logistics. Reverse inventory. Value added role of logistics. Logistics interface with manufacturer and marketing. Packing, Marking, Just in time concept; Third party logistic outsourcing challenges and future directions.

**Unit VI – Transportation:** Importance of effective transportation system; Service choices and their characteristics; inter-model services; Transport cost characteristics and rate fixation. In-company management vs. out-sourcing; Implementation and continuous improvement; Carrier selection determinants and decision.

**Structure of Shipping:** World sea home trade; international shipping – characteristics and structure; Liner and tramp operations; Liner freighting; Chartering-Types, principles and practices; Charter, party agreement; Development in sea transportation – Utilization, containersation, inter

and multimodal transport, CFC and ICD; Indian shipping – growth, policy and problems; Ports and port trust.

**International Air transport:** International set up for air transport: Freight rates; India's exports and imports by air – Problems and prospects.

Carriage of Goods by sea, sea and combined transport; international conventions and Indian law; Meantime frauds and unethical practices-causes and projection; Role and types of cargo intermediaries.

**Unit VII – Warehousing and Inventory Management:** Warehousing and marketing strategy: Objectives and functions of warehousing; strategies; Material handling equipment and material mobility Warehousing evaluation and requirements.

Inventory management-inventory categories, EOQ, LT, ICC; Inventory levels; Material planning and sourcing of procurement; Methods of cost reduction.

### **Banaras Hindu University (MBA)**

Programme: MBA, Elective: Logistics and Transportation Management

#### **Course Structure**

##### **Part A:**

- Introduction to Logistics and its interface with production and marketing.
- Scope & economic significance of Logistics.
- Key elements of Logistics, Location, Warehouse. Distribution containers. Transportation, Communication, inventory.
- Measures of logistics, Physics distribution and logistics. Facilities and services. Inventory management decisions. Dispatch and Routing decisions & models. Analytical frameworks underlying logistics problems. Logistics information system & its relation to the logistics environment.
- Future direction in Logistics.

##### **Part B:**

- Growth of urbanization and problems of transportation.
- Transportation systems – Planning, Operation and management.
- Trip generation and distribution – Load planning. Transportation modes and their selection.
- Sequential travel demand forecasting models.
- Future developments in transportation.

**Punjab University, Punjab (MBA)**

Programme: MBA (Elective)

409-Management of Logistics

**Course Content**

**Group 1:**

**Logistics Management:** Nature and Scope of Logistics, Defining Physical Distribution and Understanding its Activity Centers.

**Distribution:** Physical Distribution and its Relationship with Marketing and Material Management, Interdependence of Transactions and Exchange Actions.

**Channels:** Importance of Channels and Concept of Logistical Support, Geo Market Dynamic Logistical Operation, its Elements and Network, Integrated Physical Distribution and Competitive Actions of a Company. Physical Distribution and Elements of Inventory; Inventory Costs; Concepts of EOQ, Safety Stock.

**Transportation and Physical Distribution:** Different Transportation Modes and their Pros and Cons. Evaluation of Transport Decision. Freight Rate Structure and Road Transportation, Sea & Air Cargo-tariff structure. Practice and Procedures of their Operation and Services provided by them. International Transportation Containerization's concept and its Operation. Inland Container Depot & Terminals in India Liner Shipping Conferences- Its Norms and Practices Chartering Principles and Practices.

**Group II:**

**Transportation:** Procedures in Different Models of Transportation. Reviewing Transportation Infrastructure Tariffs and Documentation. Carrier Consignee Liabilities, Pricing and Related Services Insurance and Claim.

**Storage:** Elements of Storage and Material Handling, including Warehousing and Packing Alternatives, Receipt and Dispatch and Loading and Unloading, Handling Machinery, Dispatch of Vehicles, System Design and Administration.

**Other Contemporary Issues:** Total Costs Planning, Minimum Total costs Policy, Maximum Customer Service Policy, Maximum Profit Policy, Organisation and Control for Physical Distant Information System for P.D. Information System in Logistics.

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# Fundamentals of Mathematical Statistics

Dr. S.C. Gupta • Dr. V.K. Kapoor

## About the Book

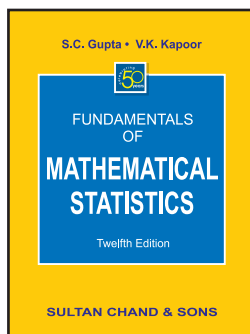
A textbook written completely on modern lines for undergraduate & post graduate courses in Statistics, Mathematics, Economics, Computer Science, Engineering and Indian Civil Services & Indian Statistical Service Examinations. The thoroughly revised, (Golden Jubilee) TWELFTH EDITION of this indispensable, authoritative, well-written & best selling textbook, while retaining its analytical and modern approach now includes a large number of new topics, extensively revised and rewritten material, updated information and various distinct new features.

## Salient Features

- The entire text has been restructured, rewritten and updated to cater to the revised syllabi of almost all universities, and various other professional examinations.
- During the course of rewriting, it has been specially borne in mind to retain all the basic features of the previous editions especially the simplicity of presentation, lucidity of style and analytical approach which have been appreciated by the readers throughout the country.
- A conscious effort has been made to make the presentation of all topics discussed very simple and to develop the subject-matter in such step-by-step manner that the book can serve as self-study text for the students.
- A number of typical problems have been added as solved examples in each chapter. These will enable the reader to have a better and thoughtful understanding of the basic concepts of the theory and its various applications.
- Several new topics have been added at appropriate places in various chapters to make the treatment of subject matter more exhaustive and up-to-date

## Contents

1. Introduction (Meaning and Scope)
  2. Descriptive Measures (Measures of Central Tendency, Measures of Dispersion, Measures of Skewness, Measures of Kurtosis)
  3. Theory of Probability – I
  4. Theory of Probability – II
  5. Random Variables and Distribution Functions
  6. Mathematical Expectation
  7. Generating Functions and Law of Large Numbers
  8. Special Discrete Probability Distributions
  9. Special Continuous Probability Distributions
  10. Correlation
  11. Curve Fitting and Regression Analysis
  12. Multiple and Partial Correlation and Regression Analysis
  13. Theory of Attributes
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  15. Exact Sampling Distributions-I [Chi-square ( $\chi^2$ ) Distribution]
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  17. Statistical Inference – I (Theory of Estimation)
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  19. Finite Differences and Numerical Analysis
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  21. Some Additional Topics
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# Materials Management

M.M. Verma

## About the Book

Materials Management has acquired a new significance in the Indian context, wherein it is expected of materials manager that he would strive hard for achieving the arduous task of providing efficient service to the whole undertaking and reducing the production and distribution costs.

## Contents

### Section One: Introduction

1. Materials Management
2. Integrated Materials Management
3. Organisation for Materials Management
4. Problems in Materials Management

### Section Two: Management of Materials

5. Materials Planning and Budgeting
6. Materials Identification, Codification and Standardisation
7. Inventory Control
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### Section Four: Purchasing

21. Purchasing Organisation
22. Purchasing Principles, Procedure and Systems
23. Make or Buy
24. Purchasing and Corporate Planning
25. Buyer-Seller Relations
26. Ethics of Buying and Selling
27. Legal Aspect of Purchasing
28. Purchasing Research and Value Analysis
29. Quality Control





# Principles and Practice of Management

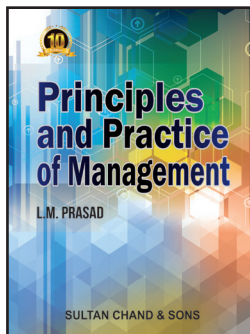
Dr. L.M. Prasad

## About the Book

The book in the present edition has been thoroughly revised and restructured. All the chapters have been re-written not only to incorporate new developments in Principles and Practice of Management but also to make the subject-matter more lucid and crisp. Thus, the present edition is vastly improved both in terms of contents and presentation.

## Salient Features

- Comprehensive coverage of Subject-matter with latest developments.
- Authentic presentation of the subject matter with suitable Figures, Tables and Exhibits
- Proper blend of theory and practice.
- An opening case study so that the concerned concepts can be related to practices easily.
- Multiple choice questions, short answer questions, and discussion/application questions at the end of each chapter to test the assimilation of subject-matter concerned.
- Awareness Developer at the end of each chapter to enable the reader to assess her/his behavioral pattern.
- Case study at the end of each chapter for class-room discussion to sharpen diagnostic and analytical skills of the readers.
- Guidelines for learning through cases at the end of the book to enable the readers to make full use of learning through cases.
- Glossary at the end of the book for bird's eye-view.



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## About the Book

Logistics Management is tailored to meet the requirements of students specializing in Logistics and International Business. The book covers the syllabus of most of the Indian Universities offering Logistics and Supply Chain Management program as well as Operations Elective in MBA programme. The Book unveils with an overview of Logistics Management in an easy to understand manner.

Some of the key features included in the book to facilitate learning process:

- Exhaustively covers Anna University & Madras University Logistics syllabus of both UG & PG students.
- Content made easy to understand in a student friendly manner.
- Critical Thinking Questions to enhance the out of box thinking of the students.
- Key concepts are presented in a diagrammatic model for better understanding.
- Case Study and Puzzles will help to enhance the understanding level of students.
- Frequently asked University exam questions to facilitate high score in the subject.
- Question Banks with answers to help in getting high score in exams.
- Glossary helps to understand the important key terms used in Logistics and to answer two marks questions.
- Multiple Choice Questions help to recollect the concept and enhance the learning for competitive exams.
- Included more Logistics & Supply Chain Management topics as per the activities carried out in the Logistics firm.

## About the Authors

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ISBN 978-93-91820-41-1



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