

ARTIFICIAL INTELLIGENCE IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT ETHICAL IMPLICATIONS IN AUTOMATION, TRANSPARENCY & SUSTAINABILITY

Volume - II

Editors in Chief

Dr. D. Divya | Dr. G. Vignesh

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CONTENTS

S.No	CONTENTS	PAGE NO
1	Impact of AI on Quick Commerce Supply chain Management Dr. Y.S. Irine Jiji, Suwetha. S & Arunadevi. P.M	1
2	The Role of Artificial Intelligence in Marketing For Social Good: An Ethical Approach Mrs. V. Bhuvaneswari	7
3	Human-AI Collaboration in Supply Chain Decision-Making: Balancing Efficiency, Ethics, and Workforce adaptation Mrs. M. Dhavapriya	14
4	Impact of Green Supply Chain Management Initiatives Dr. P. Anu Shruthi & Dr. B. Indirapriyadharshini	22
5	Deep Learning for Demand Forecasting in Supply Chain Management: A Comparative Study of LSTM and Transformer Models Mr. S. Dilip Kumar & Dr. K. Jayanthi	26
6	Ethical Use of AI for Sustainable Logistics Dr. N. Giri, Ms. B. Pavithra & Ms. K. Gnanasundari	30
7	The Evolution of Financial Services in the Digital Age Dr. D. Rajasekaran	36
8	Leveraging Artificial Intelligence in Supply Chain Management for Early Detection and Eradication of Lung Cancer Dr. R. Malathi Ravindran	40
9	Ethical AI in Supply Chain Decision-Making: Ensuring Fairness and Transparency Dr. K. Sathya Prasad , Sneha S & Cathrine M	43
10	Ethical Use of AI in Sustainable Logistics Vasanth S, Ruthra Devi S & Dr. Begam Benazir. K	46
11	Leveraging AI for Sustainable Logistics: Optimizing Efficiency and reducing Environmental Impact Dr. P. Jayapriya	50
12	AI in logistics and supply chain: Use cases, applications, solution and implementation Dr. M. Meena Krithika	56
13	Ethical AI in Mobile Logistics: Enhancing Rural Women's Market Access and Economic Sustainability Dr. G. Akilandeswari , Dr. E. Renuga & Dr. K. Priyatharsini	62
14	A Study on Human AI Collaboration in Supply Chain Management S. Kalaivani	66

LEVERAGING ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN MANAGEMENT FOR EARLY DETECTION AND ERADICATION OF LUNG CANCER

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Abstract

The integration of artificial intelligence (AI) into supply chain management (SCM) has revolutionized healthcare logistics, particularly in the early detection and eradication of lung cancer. AI-driven technologies such as machine learning (ML), deep learning, and predictive analytics enhance efficiency in the procurement, distribution, and deployment of diagnostic tools and treatment resources. This paper explores the role of AI in optimizing healthcare supply chains, ensuring the timely availability of diagnostic imaging, biopsy kits, and targeted therapies. We also examine AI's role in real-time tracking of medical inventory, predictive maintenance of medical equipment, and automation of early detection algorithms to facilitate prompt intervention. By leveraging AI-driven SCM, healthcare systems can improve patient outcomes through enhanced diagnostic accuracy and treatment accessibility.

Keywords: Artificial Intelligence, Supply Chain Management, Lung Cancer Detection, Predictive Analytics, Machine Learning, Early Diagnosis, Deep Learning, Medical Supply Chain

1. Introduction

Lung cancer remains one of the leading causes of mortality worldwide due to late-stage diagnosis and inefficient resource allocation. The integration of AI in supply chain management offers an innovative approach to addressing these challenges by streamlining logistics and enhancing diagnostic and treatment processes. AI-driven SCM enables healthcare institutions to track and manage medical supplies effectively, ensuring timely access to essential resources such as imaging equipment, biopsy kits, and therapeutic drugs. Furthermore, AI models can process vast datasets to predict demand patterns, mitigate shortages, and optimize supply routes, ultimately reducing delays in lung cancer detection and treatment. This paper examines AI's transformative impact on healthcare SCM, focusing on early detection, predictive logistics and eradication strategies for lung cancer.



2. AI-Driven Predictive Analytics for Early Detection

Predictive analytics powered by AI significantly enhances early lung cancer detection by analyzing historical and real-time patient data. AI models, such as convolution neural networks (CNNs) and recurrent neural networks (RNNs), can detect anomalies in medical imaging and electronic health records (EHRs), flagging potential lung cancer cases at an early stage.