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

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.