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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Editors in Chief: **Dr. D. Divya**
Dr. G. Vignesh

Editors : **Dr. B. Rohini**
Mrs. M. Ragaprabha

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PREFACE

The rapid advancement of artificial intelligence has significantly impacted various industries, including logistics and supply chain management. However, this technological evolution raise significantly the ethical challenges related to automation, transparency, and sustainability. This book delves into the decisive ethical concerns associated with AI-driven logistics and supply chain management. It provides a comprehensive analysis of automation's impact on employment, the necessity of transparent AI in decision-making, and the sustainability challenges posed by AI-driven supply chain operations.

This book offers insights from interdisciplinary perspectives, covering topics such as Role of AI in balancing efficiency and job displacement, Addressing bias in AI-driven supply chains, Ethical use of AI for sustainable logistics, AI and Data Privacy in Supply Chain Operations, Ethics of AI-Driven Decision-Making in Logistics, Human-AI Collaboration in Supply Chain Management, Impact of AI on Global Supply Chain Equity, AI-Driven Risk Mitigation in Supply Chains, AI in optimizing reverse logistics for sustainability, Green Supply Chain Management Initiative and so on. The prime objective is to foster a balanced approach to AI adoption that one maximizes efficiency while ensuring fairness, accountability, and environmental responsibility.

The edited volume of the book is a collection of research papers from eminent scholars, students, and academicians presented at the ICSSR Sponsored One Day National seminar on "Artificial Intelligence in Logistics and Supply Chain Management Ethical Implications in Automation, Transparency & Sustainability".

This book is intended for scholars, industry professionals, and students who seek to understand the intersection of AI, ethics, Logistics and Supply chain management. We sincerely thank the **Indian Council of Social Science Research (ICSSR), New Delhi**, for conducting this National Seminar through sponsor. We extend our gratitude to the researchers, contributors, and industry experts, whose insights have shaped this work. We hope it serves as a valuable resource and a reminiscence master-piece for fostering responsible AI integration and driving sustainable innovation in the logistics sector.

Dr. D. Divya
Seminar Director - Assistant Professor,
PG Department of Commerce with International Business,
Nallamuthu Gounder Mahalingam College

Dr. G. Vignesh
Seminar Convener - Associate Professor and Head,
PG Department of Commerce with International Business,
Nallamuthu Gounder Mahalingam College

ROLE OF ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN

Mrs. P. Sudha
Assistant Professor
Department of Commerce with International Business
Nallamuthu Gounder Mahalingam College, Pollachi.

Dr. M.V. Sathiyabama
Associate Professor & Head,
Department of Commerce (E –Commerce)
Nallamuthu Gounder Mahalingam College, Pollachi.

S. Midunarakavi
II B.com PA,
Kumaraguru College of Liberal Arts and Science, Coimbatore

Abstract

The last century brought significant changes to the automotive industry and represents a significant economic and technological force in the life of countries connected to the industry. Digitalization, automation, Internet of Things, Big Data applications are forming the current business models and challenging the companies to adopt to the new ERA. From Industry 4.0 grow out the Logistic 4.0 or Supply Chain 4.0. Logistics 4.0 - much more than having the right products at the right time and in the right place. The different AI use cases and solutions review will present the complexity of the Supply Chain and Logistics

Keywords: *Supply Chain Management, Artificial Intelligence, Industry 4.0, supply chain 4.0, Machine Learning, inventory*

Introduction

The concept of digitizing everything is becoming a reality. Automation, artificial intelligence, IoT, machine learning and other advanced technologies can quickly capture and analyze a wealth of data that gives us previously unimaginable amounts and types of information to work from. Our challenge becomes moving to the next phase—changing how we think, train and work using data—to create value from the findings obtained through advanced technologies." Brian Householder, President and Chief Operating Officer, Hitachi Vantara. Industry 4.0 is defined by connectivity. In an Industry 4.0-capable factory, devices are connected to one another and to human interfaces and provide real-time data from a large number of sensors. People can "connect" to this data at any time. Today, most automotive manufacturers and suppliers have voluntarily embarked on the journey to Industry 4.0, and that journey will lead them to higher profitability. According to Automotive World, the sensors have been very useful in the supply chain. As an example, Bosch has achieved a 25% increase in production for its automatic brake stabilization (ABS) and electronic stability program by simply introducing smart, interconnected wires.

Objectives

- To identify the categories of AI solutions and techniques.
- To analyze the role of AI in supply chain management.
- To understand the various applications of AI in supply chain operations.

Categories of AI Solutions and Techniques

As common the use of AI is today, understanding AI and AI terminology can be a challenge as terminology is used interchangeably or even incorrectly. Defining what AI stands for is more than ever important in order to better understand and objectify the hype. AI can be defined as a discipline that applies advanced analysis and logic-based techniques, autonomous learning, to