

STRATEGIC APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN THE LOGISTICS INDUSTRY

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ABSTRACT

AI is playing an increasingly important role in the development of the logistics industry, transforming the way goods are moved and managed. AI-powered solutions have enabled logistics companies to optimize their operations, reduce costs, improve efficiency, and enhance customer service. This study explores the various applications of AI in logistics, such as demand forecasting, automated warehousing, damage detection, predictive maintenance, route optimization, and so on. While the adoption of AI in logistics has brought significant benefits, there are also challenges that need to be addressed. This study will present three case studies of logistics companies that have invested heavily in AI and demonstrate how they have adopted AI to achieve their goals.

Keywords: Artificial Intelligence Applications; Logistics Industry

1. INTRODUCTION

1.1 Definition and Overview of the Logistics industry

The logistics sector is concerned with the planning, execution, and management of the transfer of products and services from one location to another. Supply chain management, transportation, inventory management, and warehousing are all included in the North American Industry Classification System (NAICS) number 541614. Logistics is a crucial aspect of modern business operations as it helps ensure that products are delivered to customers promptly and efficiently.

It also plays a significant role in reducing costs, improving customer satisfaction, and increasing profits. With the introduction of new technology and the expansion of e-commerce, the logistics business has transformed substantially in recent years.

Companies can now trace shipments in real time, optimize delivery routes, and better manage their inventory. As a result, deliveries are now faster and more dependable, and customers have a better experience (BuiltIn, n.d.).

The worldwide market size of the logistics industry was assessed at \$10.68 trillion in 2022 and is expected to reach over \$18.23 trillion by 2032, with a notable CAGR of 5.48% from 2023 to 2032. The market is now dominated by the North American area (see Figure 1).

Logistics is a wide-ranging term that encompasses the physical collection, transport, and ultimate distribution of goods. Some key players in the logistics industry include transportation companies (such as airlines, shipping companies, and trucking companies), warehousing and distribution companies, and logistics software providers. These companies work together to ensure that goods are transported and stored efficiently and safely from the manufacturer to the end user (see Figure 2).

In today's time, businesses have improved their infrastructure and record-keeping systems, which are further enhanced by technological advancements. The significance of logistics has also increased with time, leading to the establishment of facilities such as warehousing in proximity to major urban areas. This development in logistics has had a positive impact on the job market in urban regions, creating more employment opportunities for people (Wilson, J, 2022).