The Role of AI in optimizing E-commerce logistics: A Literature Review

Fatimaezahraa Aboumejd[1], Ali El Oualidi[1] and Mustapha Ahlaqqach[1]

[1] Laboratory of Advanced Research in Industrial and Logistic Engineering (LARILE), ENSEM, Hassan II University, Casablanca, Morocco

fatimaezahraa.aboumejd.doc22@ensem.ac.ma
a.eloualidi@ensem.ac.ma
ahlaqqach@gmail.com

Abstract. The COVID-19 pandemic escalated the shift from traditional distribution channels to digital platforms triggering a surge in online shopping and intensifying competition in the e-commerce sector. Ecommerce and postal logistics providers were compelled to adapt rapidly in order to meet e-customers evolving requirements. The traditional logistics models proved inadequate, prompting scholars and practitioners to explore how emerging technologies, particularly Artificial Intelligence, could be integrated with existing processes for an adaptive and efficient approaches handling urban logistics. This study aims to review and synthesize existing literature on AI applications in e-commerce logistics focusing on four operational clusters: pickup and delivery, parcel sorting, address verification and reverse logistics. It examines the AI techniques and models applied, evaluates their methodological robustness and identifies gaps and limitations in current research, special attention is given to underexplored context of emerging markets, particularly Morocco, where AI adoption remains limited. this paper contributes a comprehensive state of the art of AI applications, a critical gap analysis and proposes actionable insights for future AI-driven innovations in e-commerce logistics.

Keywords: Artificial Intelligence, Ecommerce Logistics, Postal Logistics, Pickup and Delivery, Sorting, Address Verification, Reverse Logistics.