African Supply Chain Management

Technological Integration in Supply Chain Management of Personal Protective Equipment during Pandemics in Nigerian Urban Markets

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Abstract

In response to the global pandemic of -, there was a critical need for efficient supply chain management (SCM) of Personal Protective Equipment (PPE). Nigeria's urban markets faced significant challenges in managing PPE supplies due to inadequate technological integration. A comparative study design was employed to analyse data from interviews with industry stakeholders, surveys of urban market managers, and case studies of successful implementations. Statistical tools were used to quantify the impact of technological integration on SCM efficiency. The analysis revealed that only 25% of urban markets had implemented any form of technological solution for PPE management, with significant variability in practices across different regions and market sizes. Current solutions often relied on manual inventory tracking systems which were prone to errors and inefficiencies. While current approaches showed room for improvement, the study highlighted that integrating digital tools such as blockchain and IoT could significantly enhance SCM efficiency by reducing costs, improving accuracy, and ensuring timely delivery of PPE. Urban market managers are advised to adopt technological solutions like blockchain-based supply chain management systems and Internet of Things (IoT) for monitoring inventory levels in real-time. This recommendation is based on the findings that these technologies can lead to a more streamlined and efficient SCM process, thereby improving service delivery during pandemics. PPE Supply Chain Management, Urban Markets, Digital Integration, Blockchain, IoT Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert 2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Geographic, Africa, Integration, Sustainability, Blockchain, Governance, Logistics, Supply Chain*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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