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## Inventory Management Sustainability: A Case of Carbon Emanation Reduction in Selected Ceramics Manufacturing Firms in Lagos State, Nigeria

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### Abstract

Inventory optimality is an option of energy utilization proportionality that can lessen carbon emanations and maximize profitability. This study proposes an inventory management model in which the stock volume is optimally decided to diminish energy per resource utilized in-order to reduce carbon emanations. This will likewise help in concluding renewal volume optimally. Consequently, the study utilized economic order quantity (EOQ) to decide inventory volumes in-order to decrease carbon emanations so as to augment profits of the inventory chain. Partial least square(PLS) was additionally utilized to examine the extent of inventory management frameworks on environmental sustainability. The study, therefore, shows its oddity and pertinency by utilizing economic order quantity(EOQ) and partial least square(PLS) to examine and optimize inventory respectively, as it gives a perspective of decreasing carbon emanations during inventory procedures.

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#### 1. Introduction

The manufacturing industry has thrived in numerous nations, bringing about carbon emanation. Fossil fuel utilization from the cycle of inventory management, production chain, and transportation are the essential sources of green house emanation. Furthermore, processing plants are one of the fundamental sources of carbon that causes ecological damages. This obliteration of the environment will ultimately

undermine human well-being and in this way, the manufacturing business should consider eco-friendly production cycles that will lead to environmental sustainability (Mishra, Wu, & Sarkar, 2021). Despite the fact that fossil fuel by-product have increased development, there ought to be ecological policies. However, If the focus is on economic performance only disregarding the ecological effect of inventory storage, it might worsen the situation. Consequently, this peculiarity is a critical source of worry since it undermines societal needs like the quality of air, aqua quality, public habitat, and human well-being causing abbreviated life span and health outcomes such as diseases. Moreover, it is turning out to be progressively apparent that carbon emanation brings about critical biodiversity misfortune (Mohapatra, Singhal, & Tripathy, 2021; Meghana, & Pravudatta, 2021).

Confronted with pressures from state-run managers, clients, and various stakeholders, ceramic manufacturing firms in Lagos, Nigeria should make a move to lessen the ecological and social effects of their operations that will adapt to the expanding environmental needs. Furthermore, ceramic manufacturing firms in Lagos State could take on various intra-hierarchical sustainable operations to decrease their ecological effects, for example, utilizing sustainable power sources, and eco-friendly production procedures. To diminish gas emanations, manufacturing firms could also incorporate sustainability into inventory process and set up ecological standards(Pritee, 2021).According to Pattnaik, Nayak, Abbate, and Centobelli (2021), the utilization of environmental management framework (ISO 14001) could improve organizations' environmental outcome by diminishing the waste within the production framework. Other supporting inter-hierarchical practices stringently associated with the production processes, such as inventory management, and energy approach, essentially impact emanations produced by inventory frameworks. In extant literatures little consideration was given to sustainability such as the release of carbon during the process of inventory chain and storage. Given this, inventory is a fundamental echelon within the production chain from the point of production to the point of demand, which makes it a focal point of an organization's resources(Zhang, Huang, & Yuan, 2021 ; Anilkumar, & Sridharan, 2019). Regardless of the size of the venture or the kind of industry, inventory management is necessary to address the issues of the market and clients. Furthermore, manufacturing firms generally hold stock for two reasons: the principal reason is to diminish the discontinuity between the production and conveying frameworks with the goal that the system and appropriation co-ordinations will not interference with the operations(Pan, Chiu, Wu, Yen, & Wang, 2020). The subsequent reason is to address the issues of clients, and forestall unavailable circumstances. Sadly, ceramics manufacturing firms tend to hold inventories bring about specific costs, such as storage cost, protection cost, and value depreciation.Exorbitant inventories prompts a build-up of resources. On the account of the development of globalisation and different client requests, the cycle of products have been shortened(Tarurhor, & Osazebura, 2021).Therefore, excessive inventories can lead to obsolescence of items over a period(Atnafu, Baldu, & Liu, 2018). From the stand point of business activities, profitability can be optimized from the sale of inventories.

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