

**INFLUENCE OF MATERIAL HANDLING PRACTICES ON THE PERFORMANCE
OF FORMAL MANUFACTURING FIRMS IN MOMBASA COUNTY**

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DECLARATION

This thesis is my original work and has not been presented to any university for examination.

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DEDICATION

This research thesis is dedicated to my loving husband Bernard Ndzai for his support and motivation while undertaking the research.

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ABBREVIATIONS AND ACRONYMS

AMHS	Automatic Material Handling System
ANOVA	Analysis of Variance
AGVs	Automated Guided Vehicles
BSC	Balanced Score Card
BPM	Business Process Management
EDI	Electronic Data Interchange
EOQ	Economic Order Quantity
FDI	Foreign Direct Investment
FIFO	Firs In First Out
GDP	Gross Domestic Product
JIT	Just in Time
KAM	Kenya Association of Manufacturers
KMO	Kaiser Meryer Olkin
KNBS	Kenya National Bureau of Statistics
MH	Material Handling
MHS	Material Handling System
MMHS	Manual Material Handling System
MMSL	Minimum-Maximum Stock Levels
MRP	Manufacturing Resource Planning
NPT	Network Perspective Theory
PhD	Doctor of Philosophy
RBT	Resource-Based Theory
SAMHS	Semi-Automated Material Handling System
SME	Small Medium Enterprises
SPSS	Statistical Package for the Social Sciences
TOC	Theory of Constraints

DEFINITION OF TERMS

- Material Handling:** ‘The process of getting the correct stuff to the right location at the right time. In order to save manufacturing costs, this is carried out in the correct order and sequence’ (Stephens, 2019).
- Performance:** “The context of an organization is the attainment of the goals in that an organization seeks to create and add value to its stakeholders, meet customer expectations, and protect the environment” (Maria & Elena-iuliana, 2016).
- Material Handling System:** “Is an integrated arrangement that involves activities of the movement, handling, storing, and controlling of materials throughout the manufacturing process” (Rosenblatt, 2016).
- Material Flow:** “Movement of entities including raw materials, intermediate products, parts, components, integrated things, and finished goods” (Deng, M., Mao, J., & Gan, X., 2018).
- Material Handling Activities:** “Human actions in the manufacturing of a product or service, including assisted and unassisted lifting, lowering, pushing, pulling, carrying or holding, and releasing of an item or materials” (Rosenblatt, 2016).
- Material Handling principles:** “Activities that involve planning, working, standardization, ergonomic, unit loading, space utilization, system, environmental that ensure material handling is executed deliberately and efficiently” (Azizi, A., Yazdi, P. G., & Humairi, A. A., 2018).
- Manufacturing:** “Refers to the process of converting raw materials into finished goods by using machinery, human labor, tools, as well as chemical processing. In Kenya, manufacturing firms are split into formal and informal sectors” (Kenya Association of Manufacturers, 2022).

Formal Manufacturing Firms: “Companies that primarily focus on the mechanical, physical, or chemical transformation of components, materials, or substances into industrial or consumer items are included in this category of registered manufacturers. Manufacturing in the areas of agriculture (drinks and meals), medicines, textiles (in Export Processing Zones), automobiles, and technology are only a few examples” (Were, 2016).

Informal Manufacturing Firms: “These are unregistered manufacturing companies that rely less on machines and physical infrastructure, but more on the management’s human capital. For instance, metal works, and furniture making” (Were, 2016).

Resource Utilization: “Refers to the efficiency and effectiveness with which resources are allocated, deployed, and utilized within an organization or system” (Ko and Park (2017).

Ergonomic Workspace: “Refers to a work environment that is designed and arranged in a way that promotes the health, safety, and well-being of individuals while optimizing their productivity” (Robertson & Huang, 2017).

Skilled Team: “Refers to a group of individuals who possess the necessary expertise, knowledge, and capabilities to successfully perform their roles and tasks within a specific context or domain” (Albert, I., Shakantu, W., & Ibrahim, K., 2018).

Batch/Stock Tracking: “systematic process of monitoring and recording the movement and availability of batches or stocks of products within a supply chain or inventory management system” (Alves, A. C., Ferreira, A. C., Maia, L. C., Leão, C. P., & Carneiro, P., 2019).

Manual stock control: “Process of managing and monitoring inventory levels, stock movements, and replenishment activities using manual methods such as paper-based records, spreadsheets, and manual calculations” (Benotmane, Z., Belalem, G., & Neki, A., 2017).

Computerized stock control: “Use of computer-based software and technology to manage and automate inventory control processes” (Daryanto,2018).

Equipment setup time: “Time required preparing and configuring equipment or machinery for a specific task or production process” (Inegbedion, H., Eze, S. C., Asaleye, A. J., & Lawal, A. I., 2019).

Material handling: “The movement, transportation, storage, and control of materials within a facility or supply chain” (Kathurima, R.I, Ombul, K., & Iravo, M.A., 2016).

Tool handling: “The management and proper utilization of tools in various industrial or work settings” (Kroemer, 2017).

Revenue: “The total amount of money generated by a company or organization from its primary business activities” (Cowie, 2015).

Profitability: “The ability of a company or organization to generate profits or positive financial returns from its business operations” (Miller, 2020).

Output: “Final products, goods, or services produced or delivered by a company or system as a result of its operations or production processes” (Arnita, N. P. S., Adiputra, N., Purnawati, S., Sucipta, I. N., Sutajaya, I. M., & Sundari, L. P. R., 2020).

Lead time:

“Lead time is the total time from the arrival of raw material, through manufacturing, to the dispatch of finished products” (Jónsson & Svenson, 2016).

ABSTRACT

Material handling is an essential component of the manufacturing process. Manufacturing companies are working to improve their production and operating efficiency while also assuring the safety of their employees. Manufacturing organizations are working on building systems that will see the material go through several phases of manufacturing in a seamless manner to ensure customer satisfaction and increased profitability. Furthermore, a study of the current empirical literature on this topic finds that the majority of local studies have concentrated on manufacturing enterprises in Nairobi, Machakos, and Migori, leaving the coastal region out of the picture, resulting in a research gap. The goal of this research was to see how material handling methods affected the performance of formal manufacturing companies in Mombasa, Kenya, verify how materials handling systems may improve production and yield profitability. The study also determined the impact of material handling systems, stock flow, and material flow on manufacturing enterprises' performance in Mombasa. The study used a descriptive survey design, with the population of interest being 25 formal manufacturing enterprises in Mombasa. The study's 175 participants were recruited from various levels of management in various manufacturing companies (strata). To compute the sample size of each strata or industry of selected manufacturing enterprises, a proportionate stratified sampling technique was used on the target sample of 150 participants. Structured questionnaires with a Likert scale were used to collect primary data. Data was collected from managers, engineers, truck drivers, and operators from each manufacturing organization. The surveys were double-checked for accuracy before being coded and entered into SPSS. The data was analyzed using both descriptive and inferential statistics. The analytical findings were given in tables with footnotes. We had 81.1% participation percentage. Most of the indications for the material handling operations were determined to be helpful to the company's success. As a secondary method, a regression analysis was performed at a 5% level of significance to explore the bond between the variables. According to the findings, the three variables had a considerable impact on the companies' performance. The research shows that there is a strong link between material flow, stock control, and material handling systems, all of which contribute to the performance of manufacturing companies. According to the study, Material handling was also identified as an important aspect of production that had a substantial impact on the performance of manufacturing firms. A manufacturing company's material handling systems should be prioritized if it wishes to reduce costs, increase profits, and improve quality. The study had two main limitations; the private nature of business information and thus respondents were hesitant in giving information. Time was also a hindrance; most respondents took longer than expected in giving their feedback.