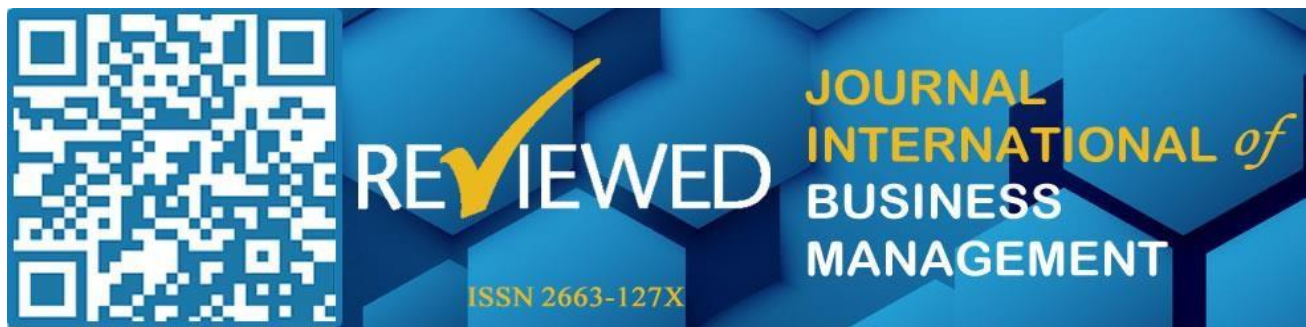




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EFFECT OF ORDER PICKING PRACTICES ON ORGANIZATIONAL PERFORMANCE AT THE KENYA MEDICAL SUPPLIES AUTHORITY (KEMSA), KENYA

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ABSTRACT

This study examined the effect of order-picking practices on organizational performance at the Kenya Medical Supplies Authority (KEMSA), Kenya. The problem addressed was limited empirical evidence on how order-picking accuracy, efficiency, errors, technology utilization, and staff effectiveness influence organizational performance. It assessed the effect of order-picking accuracy, efficiency, and errors on organizational performance and examined the effect of technology utilization and staff training on organizational performance. The study focused on KEMSA employees involved in warehousing operations and was significant to management and policymakers. Resource-Based View theory was the anchor, while Socio-Technical Systems Theory provided supporting grounding. A case study design was used. From a population of 300 employees, a sample of 169 respondents was determined using Yamane's formula and selected through stratified random sampling. Data were collected using a questionnaire measured on a Likert scale. Validity was established through expert review and pilot testing, while reliability was assessed using Cronbach's alpha. Data were analyzed using SPSS Version 17.0 through frequencies, percentages, means, standard deviations, and regression analysis. Findings were based on 150 responses. Results showed that 98.5% agreed that orders were picked accurately and that the process was time-efficient and well-structured; 95.6% agreed that order-picking errors affected organizational performance; 100% agreed that barcode technology enhanced accuracy; and 97.0% agreed that staff were well-trained and effective. The study concludes that accurate, efficient, technology-supported, and competent order picking is important to KEMSA's operational effectiveness. It recommends stronger accuracy controls, investment in barcode technology, regular staff training, performance monitoring, and standardized order-picking procedures.

Keywords: Order picking; Order-picking accuracy; Picking efficiency; Staff training; Technology utilization; Warehousing operations.

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BACKGROUND OF THE STUDY

The act of picking orders is one of the most important warehouse activities, whereby the picking choice is made, and the goods are prepared for delivery. This process is very significant because the speed and precision of the order-picking process impacts the delivery of orders, use of resources, and service quality (Johanson et al., 2024). Recent research shows order picking among the most resource-demanding processes in warehouses as any mistake or delay can impact company efficiency and customer service (Diefenbach et al., 2024; Helm et al., 2024). So, businesses are trying to find better order-picking methods to enhance accuracy, shorten time for order processing and decrease the rate of mistakes.

Order-picking processes have been changing ever-more due to technological innovation. Equipped with digital technology and automated solutions, workers can receive instant instructions for the process of picking, have the products identified correctly, and verify the picked items properly. Windhausen et al. (2024) note that the utilization of technology in order-picking can enhance work efficiency and decrease mistakes although the results can vary depending on the workers' experience with technology. Scholz et al. (2022) also showed that the degree of success of the technology usage in order-picking depends on the technology itself and the way the workers, as well as managers, apply it while doing the job.

The significance of human competence is also apparent in the case of order picking since labor still plays a key role in this process. Employee training, experience, and the appropriate implementation of orders affect the speed and precision of order fulfillment. Recent studies show that human factors are still salient in operational performance even when automation is employed. Thanks to this, order picking can be carried out successfully with a combination of standard procedures, technology, and competent human labor.

The efficiency of warehousing and order fulfilment takes on added significance in the supply chain associated with health products in Kenya. The Kenya Medical Supplies Authority (KEMSA) has a key part to play in ensuring that medical supplies for public health facilities are sourced, stored and moved efficiently. According to KEMSA, the sustainability of modern warehousing methods and systems is essential for fast order fulfillment (KEMSA, 2024). The latest performance review of KEMSA indicates that order turnaround time, automation and inventory management are critical areas of systems in need of improvement (KEMSA, 2025)

In light of this, the importance of order-picking effectiveness in organizational performance at KEMSA cannot be overstated. Therefore, the present study investigates the relationships between order-picking accuracy, order-picking efficiency, order-picking error control aspects of technology utilization, and staff effectiveness, as well as their impact on organizational performance at KEMSA.

Statement of the problem

Order picking is an important warehouse operation because its effectiveness in terms of accuracy, speed and error rate strongly impacts order fulfillment efficiency. According to the latest studies, enhancing order picking can boost efficiency of operations thanks to implementation of lean techniques and proper technologies (Fares et al. 2025; Grosse 2024). In the case of KEMSA, order fulfilment and warehousing are also important processes, with the Authority making an effort to enhance order fill rates and order processing time required (Kenya Medical Supplies Authority [KEMSA], 2026). Nonetheless, existing investigations are largely conducted within commercial manufacturing and high-tech warehouse contexts, therefore there is not much literature on public health supply organizations in Kenya. Moreover, there is not much empirical literature on the relationship between order-picking accuracy, efficiency, error management, technology application and employee effectiveness and their effect on KEMSA performance. This gives rise to a contextual and empirical gap that this study aims to fill by investigating the impact of order-picking practices on organizational performance at KEMSA, Kenya.

Objectives

- To find out the effect of order picking accuracy, efficiency, and errors on organizational performance at the Kenya Medical Supplies Authority (KEMSA).
- To examine the effect of technology utilization and staff training in order picking on organizational performance at the Kenya Medical Supplies Authority (KEMSA).

Scope

The research was aimed at the experience of picking processes along with the business performance of the Kenya Medical Supplies Authority (KEMSA). Its specific objective included evaluation of picking accuracy, process efficiency, mistakes committed, technological application, and effectiveness of human resources. The target population of the research consisted of employees engaged in the organizing/flow processes in KEMSA and it was focused on determining the impact of order-picking practices on organizational performance of the company.

Significance

This research is important to the KEMSA management as it provides information on how order-picking methods affect organizational performance. It can help the management to improve effectiveness in order-picking performance, efficiency, accuracy, and reduced errors, as well as use of technology. It also aids employees in understanding the significance of training and technology in fulfilling orders. The results can provide health-sector stakeholders and policymakers with information that strengthens medical supply chain warehousing and distribution. The research contributes to the knowledge of order-picking practices and organizational performance in academic literature. It is expected to serve as a reference to those studying warehousing operations.

LITERATURE REVIEW

The literature on order picking indicates that this practice is crucial in making a warehouse effective, as the decisions taken during this operation will determine the efficiency of the fulfillment process, allocation of resources, accuracy, and the outcome of service delivery. Casella et al. (2023) conducted a review of 269 papers, and they state that research on order picking becomes more oriented toward such topics as design of systems, routing, batching, use of technologies, and human factors, which highlights that picking performance has many different aspects. Alamsah et al. (2024) have revealed that warehouse management systems help to increase the level of productivity, speed of response, and accuracy by guiding to storage locations and directing operators. Pereira et al. (2024) received similar results indicating that the errors made during picking resulted in the mismatch between stock and data in the system, and they proposed using barcode scanning in order to enhance traceability and minimize mistakes. A factor regarding people has also been taken into account. Loske and Klumpp (2024) indicated that experience influences the level of efficiency in the process of picking since the experienced workers demonstrated an increase in the average level of performance and had a decrease in the level of variation.

Recent studies prove that order picking with AI support leads to lower travel distances and reduced time taken for picking, while successful application depends on factors related to organization and employees (Rad et al., 2025). That being said, the wide majority of the research focuses on retail, production, or automated warehouses, which means the empirical proof regarding public supply institutions in Kenya is absent, especially in terms of KEMSA as a public medical supplier. Therefore, the situation makes it worth examining the way that the order-picking processes occur within KEMSA and linking the results with the overall performance of organizations in Kenya.

Theoretical Review

The research is grounded on the concept of Resource-Based View (RBV), which states that performance of an organization is determined by the availability of critical resources and capabilities developed or utilized by it.

In this research, employee skills, order-picking skills and use of technology represent crucial resources for improving performance (Arbelo et al., 2024).

According to Socio-Technical Systems (STS) theory, this study is also supported by theory that describes relationship between people, work processes, and technologies. This theory is important as in order picking process people interact with technological systems to become efficient and accurate. According to Winkelhaus et al. (2021), modern order-picking systems should be defined as sociotechnical systems, where human and technical aspects are working together on the success of organization performance over the whole.

METHODOLOGY

To analyze how order picking influenced the functioning of the Kenya Medical Supplies Authority (KEMSA), a case study research method was incorporated into the design of the study, which facilitated a thorough comprehension of the phenomenon under study. The researched group was represented by 300 employees engaged in the warehousing and supply chain operations of KEMSA including employees working in the field of inventory management, shipment, warehouse planning, and order picking (KEMSA, 2023). Stratified random sampling was applied to make sure the employees could be represented across various functional departments of the organization. Based on Yamane's formula, as provided in $(n=N/(1+N e^2))$, with the population amounting to 300 employees and the error of 5%, the size of the sample is 169 participants. Data were gathered through the use of a structured and standardized questionnaire with closed-ended questions formatted according to a five-point Likert-type scale (Creswell & Creswell, 2021; Saunders et al., 2020).

Content validity was obtained through the expert review, while construct validity was assessed through pilot test evaluation. Reliability was calculated using Cronbach's alpha where a value of 0.70 was taken as the threshold of any scale. The data was analyzed using SPSS Software Version 17.0, utilizing frequency tests, percentages, mean scores, standard deviations, and regression techniques for analysis. The results were presented in the form of tables, bar charts, and graphs.

FINDINGS

The following is the findings of the study.

Bio Data

The analysis examined the respondents on the basis of their department and age. The majority of respondents were involved in Operations (42%), which indicates direct participation in logistics and warehousing. Both Finance & Accounting and Other departments together accounted for 20% of respondents, Sales and Marketing had 11%, and IT 7%. About 83.3% of the total respondents were older than 35 years. The age group with 26-35 years comprised 12.7%, those of 21-25 years were 3.3%, and there were only 0.7% respondents below 20 years old.

Effect of Order-Picking Practices on Organizational Performance

This study evaluated the impact of order-picking strategies on the performance of KEMSA using two main objectives. The first objective focused on examining the influence of order-picking precision, operational efficiency and mistakes on the performance of the organization, while the second objective looked at the impact of technological advancement and employees training.

Order-Picking Accuracy, Efficiency and Errors

Table 1 presents respondents' views regarding order-picking accuracy, process efficiency and the effect of picking errors on organizational performance.

Table 1: Order-Picking Accuracy, Efficiency and Errors

Statement	SA		A		N		DA		SDA		Total
	N	%	N	%	N	%	N	%	N	%	
Orders are picked accurately and without frequent errors.	42	27.9	106	70.6	2	1.5	0	0.0	0	0.0	150
The order-picking process is time-efficient and well-structured.	46	30.9	101	67.6	2	1.5	0	0.0	0	0.0	150
Errors in order picking affect the organization's performance.	44	29.4	99	66.2	7	4.4	0	0.0	0	0.0	150

The investigation reveals that the order-picking actions have a close correlation with success in operations at KEMSA. The positive consensus concerning precision indicates that the reliable approaches to picking help reduce the error rate and ensure efficient order fulfillment. In addition, the positive mark for time efficiency means that proper picking procedures are necessary for proper operations in the warehouse. Moreover, the strong agreement about the fact that picking errors negatively impact the performance of the organization indicates the importance of operational aspects of imprecise orders. The above statements are consistent with the research of Casella et al. (2023), who have pointed out the importance of precision and efficiency, and demonstrate the point of view of Pereira et al. (2024) claiming that picking errors make operations inefficient and ineffective.

Technology Utilization and Staff Training

Table 2: Technology Utilization and Staff Training

Statement	SA		A		N		DA		SDA		Total
	N	%	N	%	N	%	N	%	N	%	
Technology, such as barcode scanners, enhances order-picking accuracy.	57	38.2	93	61.8	0	0.0	0	0.0	0	0.0	150
Staff involved in order picking are well-trained and effective in their roles.	88	58.8	57	38.2	4	2.9	0	0.0	0	0.0	150

The revelation implies that technology along with the skills of employees are essential for the success of the order-picking process in KEMSA. The unanimous view that the use of barcodes in this process increases the accuracy of order-picking proves that technology helps with easier identification, verification, and tracing, thus minimizing the risks of mistakes in order-picking. These results correlate with the observations made by Grosse (2024), who stated that various technologies could enhance the accuracy of the order-picking process. At the same time, the high consensus regarding the need for employee training highlights the role of people for making operations more efficient. Loske and Klumpp (2024) showed that the skill and experience of employees could significantly affect the efficiency of order-picking operations proving that the use of various technologies presupposes the presence of capable workers.

Table 3: Inferential Analysis

Statement	Proposed inferential analysis	Result in supplied findings
effect of order picking accuracy, efficiency, and errors on organizational performance	Pearson correlation and/or multiple regression with organizational performance	Not reported
effect of technology utilization and staff training in order picking on organizational performance	Pearson correlation and/or multiple regression with organizational performance	Not reported

The descriptive findings demonstrate a high level of agreement among respondents regarding order-picking practices; however, these results alone cannot establish the statistical significance or magnitude of relationships between order picking and organizational performance. Descriptive statistics only summarize respondents' perceptions and indicate the general pattern of responses. Therefore, inferential analysis is necessary to determine whether the observed relationships are statistically significant and to establish the extent to which order-picking practices are associated with organizational performance. Pearson correlation and multiple regression analysis would provide evidence on the strength, direction and statistical significance of these relationships, allowing conclusions to be drawn beyond the descriptive responses.

CONCLUSION AND RECOMMENDATION

The study concludes that order picking practices are a key factor determining KEMSA's overall performance. Respondents showed a high level of agreement regarding the accuracy and time efficiency of the process as well as the fact that mistakes in order picking influence organizational performance. The study was able to demonstrate that the use of technology such as barcode scanners increases order picking accuracy by enhancing product identification and verification. Moreover, respondents thought that training and effectiveness of employees enhance order-picking operations. In combination, the results support the idea that effective order picking is based on timely and correct order picking process, suitable technological support, and qualified personnel. All these factors ensure efficient order fulfillment and overall efficiency of operations. Nevertheless, the results being descriptive do not allow to prove the statistical significance of the relationship between organizational performance and order picking.

In reference to the theoretical background, results substantiate the Resource-Based View theory since they indicate that employees' competence and technology-related resources serve as supportive resources for efficient order picking activity and company performance. Furthermore, the findings support the Socio-Technical System theory because the findings demonstrate the interrelation of technology and trained employees in order picking. Therefore, the evidence confirms both theories although less rigorous confirmation of the theories' validity will require the use of inferential analysis that will establish the correlation between variables.

In light of the results of the study, KEMSA management needs to introduce more robust order-picking practices, including better collating and verification systems to help mitigate picking errors. It is also paramount that the authority invests in barcode scanner systems and such similar technology to help improve product identification, order verification and order tracking; frequent training and refreshers for order-picking personnel ought to be carried out to improve their skills for successful order picking. It is also essential that management monitors order-picking times and errors regularly so as to identify problem areas. Furthermore, normative operational practices should guide ordering-related processes in the warehouse to guarantee quick and effective order delivery. Finally, KEMSA should make sure that technology and human capital are blended correctly for effective order-picking process implementation in the company.

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