

## The Influence of Reverse Logistics Practices in Enhancing Competitiveness of Soft Drinks Companies in Tanzania: a Case of Kisima Pure Drinking Water

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### Abstract

The adoption of reverse logistics among soft drinks companies has been essential for transforming the industry from a linear model to a circular one, thereby gaining a competitive edge through improved reputation and cost-effective recycling. This article assessed the influence of reverse logistics practices on enhancing competitiveness in soft drinks companies in Tanzania focusing Kisima pure drinking water. Pragmatist philosophy with the descriptive design was used to select randomly a sample of 55 respondents that included managers and assistant managers. Questionnaires and in-depth interviews were used to collect data. Quantitative data were descriptively and inferentially analysed to obtain the mean, standard deviation and relationship between variables while qualitative data being analysed using content analysis. The findings indicated that refurbishment processes were attained through restoring used bottles, crates or equipment to a functional and acceptable condition for use, having clear procedures for inspecting and restoring returned packaging materials with appropriate tools and equipment for repair and improvements. However, regression results indicated an ( $R^2$ ) value of 0.542 signifying a 54.2% of the variation in the competitiveness of soft drinks companies in Tanzania, explained by reverse logistics practices like refurbishment and recycling. The remaining 45.8% was due to other factors not included in the model as nearly half of company success depends on other missing factors, like marketing, price or product quality while managing waste and reusing materials helps companies save money and attract eco-friendly buyers. Kisima pure drinking water consistently met customer requirements by responding effectively to changes in customer demands and market conditions thereby maintaining its competitiveness. It is concluded that for the company to maintain a strong market position compared to its competitors; efficient use of resources and delivering products in a timely manner are important. The study recommends Kisima pure drinking water to adapt its operations towards sustaining performance in a changing business environment by transforming operational waste into revenue streams, enhancing brand equity and fostering long-term customer loyalty.

*Key Words: Reverse logistics practices; Competitiveness; Soft drinks companies; Pure drinking water.*

### 1. Introduction

Reverse logistics globally provides a competitive advantage by enabling faster, more efficient responses to customer needs and reducing supply chain costs (Job et al., 2020). For soft drink companies in developing countries and in particular Sub-Saharan Africa, the adoption of reverse logistics is essential for transforming the industry from a linear model to a circular one, thereby gaining a competitive edge through improved reputation and cost-effective recycling (Kumar et al., 2023). An effective and standardized reverse logistics practice can give a firm the necessary competitive advantage to move above peers and competitors, and possibly capture larger market share within their industry because of their superior process and being able to meet the demands of the customers (Mutuku and Moronge, 2020).

Job et al., (2020) opined that the implementation of reverse logistics practices should be guided by a process that requires identifying the uniqueness of resources the organization has and strategically utilizing these resources in a manner that builds comparative advantage. Studies by Mwanyota et al., (2017) have shown that the adoption of reverse logistics practices can lead to a sustainable competitive advantage for firms. Pollock (2017) asserted that reverse logistics practices accounts for 3% to 4% of a company's total logistics costs and argues that companies can save up to 10% from their annual logistics bill by implementing an efficient reverse logistics system. 20% of this amount is saved in labour costs and the remaining eighty percent is saved in lowered freight costs and reduced pipeline inventory.

Ivanova et al (2022) in examining the relationship between reverse logistics and competitiveness, economic performance, the environment and society in the OECD countries found that reverse logistics has a positive effect on competitiveness, economic performance, environmental performance and society although it could not assess the contribution of reverse logistics practices on enhancing competitiveness of soft drinks companies. Mutuku and Moronge (2020) asserted that reverse logistics influenced the performance of food and beverage manufacturing firms in Kenya where R square value of 0.647 meant 64.7% of the corresponding variation in performance of food and beverage manufacturing firms can be explained or predicted by product returns management, recycling management, disposal management and product repackaging which indicated that the model fitted the study data.

In Tanzania the plastic packaging industry and soft drink has grown since the 1990's mainly for packaging bottled water, soft drinks, laundry powder, margarine and cooking fat and oil (Panya and Marende, 2021). About 315 thousand tons of plastic wastes were generated in Tanzania in 2018 of which the per capita plastic waste generation was around 5.6 kg/year which is lower than the world average of 29 kg/year. It is estimated that only 40% of the plastic waste is collected, 4% of the plastic waste is collected for recycling, Because there are no sanitary landfill and incineration facilities, there is no proper disposal of waste in Tanzania where 96% of the plastic waste is mismanaged and can potentially leak to the oceans, rivers and lakes of Tanzania especially in Dar es Salaam (UN environmental programmer final report, 2021).

Panya and Marendi (2021) assert that reverse logistics practices in Tanzanian soft drink firms (e.g., SBC Tanzania) enhanced competitiveness by reducing operational costs through bottle recycling and reuse. Key practices include outsourcing, improving fleet capacity and utilizing community environmental knowledge to handle returns. Appiah and Owuso-Bio (2024) opined that the financial outcome of reverse logistics among firms in a developing country such as Ghana show that reverse logistics is negatively related to firm's financial performance. However, analytics capability attenuates this negative relationship, such that firms with high analytics capability obtain a positive relationship between reverse logistics and firm's financial performance.

Many companies conventionally perceive reverse logistics practices as a necessary evil rather than recognizing its potential to improve business performance, resulting in the widespread neglect of its impact despite the accepted view that it can generate cost savings and enhance financial performance and firms' competitiveness (Appiah and Owuso-Bio, 2024). Despite the massive contribution to the country's gross domestic product (GDP), the industry is faced with many evils of competitiveness leading to shortage of raw materials, aggressive and ever increasing competitors, unstable markets, many types of returns resulting from wrong deliveries and damages, price volatility of materials, to the changing legal and policy frameworks for waste management in relation to reverse logistics supply (Panya and Marendi, 2021). Studies indicate that while reverse logistics supply and practices strategies such as returns, recycling and disposal may not show immediate financial gains, they significantly improve operational efficiency and long-term profitability. In the beverage industry which faces high pressure regarding plastic waste, reverse logistics act as a crucial, non-negotiable component of a sustainable and competitive business model (Ivanova et al., 2022; Appiah and Owuso-Bio, 2024).

This study is important because it will allow making the right management decisions on reverse logistics and implementation of some strategies at the enterprise level (Sharm et al., 2021). It also utilized a closed-loop supply chain theory that addresses the limitations of traditional supply chains by emphasizing the importance of incorporating reverse logistics practices such as recycling, reusing and remanufacturing into supply chain operations to enhance environmental sustainability and drive cost savings (Kazemi et al., 2019; Malmgren et al., 2020). Although previous research have acknowledged the importance of reverse logistics practices on enhancing competitiveness of soft drinks' companies, gaps persist on assessing their contribution (Appiah and Owuso-Bio, 2024). Yet, despite various studies in the areas of reverse logistics practices, there still scanty studies focusing the contribution of refurbishment on competitiveness of firms; soft drinks companies in Tanzania, Temeke municipality in particular. A lot have focused on measuring the performance outcomes of reverse logistics implementation (Prajapati et al., 2021; Kumar et al., 2023). Moreover, there are many reverse logistics practices and processes in various firms, but this study aimed to bridge the gap in assessing the contribution of refurbishment in enhancing competitiveness of soft drinks companies in Temeke, Dare Es Salaam Tanzania as a case towards filling the knowledge gap that exists.

## **2. Method**

### **2.1 Description of the Study Area**

The study was conducted at Kisima pure drinking water in Temeke Municipality. The reason for its choice is that although previous research have acknowledged the importance of reverse logistics practices on enhancing competitiveness of soft drinks' companies, gaps persist on assessing their contribution (Appiah & Owuso-Bio, 2024). Yet, despite various studies in the areas of reverse logistics practices, there still scanty studies focusing the contribution of refurbishment on competitiveness of firms; soft drinks companies in Tanzania, Temeke municipality in particular. Therefore this study aimed to add on limited knowledge in this area by assessing the contribution of reverse logistics practices in enhancing competitiveness of soft drinks companies in Temeke, Dar es Salaam Tanzania focusing Kisima pure drinking water.

### **2.2 Research Approach and Design**

The researcher utilized a mixed approach. This involved quantitative and qualitative approaches. Creswell (2018) asserts that qualitative approach explores and discovers issues as a few of issues may be known concerning the problem in hand. Saunders et al (2017), on the other hand state that a qualitative approach helps researchers realize people, the cultural and social contexts where they live and work whereas quantitative approach gathers data that is revised and tabulated in numbers, allowing them to be characterized by using statistical analysis. Therefore, quantitative researchers measure variables on a sample of subjects and express the relationship between variables using effective statistics such as correlations, relative frequencies or differences between means (Kothari, 2019).

The study adopted the descriptive research design. This research design allows researchers to gather information, summarize, present and interpret it for clarification (Creswell, 2018). Descriptive research design was chosen based on the fact that it enables a researcher to obtain data about practices, situations or views at one point in time through questionnaires or interviews.

### **2.3 Study Population**

Saunders et al. (2017) assert that the population refers to the full set of cases from which a sample is taken. In this study the target population included finance manager, procurement managers, inventory managers and assistant managers of Kisima pure drinking water. This population amounts to 65 both at the factory and those found in upcountry offices outside Temeke (Kisima pure drinking water Human Resource Report, 2024)

### **2.4 Sampling Techniques and Sample Size**

Simple random sampling technique was used to select members as each respondent had an equal chance of being selected. Simple random sampling allowed the researcher to gather data that would not have been possible otherwise while obtaining basic data and trends regarding the study without the complications of using a randomized sample (Kothari, 2019).

The sample size was determined using Yamane (1967) formula to its appropriate respondents to represent the study population. Where  $n$  is the sample size,  $N$  is the total target population, in this case, the 65 population size obtained, and  $e$  is the error rate, in this case 5%. The sample size for this study was calculated as shown below.

$$n = \frac{N}{1+N(e)^2} \text{ where } N = \text{the Total Population; } e = \text{the margin of error (5\% has been used to obtain the best sample given the population size); } n = \text{the sample size}$$

$$n = \frac{65}{1+65(0.05)^2}; n = 55$$

Therefore, the sample size is 55 respondents

## 2.5 Data Collection Tools

The study employed the questionnaires and interviews as primary data collection tools. The closed-ended questionnaires in the form of Likert type scale were administered to assistant managers. These questionnaires were self-administered and managed with drop and pick method. In-depth interviews were used to the managers. The advantage of this method is that it enables the researcher to evaluate the entire situation over the study concerned and obtain relevant information to answer research objectives.

## 2.6 Data Analysis

Quantitative data were analyzed descriptively through the IBM Statistics (Statistical Package for Social Sciences) version 26 in terms of frequencies and percentages. Moreover, mean and standard deviations were computed. Yet, multiple regression analysis was used to analyse the relationship of variables for the quantitative data. The regression model formula was utilised;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Whereby:

$Y$  = Dependent Variable (Firm's competitiveness);  $\beta_0$  = y intercept (Constant);  $\beta_1$  = regression coefficient for remanufacturing processes;  $\beta_2$  = regression coefficient for refurbishment processes;  $\beta_3$  = regression coefficient for recycling processes;  $X_1$  = remanufacturing processes;  $X_2$  = refurbishment processes;  $X_3$  = recycling processes;  $\varepsilon$  = error term.

Additionally, the multiple regression analysis included linearity, autocorrelation, normality and multicollinearity assumptions.

Qualitative data from in-depth interviews were coded and analyzed through content analysis (Saunders et al., 2017). Moreover, data from objective 1 were analysed using content analysis while data from objectives 2 and 3 analysed through descriptive statistics.

## 3. Results

### 3.1 Influence of Refurbishment processes on competitiveness of soft drinks companies

The objective examined the influence of refurbishment processes on competitiveness of soft drinks companies. Questionnaires were administered to assistant managers. The results are presented in Table 3.1

**Table 3.1: Influence of Refurbishment Processes**

| Statement                                                                                                       | %<br>strongly<br>agree | %<br>Agree | % not<br>sure | %<br>disagree | %<br>strongly<br>disagree | Mean | SD   |
|-----------------------------------------------------------------------------------------------------------------|------------------------|------------|---------------|---------------|---------------------------|------|------|
| The company restores used bottles, crates or equipment to a functional and acceptable condition for use         | 90                     | 10         | 0             | 0             | 0                         | 3.7  | 0.75 |
| There are clear procedures for inspecting and restoring returned packaging materials                            | 85                     | 0          | 0             | 15            | 0                         | 3.1  | 0.80 |
| Appropriate tools and equipment are used to repair and improve the condition of reusable items                  | 80                     | 0          | 20            | 0             | 0                         | 2.9  | 0.75 |
| Refurbished items are checked to ensure they meet required quality and safety standards                         | 90                     | 10         | 0             | 0             | 0                         | 3.5  | 0.79 |
| Employees are trained in processes for restoring reusable packaging and equipment                               | 85                     | 0          | 15            | 0             | 0                         | 3.2  | 0.85 |
| The company monitors and records refurbishment activities to support quality control and operational efficiency | 80                     | 0          | 0             | 20            | 0                         | 2.8  | 0.65 |

The results in Table 3.1 indicate that 90% of respondents strongly agreed while 10% of respondents agreed that the company restores used bottles, crates or equipment to a functional and acceptable condition for use that is associated with the mean of 3.7 and standard deviation of 0.75. This implies that Kisima pure drinking water attains all requirements for refurbishment (reusing and restoring bottles/crated) in a moderate manner towards its competitiveness. The low standard deviation of 0.75 signifies a strong consensus that restoring assets adds significant value. It was further observed that restoring used crates and bottles cuts the need for raw packaging thereby lowering unit costs and helps companies maintain competitive retail pricing. The argument above concurs with Kumar et al (2023) who opined that refurbishment and cleaning packaging support green logistics, which improves brand reputation and appeals to environmentally conscious consumers. Therefore, keeping returnable equipment functional prevents supply chain bottlenecks, ensuring consistent product availability.

Yet, it was observed that refurbishment creates hidden operational bottlenecks and with the mean score of 3.7 suggests moderate to high influence in the supply chain where the standard deviation of 0.75 indicates polarized results. Therefore,

refurbishment can decrease competitiveness due to higher reverse logistics costs, variable quality control, and slower production turnaround. The costs of setting up reverse logistics such as collecting, sorting and transporting empty crates and used bottles frequently outweigh the savings. This reduces overall operating margins compared to one-way, disposable packaging. Moreover, it was found that restoring used bottles or equipment to an acceptable condition introduces micro-cracks, surface wear or residual contaminants. This poses severe food safety risks and can require expensive chemical and water-intensive washing processes. Thus, time and capital spent managing used assets distract from core competencies, such as innovating new products or expanding market reach.

Similarly, the results in Table 3.1 indicate that 85% of respondents strongly agreed that there are clear procedures for inspecting and restoring returned packaging materials with a mean score of 3.1 indicating a moderate level of refurbishment implementation and standard deviation of 0.8 that indicates a moderate variation among the responses. It was found that while soft drinks companies such as Kisima pure drinking water have basic inspection and refurbishment procedures in place for returned packaging materials, they have not yet achieved complete integration or mastery of these processes. This means that some firms are highly effective at refurbishing, while others struggle with inconsistencies, delays or high defect rates in their return and reuse processes. This supports the argument by Job et al (2020) who contended that in the beverage industry, effective reverse logistics and packaging refurbishment act as double-edged swords that simultaneously impact both the bottom line and sustainability metrics. Therefore, in soft drinks, inadequate inspection of returned packaging (e.g., residual chemicals, micro-cracks) leads to high product contamination or breakage rates during refilling. This hurts a brand's reputation and diminishes market trust. For example, processing, sorting and cleaning returned bottles might take longer or require excess manual labour, slowing down the overall production line.

However, it was found also that a mean score of 3.1 with a standard deviation of 0.80 suggests that while some soft drink companies have clear refurbishment procedures, many struggle to implement them consistently; but theoretical policies often fail in practice, meaning un-optimized processes can actually reduce a firm's competitiveness. For example, in fast-paced production, inconsistent return handling disrupts line efficiency and inflates costs as returned packaging (e.g., glass, plastic crates) degrades with each cycle. And without highly advanced inspection technology, restoring this packaging to a like-new state causes production bottlenecks. Therefore, labour, energy, and chemical costs required to inspect, clean, sanitize and refurbish materials often eclipse the cost of purchasing new, mass-produced packaging.

On the other hand, the results in Table 3.1 indicate that 80% of respondents strongly agreed that appropriate tools and equipment are used to repair and improve the condition of reusable items while 20% of respondents being unsure of the matter. This goes with the mean score of 2.9 reflecting a moderate implementation of tools and equipment for refurbishment and standard deviation of 0.75 showing a moderate

agreement among respondents that implies varied or developing practices. This suggests soft drink companies view refurbishment as a functional practice, yet lack the advanced equipment or strategic focus required to achieve maximum competitiveness. The argument above concurs with Appiah and Owuso-Bio (2024) who stated that investing in dedicated refurbishment machinery could significantly cut procurement costs and improve brand sustainability and relying on basic repair methods instead of standardized, specialized tools can increase equipment downtime and operational waste. This limits a company's ability to maximize the lifespan of reusable assets (e.g., crates, kegs, dispensing equipment).

Yet, it was further found that a mean score of 2.9 indicates that stakeholders only moderately agree on the influence of refurbishment and the standard deviation of 0.75 suggests moderate consensus, meaning there is a notable group who view these processes negatively. The reason is that the high operational and capital costs of refurbishment often negate the competitive advantage gained over producing new, single-use alternatives from the fact that the logistical expenses of retrieving, cleaning, and repairing reusable items (like returnable bottles or pallets) require specialized equipment that can reduce profit margins, especially in emerging markets where new raw materials may be cheaper. Therefore, refurbished items may suffer from aesthetic wear-and-tear or hygiene concerns, which can negatively impact consumer confidence and brand reputation.

Additionally, the results in Table 3.1 indicate that 90% of respondents strongly agreed while 10% of respondents agreed that refurbished items are checked to ensure they meet required quality and safety standards. This is accompanied with the mean score of 3.5 and standard deviation of 0.79. It was found that checking refurbished items to ensure they meet quality and safety standards validates the influence of refurbishment processes. It was further found that a mean of 3.5 and a standard deviation of 0.79 imply that respondents agree or moderately agree that these rigorous safety/quality checks are in place and working well. Therefore, for soft drinks companies, such as Kisima pure drinking water relying on functioning refurbished machinery directly lowers capital costs, reduces supply chain downtime and ensures food-grade safety standards. This supports the argument by Ivanova et al (2022) who asserted that companies that effectively manage reconditioned assets can pass these savings to consumers or invest them elsewhere, gaining an edge in the market.

Moreover, it was observed that rigorous inspections alone do not guarantee defect prevention. Quality checks are reactive as respondents feel the processes to be only moderately effective, thus soft drink companies execute refurbishment, increasing the risk of inconsistent product safety and market competitiveness. This suggests that a check verifies the outcome, but it does not improve the initial refurbishment process itself. Companies risk wasting resources on reworking failed items rather than refining the core remanufacturing workflow. Also, consumers and stakeholders cannot rely on hit-or-miss processes to consistently deliver safe, high-quality soft drink equipment (e.g., dispensers, vending machines), but demand consistency, especially regarding food and beverage safety as if refurbishment processes are not

inherently stable and standardized, negative market perceptions can severely damage a brand's competitive edge.

Furthermore, the results in Table 3.1 indicate that 85% of respondents strongly agreed that employees are trained in processes for restoring reusable packaging and equipment while 15% of respondents being unsure of the matter with a mean score of 3.2 and standard deviation of 0.85. This signifies that in soft drinks companies such statistics imply a moderately positive consensus that employee training in reverse logistics improves refurbishment processes. This boosts cost-efficiency and sustainability, granting companies a stronger competitive advantage in the beverage market. It was further found that reusable packaging (e.g., refillable glass/PET bottles and crates) minimizes the need to continuously purchase new raw materials and trained employees ensure equipment remains functional, reducing costly downtime and waste in manufacturing plants. The argument is in concurrent with Sharma et al (2021) who reported that beverage manufacturers face increasing pressure to adopt green technologies and meet mandatory refill targets. Effective refurbishment means less environmental impact and a better brand reputation.

Moreover, it was found that when employees are not achieving the high proficiency required for complex refurbishment, the gap limits true competitiveness. For example, because soft drinks are highly sensitive to contamination; if training is only moderately effective, refurbishment quality will vary widely, leading to damaged brand reputation and safety risks. Also, ineffective training can lead to longer cleaning times, equipment damage and high defect rates, which erode the cost savings and environmental benefits of reusable packaging.

Finally, the results in Table 3.1 indicate that 80% of respondents strongly agreed that the company monitors and records refurbishment activities to support quality control and operational efficiency with a mean score of 2.8 and standard deviation of 0.65. It was found that in soft drinks companies, this data implies a moderate-to-strong agreement among respondents that tracking refurbishment and maintenance activities is a vital operational practice. This suggests that refurbishment monitoring is actively applied and seen as useful, though there is still significant room for process standardization and improvement. For example, in bottling and soft drink manufacturing, monitoring equipment and refurbishments prevents unexpected downtime and reduces defects. Therefore, relying on records rather than guesswork ensures that the company acts on evidence-based data, which ultimately lowers operational costs. This supports the argument by Bai et al (2020) who opined that by maintaining high operational efficiency and consistent product quality, soft drinks companies such as Kisima pure drinking water can better protect their market share and consumer trust against competitors.

Yet, it was found that the low mean score of 2.8 indicates that employees and managers perceive current monitoring practices as largely ineffective. Therefore, intrusive, poorly standardized monitoring creates perverse incentives and erodes employee morale, hindering rather than helping long-term competitiveness. However, a standard deviation of 0.65 shows significant variability in how these

processes are being executed. This indicates that monitoring isn't resulting in a standardized, streamlined workflow. It was further found that strict monitoring of refurbishment processes can foster a culture of distrust. Employees who feel micromanaged are more likely to experience high stress, leading to increased staff turnover, which is highly detrimental in the competitive soft drinks industry. Therefore, when operational efficiency is tied strictly to monitored output, employees may prioritize speed over actual quality and in bottling and carbonation this can result in compromised quality control. Competitiveness in beverage manufacturing often relies on rapid innovation and adapting to new technologies.

The closed-loop supply chain theory aided the process of repairing, cleaning and testing used water dispensers (e.g., standard or West-point dispensers) to return them to optimal working condition where reverse logistics systematically recover broken or leased dispensers from offices and homes while extending the lifespan of expensive capital assets, reduces equipment replacement costs, and allowing companies like Kisima to offer comprehensive, budget-friendly hydration solutions to corporate clients.

Generally, the results indicate that refurbishment processes are vital cost-reduction and brand-differentiation strategies. This was achieved through restoring used bottles, crates or equipment to a functional and acceptable condition for use, having clear procedures for inspecting and restoring returned packaging materials, possessing appropriate tools and equipment for repair and improvements. More so, undertaking checking to ensure items meet required quality and safety standards was vital that is enhanced by training employees for restoring reusable packaging and equipment; and monitoring and recording refurbishment activities to support quality control and operational efficiency. Yet a regression result of an ( $R^2$ ) value of 0.542 meant that 54.2% of the variation in the competitiveness of soft drinks companies in Tanzania is explained by reverse logistics practices like refurbishment and recycling. The remaining 45.8% is due to other factors not included in the model. Nearly half of company success depends on other missing factors, like marketing, price or product quality. Managing waste and reusing materials helps companies save money and attract eco-friendly buyers. Thus, refurbishment helps improve company competitiveness.

#### **4 Conclusion, Recommendations and Areas for Further Research**

##### **4.1 Conclusion**

It is concluded that the integration of refurbishment provides soft drink companies with a strong competitive advantage. This practice significantly cuts operational costs, builds supply chain resilience against fluctuating commodity prices and improves corporate brand equity by meeting sustainability demands. With the aid of closed-loop supply chain theory, a shift was necessitated from a linear model (extract, make, dispose) to a circular one as for soft drink and bottled water companies, it directly dictates how effectively they can recover materials, thereby minimizing virgin resource extraction, cutting waste and sharply driving up overall environmental efficiency. Moreover, in a heavily commoditized and environmentally scrutinized beverage market, transitioning from linear production to a circular model

(focusing heavily on remanufacturing/refill models and equipment refurbishment) is no longer just a regulatory compliance measure. It is a major driver of cost efficiency and market positioning as soft drinks companies that design for circularity achieve insulation against raw material price volatility and win over eco-conscious consumers, securing long-term market resilience.

With regard to refurbishment, Kisima pure drinking water attained its critical internal cost-efficiency involving repair and reconditioning of capital-intensive production equipment, refrigeration units and post-mix dispensing machines. This maximized the lifespan of expensive corporate assets, reducing capital expenditures and avoiding downtime across distribution networks thereby attaining its competitive advantage.

#### **4.2 Recommendations**

Integrating refurbishment drastically boosts soft drink companies' competitiveness by reducing raw material costs, insulating against supply chain disruptions and meeting strict ESG regulations. These circular economy practices transform operational waste into revenue streams, enhance brand equity and foster long-term customer loyalty.

Therefore, Kisima pure drinking water should prioritize refurbishment, through extending the lifespan of vending machines, coolers and fountain dispensers. Also, upgrading and repairing units rather than replacing them cuts capital expenditures and creates localized service partnerships. This will help in implementing Deposit Return Schemes (DRS) to retrieve, sanitize and reuse bottles that will dramatically lower material usage and packaging costs.

#### **4.3 Areas for Further Research**

Further studies should focus on quantifying the direct ROI of circular practices (remanufacturing, refurbishing and recycling), optimizing the reverse logistics required for glass and PET bottle returns and measuring how consumer perception of refurbished/recycled packaging impacts market share and brand competitiveness.

Also, researchers should investigate the scalability of deposit-return schemes (DRS) and assess the infrastructure costs needed to move away from single-use packaging while modeling the most cost-effective collection routes in emerging markets.

Finally, scholars need to explore how emerging digital tools such as sensor-embedded sorting systems, IoT and digital product passports can reduce administrative overhead and streamline circular value chains.

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