

# Reverse Logistics for Food and Beverages in Grocery Stores: Benefit the Customers and the Businesses

Azlin Abdul Latif<sup>1</sup>, Nur Farizan Tarudin<sup>2\*</sup>, Muhammad Akmal Asyraaf Adlan<sup>3</sup>, Rudiah Md Hanafiah<sup>4</sup>, Mohd Hafiz Zulfakar<sup>5</sup>

<sup>1</sup>Faculty of Business and Management, UiTM Puncak Alam, Selangor.

<sup>2</sup>Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia.

<sup>3</sup>Faculty of Business Management, Universiti Teknologi MARA Cawangan Johor Kampus Pasir Gudang, Johor, Malaysia.

<sup>4</sup>Faculty of Maritime Studies, Universiti Malaysia Terengganu, Malaysia.

<sup>5</sup>Faculty of Business and Management, UiTM Puncak Alam, Selangor.

\*Corresponding Author

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## ABSTRACT

In the post-pandemic Covid-19 era, as more people start doing their physical grocery shopping, supply and demand in the retail industry will eventually need to keep up. A few of the challenges the grocery retail sector is currently facing globally include the perishability of food products, which requires special handling, demand and supply forecasting, maintaining continuous stock inventories, return management, and waste management. In today's world, reverse logistics and speedy and effective food product movement along supply chain networks are both essential. Employing reverse logistics benefits business operations and unwittingly supports global government sustainability objectives, which in turn benefits the green supply chain. While reverse logistics techniques frequently concentrate on ways to profit from returned goods and lower their cost of loss, they unwittingly have an indirect negative influence on the environment. There are far too many wastes produced by the retail sector. Based on that supposition, the study's major goal is to analyse the best strategies for using reverse logistics and managing waste issue in this industry, so that business operations can be successful, economical, and eventually deliver a high-quality product to the customer. To collect specific information and viewpoints from the targeted organization, a qualitative technique was adopted in this study. Through this study, the authors can provide suitable recommendation solution find ways to reduce the cost of transportation if possible and improve the logistics system as a whole. This is because reverse logistics in retailing industry plays an important role in sustaining the retail business for all the parties involved in the business and logistics. Companies that are practicing reverse logistics the right way are tend to improve their overall performance, for example, the increasing numbers of customers which is gaining competitive advantage from the competitors.

**Keywords:** Reverse logistics, Food and beverages, Grocery stores, Customers

## INTRODUCTION

The administration of the flow of commodities from the point of origin to the point of consumption in order to suit the needs of customers is defined as logistics. In logistics, resources including food, drinks, equipment, liquids, and even animals are used. The logistics of commodities often comprise the framework of information flow, handling, warehousing, product production, product packing, inventory management, transportation and ultimate sales of the items to the end user. Every business in the retail sector depends on logistics to some extent, but grocery stores are particularly reliant on it. Customers in this market place a high value on speed and quality, therefore the retail industry needs to keep an eye on these aspects to remain competitive. As important as controlling the movement of information and commodities from supplier to customer is managing the flow of information and things in reverse, with products returned by customers for a variety of reasons. The term “reverse logistics” refers to this procedure. Product damage, expiration, end-of-life, recalls, poor quality, and non-halal products are just a few of the reasons why customers return goods. Product returns, return avoidance, remarketing, repackaging, delivery failure, unsold items, repair, maintenance, exchange, refurbishment, and disposal are characteristics of reverse logistics. According to Abdissa [1], reverse logistics is a process that helps businesses reduce their environmental impact by recycling, reusing, and consuming fewer resources.

By using reverse logistics in their operations, the logistics industry contributes a minor amount to the environmental issue. In the food retail industry adoption of reverse logistics is considerably dissimilar from that in the manufacturing industry. Groceries, often known as food and drink, required particular treatment in the logistics division. The supply chain’s backward movement of packaging and food components calls for a dependable reverse logistics system. Handling grocery products need a seamless reverse logistics system because they are typically perishable, easily damaged, have an expiration date, and most importantly are foods.

In Malaysia, the reverse logistics industry faces a similar issue. The amount of daily solid trash generated in Malaysia has increased as a result of the country’s expanding industrial sector. There are several different supermarkets, convenience stores, and grocery stores in Malaysia, with hypermarkets being the biggest. The retailing of groceries is currently one of Malaysia’s fastest expanding businesses due to the availability of grocery stores almost everywhere. This is a result of globalisation, which has raised peoples’ incomes and daily wants alike. Future studies must look more closely at the sustainability of the green environment, especially in light of Malaysia’s support for the green movement. To maintain the current state of the environment, we must eliminate waste that is hazardous to the ecosystem, particularly waste from food.

The practices of reverse logistics for food and drink in Grocery A store in Malaysia are the main subject of this study. Because its real identity is confidential, the researchers used the alias “Grocery A” for the grocery store that was used in this study. A grocery store is a type of retail business that sells meals, beverages, and other items commonly referred to as groceries. We can see that grocery stores sell non-perishable foods like canned goods wrapped in bottles, plastic wrap, and cans alongside perishable commodities like fresh vegetables and meats on a regular basis. Clothing and home furnishings are common non-food goods sold in large supermarket stores like hypermarkets. Some also have departments for electrical work, customer service, and pharmacies. As a result, the researcher will in this study go into further detail into the practises, flows, and effects of reverse logistics in the grocery shop.

The issue with the grocery store is that there isn’t enough space and storage in the receiving area and storage section. The outlet’s constrained size is to blame for this. The management of the outlet must find a solution to the issue of the rising rate of returned goods there because there is a finite quantity of space in the receiving department. The efficiency of return handling in this circumstance needs to be carefully

considered due to costs, third-party logistics, and multiple stakeholders in the grocery shop. Thus, industry professionals in the food retail sector need to undertake a complete study of the management of these reverse logistics difficulties and establish a strategy in order to improve the effectiveness and efficiency of grocery stores generally in managing returns.

## **DISCUSSION ON CONCEPTUAL FRAMEWORK**

Over the past few years, reverse logistics has been covered in a large number of scholarly articles. The researcher will go into greater depth regarding the reverse logistics business in order to provide the reader a clear picture of the background on which this research is based. This overview aims to provide the reader with a review of the research that have been conducted on reverse logistics, the components that have been examined, and the sectors that are involved. Sangwan's [2] research demonstrated the necessity of key performance indicators for measuring the decision variables associated with each activity. The study's main finding is that KPIs and decision variables (study variables) were accessible for all of the key reverse logistics jobs. Prior reverse logistics research studies did not consider KPIs along the lines of activity. Lack of KPIs and decision factors has an impact on both the direction of the field study and the explanation of reverse logistics efforts to the firm management. As a result of this research and the established KPIs, the managers should be able to make informed judgements regarding the design of reverse logistics operations and practises.

The research conducted by Vijayan [3] revealed some fascinating results. Academics were discussing the reverse logistics methods used by food sellers in Malaysia's Klang Valley. To acquire the comprehensive representation used in the research, sampling from convenience stores, grocery stores, hypermarkets and supermarkets throughout the Klang Valley was required. The study's findings revealed that retailers frequently use the term "reverse logistics" without fully understanding what it entails. Retailers have been demonstrated to follow important procedures like inventory management, returns management, and waste management. Retailers in the Klang Valley, who largely relied on written and visual/auditory media, viewed reverse logistics activities as a vital source of information. Reverse logistics, according to retailers, will improve waste control, quality management, and the rate at which goods are returned. Shops in the Klang Valley have reported a number of barriers to completely implementing reverse logistics activities, including customer interests, a lack of expert advice on reverse logistics, and the absence of a government initiative to make reverse logistics essential. Retailers will be required to use reverse logistics, which will enhance operations management and make Malaysia's food retail supply chain more ecologically friendly.

A lot of factors influence the effective deployment of reverse logistics in the food business. Early on, the organizations must teach and advise their staff on reverse logistics. That teaches workers about the sophistication of reverse logistics procedures. Also, the enterprises must make the policy or guideline available in order for their employees and clientele to accept it as standard operating procedure. Everyone will now have a clear idea of how reverse logistics approaches ought to be used. The government's agreement and regulations also have an impact on how effectively the sector employs reverse logistics [4][5]. As a result, it is necessary to progressively remove all barriers, both internal and external. Reverse logistics used effectively in the food and beverage sectors benefits the environment as a whole as well as the costs and profits of the company.

For a variety of causes, many different products are abandoned and returned every day. The perishable nature of food and agricultural products, such as fresh vegetables, which have a short shelf life and require quick daily movement and effective logistical processes to assure continuing supply, is one of the major issues in food and beverage reverse logistics. Reverse logistics covers every aspect of transportation, from products that can be sold again to worn-out items that customers no longer need [6]. Reverse logistics is used in many different businesses, many of which try to conserve resources by recovering value and

minimizing the amount of waste dumped in landfills [7].

The physical characteristics of food products, or more accurately, the attributes of goods, such as delicate sensory and physico-chemical properties, have a significant impact on how reverse logistics should be performed. Logistics performance is impacted by food-related parameters such shelf life, manufacturing throughput, temperature control during shipping, and production seasonality [8]. Inadequate handling of food during logistics operations may result in poor food quality, which may encourage “return avoidance,” a crucial step in the reverse logistics process [9]. But before they reach high return avoidance rates, the majority of businesses still have a long way to go [10].

The company can prepare for and work to avoid or reduce a number of costs associated with returns management, such as the following: transaction costs; transport and shipping costs; transport and shipping costs; storage costs; and warehouse costs. Where there is a return, there may be an unhappy customer who must be dissatisfied. The savings could contribute significantly to the organization’s overall supply chain cost reduction if the business can pinpoint the hidden expenses that are present in each of these reverse logistics components and then take efforts to reduce them. Returns may also have a variety of effects on different enterprises or industries, with some industries offering better rewards than others. The most crucial first step in enhancing reverse logistics management is identifying and comprehending the true costs of product returns in your company.

Every corporate entity basically wants to have a competitive advantage. The performance and profit of the business will rise as a result of having a competitive advantage. A business acquires a competitive edge when it successfully reduces pricing and the rate of returned goods, two factors that have a significant impact on reverse logistics. For instance, manufacturers may have liberal return procedures, resulting in a high proportion of product returns, despite merchants’ efforts to reduce the risk of unsold goods [11][9]. The shop gains a competitive edge and can spend less on reverse logistics as a result of decreased product returns. When executing logistics operations, retailers and suppliers should work together to cut costs and eliminate waste as much as feasible. For instance, retailers who work closely with food suppliers can remove the damaged product from the case before repackaging and promoting the remaining goods [12].

Reverse logistics operations and design are impacted by return rates as well [9]. Additionally, the study that was conducted by Jain [13] noted that a range of factors, including expected returns, costs, competition behavior, and operating methods are taken into consideration while choosing logistics facilities, such as warehousing and transportation. The logistical procedure is intricate. Among the operations that could be engaged are supply and demand forecasting, information flows, packaging, transportation activities, and other logistics-related tasks.

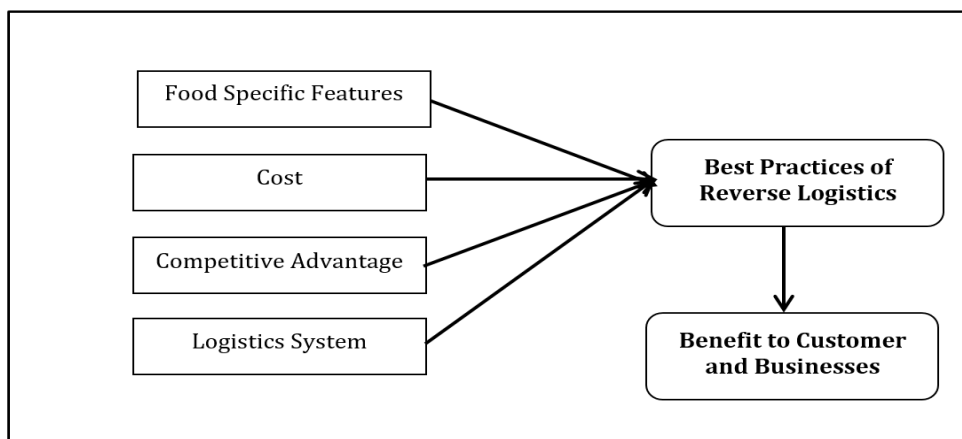


Figure 1: Conceptual Framework

## METHODOLOGY

### Research Design

The researcher employs a qualitative research methodology for this investigation. It is employed to comprehend the underlying causes, viewpoints, and intentions. Despite the fact that the results are frequently subjective, they help grasp the issue or develop ideas for additional quantitative research. Additionally, a qualitative technique is utilized to elicit opinions on particular topics from a small, focused sample, allowing the researcher to delve deeper into the problem. There are numerous techniques to gather qualitative data utilizing semi- or unstructured methods. A few of the often employed techniques include focus groups (group talks), individual interviews, participation, observations, and surveys. Usually, a small sample size is used, and the participants are people who will be interviewed and questioned about their thoughts and beliefs.

### Sampling

In order to generalise the elements of the population based on an examination of the sample and knowledge of its qualities or traits, sampling is the process of selecting a large enough number of the suitable elements from a population. Therefore, by analyzing the sample and comprehending the qualities or characteristics of the sample's subjects, it would be possible to generalize the properties or characteristics of the sample's subjects to the components of the population. In this context, the action of choosing a sample from a larger population is known as "sampling." Correct sampling is crucial to removing bias from the selection process. They might also make it possible to cut back on the expense or labor involved in gathering samples. The population is the total set of individuals, occasions, or objects that the researcher plans to examine [14]. So, 50 employees of A Grocery Store are the sample size for this study, and the data are based on a list provided by the human resources division. A sample is a subset of the population that was selected for the study and is a percentage of the entire population that was chosen for the research endeavour [14]. Finding the right respondents is vital before beginning the data collection for this project [15][16]. The recommended sample size for this study is three (3) individuals, all of whom are employed in the receiving division and are in charge of monitoring returns.

### Method of Data Collection

Data collection is the process of acquiring facts and figures from primary and secondary sources of information. To gather exact and thorough data for this investigation, the researchers used a number of data collection procedures [17]. The two methods of data creation and collection employed in this study to obtain the information were primary data and secondary data. The main information source is a structured interview session with six standard questions regarding topics that are important to the staff members who are in charge of managing returns, especially the receiving department staff members at the grocery store. To discover more about the company's reverse logistics processes, the researcher spoke with three employees of Grocery A shop. This group consists of her coworkers who have less than a year of work experience as well as the receiving department supervisor, who has three years of experience in all aspects connected to the in-store and out-of-store items. Secondary data will be gathered with the subjects' permission and in accordance with the primary data. The scope of reverse logistics may include any related reports and tables that are relevant.

### Procedure and Data Analysis

Once all the data and information have been gathered utilizing the data collection method, the process of analyzing a data set and conducting analysis begins [18]. The information gathered from the interview

session is analyzed using the NVivo program. This program can be used by researchers to organize and analyze non-numerical and unstructured data. The use of a business research study may be necessary to provide the most meaningful explanation of data analysis and result interpretation. After obtaining the data from each employee who has previously taken part in the reverse logistics procedures at Grocery A business, it is being analyzed. In order to gather information, three participants were chosen for an interview based on their prior experiences and perceptions of the practices. Each interview, which is held in the reception area, lasts 10 to 15 minutes. Thankfully, every employee does well in their interviews and can respond satisfactorily to every question. Furthermore, data analysis is essential for researchers to provide findings that show the need for additional research as well as the need to improve the system in order to make it more effective moving forward. The exact interview session findings were thoroughly described in the tables and written description.

## RESULTS AND DISCUSSION

According to the data provided, this section summarises the many methods of reverse logistics being used in Grocery A. The majority of respondents gave similar descriptions of the various reverse logistics methods used by the store. The receiving department staffs at Grocery A store have been involved in only three of the many types of reverse logistics, namely returns management, repackaging, and refurbishment. Although reverse logistics involves more complex processes than simply recycling packing or reusing shipping containers, some of the operations include remanufacturing, refurbishing, and redesigning. Reverse logistics may also make use of programs for managing hazardous materials, recycling goods, outdated equipment, and recovering assets. According to Antonyová [19], reverse logistics activities for products can be divided into the following categories: return to supplier, resell, sell via outlet, salvage, recondition, refurbish, remanufacture, reclaim materials, recycle, and landfill. In contrast, reverse logistics activities for packaging fall under the categories of reuse, refurbish, reclaim materials, recycle, and salvage.

During the interview, the researcher asked the respondent about the reverse logistics process, particularly with regard to their cost. The outlet's overall cost of reverse logistics is high due to the high rate of returned goods, the costs of which cannot support other operational expenses, according to respondent A, the supervisor of the receiving department with three years of experience. The top management should exercise caution in managing those costs. On the other hand, Respondents B and C asserted that the costs are still reasonable and that Respondent A's statements are not entirely false. They might all three agree that there are ways to reduce the costs. This conclusion was supported by the study of Gustavsson [10], which claimed that mechanical damage or spills during harvest and postharvest, processing, distribution, and consumption sites cause food losses and waste. Additionally, poor handling during logistics operations may result in a reduction in food quality, which could then encourage "return avoidance," an important stage in the reverse logistics process [9]. The short answer to this query is that Supermarket A store's present costs for handling reverse logistics were still manageable and under control. If the rate of returned items can be reduced, the overall expenses associated with this procedure can be reduced. That is all there is to it.

What is the most effective strategy for Grocery A to use in order to maintain control over the variable fuel prices given how important transportation costs are in reverse logistics due to the generated demand? In order to get their thoughts on these concerns, the respondents were questioned regarding the price of reverse logistics transportation at this store as well as the best way to at least lower the price of transportation. Respondent A stated that an examination into transportation costs must be conducted so that excessive transportation expenditures can be identified and reduced. Despite this, the majority of respondents said that the current cost of transportation is reasonable and in good shape because the bulk of the outlets are close to the company's warehouse and distribution center. Transport, which was the last step in forward logistics, is frequently the first stage in a reverse logistics system. A few of the things that can and frequently do occur when moving products include inaccurate counting during loading, errors in loading items (wrong product,

right truck, or right product, wrong truck), improper or inaccurate paperwork, product damage during loading or in transit, delays or wrong turns, improper handling of the product at the destination between the delivery vehicle, the back room, or the store shelf, and customer returns of damaged or unwanted product. In order to maximize customer service and cut costs, company logistics entails organizing all of these processes and sub-functions into a system of product transportation. Once the system is set up, it must be properly administered [20].

In addition, the respondents were questioned about how they handle the various goods in the returns procedure. About the overall quality of the work, respondent A commented. Respondent B spoke about the entire procedure for handling returned products from the receiving department until suppliers or the company’s DC pick them up. In addition, Respondent C explained how they repackaged and renovated returned items that could not be returned to the vendors. In reverse logistics, returns processing is frequently caused by product damage, unsold seasonal inventory, restocking errors, or inventory management blunders, as well as returns for salvaging, recalling, or reducing excess inventory. Reverse logistics is the movement of resources from a typical ultimate consumption in the opposite direction in order to recover value or dispose of garbage [21]. This reverse activity includes the handling of old appliances as well as the return of damaged items, renewal and expansion of inventories through product takeback, remanufacturing of packaging materials, reusing of containers, rehabilitation of goods, and handling of outdated goods.

Table 1: The amount of returned chilled, frozen, and grocery items in Grocery A store over a 12-month period. (Source: Grocery A’s receiving department)

YEAR	MONTH	RETURN QUANTITY	
		CHILLED AND FROZEN	GROCERIES
2021	October	654	788
2021	November	943	957
2021	December	1553	2978
2022	January	1122	1518
2022	February	1089	2533
2022	March	1250	3739
2022	April	934	2231
2022	May	711	2518
2022	June	420	1021
2022	July	1186	1358
2022	August	1017	1676
2022	September	1020	1301
<b>TOTAL</b>		<b>11899</b>	<b>22618</b>

Table 2: Total monthly returns over a 12-month period at Grocery A. (Source: Grocery A’s receiving department)

YEAR	MONTH	RETURN QUANTITY
2021	October	1442
2021	November	1900
2021	December	4531
2022	January	2640
2022	February	3622

2022	March	4989
2022	April	3165
2022	May	3229
2022	June	1441
2022	July	2544
2022	August	2693
2022	September	2321
<b>TOTAL</b>		<b>34517</b>

In Tables 1 and 2, the Grocery A store’s monthly total return was shown. Given that Grocery A is a small store and has a relatively small size, thousands of grocery goods are returned each month. As a result, there were constraints and a shortage of space in the receiving department and the storage area since the returned items will be gathered and managed in the receiving area. Therefore, the workers in the receiving department must handle the returned goods to the right supplier or DC with expertise and rapidity in order to make room for new returns of items in the future.



Figure 2: The returned products will be classified according to their respective vendors.

Food Management the A shop needs to come up with a new plan of action to make the most of the storage space that has been filled with returned goods. To collect returned goods more frequently, the receiving department workers must methodically deal with the relevant suppliers. This will ensure that the space in the receiving department, which is frequently packed with returned goods, is used. Figure 2 depicts the schedule for returning damaged merchandise to DC2 for each of the outlets, as can be seen. Basically, the company’s truck will pick up any damaged returns that have been packaged and separated before delivering them to the distribution centre (DC). The pickup of returned items was scheduled for three times every week. You should be aware that the business exclusively stocks high-demand grocery items in its DC warehouse, such as all kinds of flour, sugar, soft drinks, spices, baking supplies, condiments, cooking oil, regional sauces, and regional rice. If Supermarket A decides to send the damaged goods back to their separate suppliers, things might be different. The receiving department must call the supplier and give them a deadline for picking up the returned goods so that the supplier is aware that they must do it on that particular day.





Figure 3: The returned products will be classified according to their respective vendors.

The present procedure at Grocery A is for employees who wish to return damaged items to bring them to the receiving department and simply deposit them in the basket supplied there or close by. Figure 3 above shows that the basket was loaded with out-of-date sauces and that cooking oil was returned due to damaged packing. In essence, the Supermarket A shop has not designated any particular locations for returning defective goods. They choose the simplest route, which involved gathering all the returned items in the receiving department. The personnel then needed to separate the returned goods by supplier and wait for the supplier to pick them up in accordance with the scheduled appointment. This policy might only be effective with this location because it is smaller and simpler to operate than other, larger outlets.

There is one exception when it comes to sugar and wheat. In essence, neither type of goods is permitted to be returned to the DC of the corporation. As a result, if the packaging is found to be damaged, the products will be put in the baskets on the shelf and will then be repackaged by the staff of the receiving department until the basket is full of the returned flour and sugar. The new packaging was just a plain plastic bag with a price tag on it. Remarkably, despite the fact that the repackaged goods have no branding or logos at all on the packaging, people nevertheless readily purchase them. The reverse logistics strategy is successful, in our opinion.

## CONCLUSION

Several factors influence the success of reverse logistics in the food and beverage industry. Organizations need to introduce and inform their staff members early on. Employees can learn about the maturity of reverse logistics techniques from that. Additionally, having a clear image of how to apply reverse logistics methods, the businesses must present the instructions as standard operating procedure for their staff and clients to adhere to. The government's agreement and rules also have an impact on how well reverse logistics strategies work. By falling under the category of reverse logistics, this study can support national initiatives to lessen the environmental impact of the immediate region (solid waste) and fully utilize the resources at our disposal. The National Solid Waste Management (SWM) Policy aims to create an integrated solid waste management system that is thorough, affordable, sustainable, and supported by the general public. It also places an emphasis on environmental protection, chooses cost-effective technologies, and ensures public health. A waste policy will control all aspect of your company's waste management, from staffing to overall strategy. Make sure senior management at your company will support your trash

policy before you implement it. Without this assistance, it will be difficult for you to apply the policy.

In a word, it must be gently removed by overcoming both internal and external impediments. Reverse logistics success in the food and beverage industry benefits the environment more than it does the firm in terms of expenses or revenues. To keep the retail sector of the economy afloat, all parties involved in business and logistics rely on reverse logistics. As evidenced by the expanding clientele that gives them a competitive advantage over rivals, businesses that successfully use reverse logistics typically perform better overall. Particularly in the food and beverage or grocery sectors, the bulk of product returns in the retail industry involve unsaleable products like damaged and expired goods. However, when faced with a product return, many grocery retail companies are starting to recognize the importance and effectiveness of reverse logistics, especially when it will somehow be connected to public attention, overall costs, and the smoothness of the logistics movement itself that are essential effect on their business performance as a whole.

The majority of respondents agreed that the two most crucial variables for the company to be concerned about throughout the reverse logistics process are the expenditures factor and the logistics system component since they would have an impact on the company's success. The results show that, despite the fact that this outlet already employs an effective reverse logistics technique based on the responses from the interview session with the staff members responsible for reverse logistics in this Grocery A store, the suggested solution should concentrate on identifying methods to lower the cost of transportation, if possible, and improve the logistics system as a whole.

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