

# Research Study on Retailer Behaviour and Psychology towards Returning Rigid Plastic Containers for Reuse

Prepared for  
Waste Efficient Collection and Recycling Efforts

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#### **Disclaimer**

WeCare commissioned this study to deepen understanding of the practical realities of reuse under India's Plastic Waste Management Rules. The findings and views expressed are those of TERI, based on independent research. WeCare hopes the insights will inform evidence-based policymaking





Packaging is the largest end-use of plastics in India, accounting for about 56% of total consumption<sup>1</sup>. Rigid packaging, particularly PET, HDPE, and PP containers, is widely used in the FMCG sector for its low cost, durability, and ease of transport. While indispensable, their resistance to degradation has also made them a growing plastic waste challenge. In response, the PWM (Amendment) Rules, 2022 introduced key provisions to promote circularity, including a reuse obligation for Category I rigid plastic packaging. By 2025–26, containers sized between 0.9L and 4.9L are mandated to achieve a 10% reuse target. However, its success hinges on effective reverse logistics. This study explores the drivers and barriers influencing retailers, wholesalers, and distributors in returning rigid plastic containers for reuse, while also assessing the possibility of reuse obligation.

The survey was conducted in six cities across the country namely: Delhi, Bangalore, Mumbai, Kolkata, Chennai, and Dehradun to identify factors of retailer, wholesalers, and distributors to participate in the reuse system, assessed under the broad parameters of behavioural, perceptual, and operational/logistical factors. Across these cities, the survey found the following key findings:

- » **Behavioural:** Most respondents indicated that empty plastic containers are informally reused in practical ways such as for in-store storage, household purposes, or by giving or selling them to customers, kabadiwalas, or scrap dealers. The study found that, in Delhi and Dehradun, containers are largely reused for household purposes (42% and 64% respectively), while Bengaluru also shows a significant share at 57%. A large proportion of retailers in Mumbai and Bengaluru (both 74%) provide containers free of cost to customers or ragpickers, ensuring their diversion to recycling channels, followed closely by Dehradun (64%) and Chennai (54%). Selling containers to customers or ragpickers is most common in Dehradun, Delhi, and Kolkata (36%, 35%, 35%), indicating strong engagement with the informal recycling sector. Additionally, reuse within stores is more prominent in Kolkata (24%) and Mumbai (21%), with other cities reporting moderate levels of 10–20%. While these informal practices make it harder to track containers within formal reverse logistics systems, they reflect established habits that deliver tangible value to both businesses and communities.
- » **Perceptual:** Respondents are aware of the broader debate around plastics, still they preferred rigid plastic containers owing to their durability, marketability, ease of handling, possibilities of multiple re-use, and product safety as less damage happens while transportation. The study finds that across the six surveyed cities, support for rigid plastic container was high, with 80% of respondents in Delhi, 81% in Mumbai, 87% in Bengaluru, 85% in Kolkata, 90% in Chennai, and 85% in Dehradun expressing they were in favour, while only a small proportion—ranging from 10% to 20%—were not in favour because they are environmentally aware. Similarly, with regard to retailers (type A and B), the results highlight a strong positive inclination to rigid plastic container across most cities. In Type A, Delhi (90%), Kolkata (83%), and Chennai (83%) showed high support, while Mumbai (75%) and Bengaluru (60%) also reflected majority approval, with only Dehradun showing a higher share of respondents not in favour because they are environmentally aware. Similarly, in Type B, Delhi (85%), Mumbai (82%), and Chennai (89%) again demonstrated very high support, with Bengaluru (61%) and Kolkata (59%) maintaining a clear majority in favour. Although Dehradun reflected the opposite trend with 56% not in favour, the overall trend across the two respondents towards a broadly positive consensus in favour of rigid plastic container.

<sup>1</sup> <https://www.indioplasticspact.org/uploads/1702704382document.pdf>



- » **Operational/logistical:** The survey revealed several operational barriers that limit retailers' ability and readiness to return plastic containers to the brand. The wholesaler survey highlights that space constraints are the most pressing challenge across cities, peaking in Chennai (82%) and Bengaluru (78%), followed by concerns such as increased labour expenditure, lack of fixed collection timeframes, and noncompliance from retailers/customers. Meanwhile, the Type A survey similarly points to space constraints as a dominant issue, particularly in Dehradun (100%) and Mumbai (61%), along with time constraints, losing customer loyalty, space limitations at wholesalers/distributors, and sanitation concerns. Regarding Type B retailers, logistics hurdles dominate in Chennai (83%) and Bengaluru (60%), space constraints are most common in Mumbai (55%) and Kolkata (66%), while time constraints (60%) and no interest (27%) are most reported in Dehradun.

The respondents' reuse of rigid plastic containers yields significant environmental and economic benefits. It extends the containers' life cycle, supports the livelihoods of *kabadiwalas* by channelling materials for recycling, reduces the need for new storage purchases, and lowers overall waste generation—thereby enhancing resource efficiency and easing the burden on municipal waste systems. As such, any future interventions to improve container recovery should aim to integrate these existing behaviours, ensuring that strategies enhance such reuse practises. Furthermore, together the operational/logistical challenges highlight that practical constraints in space, cost, labour, time, logistics, interest, and hygiene significantly reduce retailers' preparedness to engage in a plastic jar return system.

Basis the factors that effect the willingness to return rigid plastic containers a priority matrix was developed for decision making. The matrix has been developed based on the survey responses. Accordingly, the matrix reflects the responses of the respondents, indicating which factors are considered high-impact high effort and which are viewed as low-impact low-effort. Table 1 below depicts the factors that are high-effort and high impact in red, low-effect and low impact in yellow, and factors that require uncertain effort but are high impact tasks in green.

**Table 1 Classification of respondents' deterrents based on impact and effort.**

Respondents	Factors	% Responses
wholesalers/distributors	Space constraint	61%
	logistic issues	38%
	Labour expense	36%
	Time constraint	34%
	Extra Workload	26%
	Retailer/costumer unwillingness	18%
	Damaged container	5%
	Refill tampering	2%
	Retailers Type A	Space constraints
Time Constraints		39%
Customer loyalty		36%
Sanitation issue		10%
Space constrains at wholesaler/distributor		4%
Reuse in Store		4%





Table 1 Classification of respondents' deterrents based on impact and effort.

Respondents	Factors	% Responses
Retailers Type B	Space constraints	31%
	Logistic constraints	31%
	Time Constraints	21%
	Expenditure on labour	19%
	Customers unwillingness	12%
	Extra workload	4%
	Refill Tampering	3%
	Space constrains at wholesaler/distributor	2%
	Sanitation issue	2%

<b>High impact-high effort tasks</b>	
<b>Uncertain effort but are high impact tasks</b>	
<b>Low impact-low effort tasks</b>	

Additionally, this study finding attempted to link with SGD goals, primarily SDG 12 (Responsible Consumption and Production) by observing reuse practises such as for household purposes, in-store storage, and giving away to kabadiwala which is further recycled. It further supports SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 8 (Decent Work and Economic Growth) through less littering of the rigid plastic containers that improves waste management, reduced virgin plastic demand, and formalisation of informal waste sector.

Post-use handling practices provide benefits by extending container life, supporting kabadiwalas, reducing virgin plastic demand, and lowering municipal waste burdens. However, overcoming operational/logistical challenges remains critical for achieving reuse obligations and aligning with the SDGs.





## 2. Introduction



Plastics are widely used owing to its unique characteristics including low cost, durability, light weight, chemical inertness, and ease of transportation. Among different applications of plastics, packaging is the key end use sector accounting for approximately 56% of total plastics placed on the market in India.<sup>2</sup> Amongst product packaging types, rigid packaging stands out for its robustness and versatility. These rigid containers made from polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polypropylene (PP), has become indispensable in India's fast-moving consumer goods (FMCG) sector such as household cleaners, food items and personal care products, owing to its low cost, durability, and ease of transport. However, their durability and resistance to degradation have drawn attention to the issue as a plastic waste challenge.

To address this challenge, the Plastic Waste Management (PWM) Rules, 2016 and its subsequent amendments reflect the shift towards circular economy by emphasizing reuse obligations, use of recycled content, and improved recycling under extended producer responsibility (EPR) to curtail dependency on virgin plastics and mitigate environmental degradation. In 2022, the Government of India notified the new EPR Guidelines, under the PWM Rules, placing a statutory responsibility on Producers, Importers, and Brand Owners (PIBOs) to improve material recovery and reuse. A key provision under these guidelines is the reuse obligation for Category I rigid plastic packaging. According to the PWM (Amendment) Rules, 2022, by 2025–26, containers between 0.9L and 4.9L are required to meet a 10% reuse target, while those above 4.9L must comply with a 70% reuse requirement: These rules are intended to support the formation of closed-loop systems, strengthen reverse logistics, and facilitate material recirculation at scale.

However, data on the end-of-life pathways of rigid plastic containers, how they exit the supply chain, whether they are reintegrated into manufacturing cycles, or discarded as waste is extremely limited and hampers the development of effective closed-loop systems. Additionally, the difference between the bulk and individual/household consumers in terms of usage patterns and the feasibility of engaging them in structured reuse program differs. For instance, while the bulk consumers may operate within a more organized system and bulk logistics, individual or household level behaviours are typically informal and highly decentralized. Without this clarity, it becomes challenging for policymakers and businesses to design targeted interventions that support reuse and material recovery.

It is in this context, the study was carried out, focusing on the factors influencing the return of rigid plastic containers between 0.9L or kg and 4.9L or kg of volume range, aligning with the category defined under the PWM Rules requiring 10% reuse by 2025–26. The study emphasizes three key material types:

- » PET: used in jars, bottles
- » PP: used in food tubs, household containers
- » HDPE: used in detergents and adhesive containers.

The supply chain for these containers involves multiple stakeholders. Generally, the stakeholders are generally broadly divided into three key categories: retailers, and wholesalers or distributors and among the retailers, they are classified into formal and informal retailers. For this study, stakeholders are grouped

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<sup>2</sup> <https://www.indioplasticspact.org/uploads/1702704382document.pdf>



into two categories: retailers and wholesalers/distributors. Within the retail segment, operations vary significantly, and this variation has important implications for reuse potential. Some retailers, referred to as 'Type A', sell goods by dispensing them from large containers, which means they retain the rigid plastic packaging at the store. Others, 'Type B' retailers, sell pre-packaged goods, passing the container directly to the consumer.

Taking these stakeholders into account, this study aims to assess the influence of economic drivers, logistical constraints, and stakeholder awareness, in order to identify challenges/difficulties in establishing a reverse logistic model and to generate actionable insights and recommendations for reuse obligations.





# 3. Objective of the study

The purpose of this study is to examine the factors influencing retailer, wholesaler, and distributor behaviour and willingness in relation to identify, store, and return the empty rigid packaging to assess the possibility of reuse obligation.



**The key objectives include:**

1. Analysing psychological and economic factors influencing retailers' behaviour towards return of packaging for reuse
2. Identifying key barriers to compliance and propose targeted strategies including incentive mechanisms, to enhance retailer participation in reuse programs
3. Providing evidence-based policy recommendations with regard to reuse obligations for rigid plastic packaging under PWM Rules.





The study adopted both qualitative and quantitative techniques to capture behavioural, operational, and logistical aspects related to rigid plastic container reuse. Stakeholders covered in this study included retailers, wholesalers, and distributors dealing with rigid plastic packaging in FMCG supply chains. Six cities- Delhi, Chennai, Mumbai, Bengaluru, Dehradun, and Kolkata were selected to ensure geographical diversity and varied market behaviour. A total of approx. 100 respondents were surveyed in each city, comprising approximately-60% of retailers and 40% wholesalers and distributors. Retailers were further categorized based on their mode of operation, distinguishing between those selling goods individually from containers (Type A) and those selling pre-packaged goods (Type B).

The study employed structured questionnaires and in-person interviews to capture perspectives on:

- » Perception of ownership over rigid plastic containers
- » Practices related to container retention, repurposing or disposal
- » Willingness to return containers for reuse
- » Perceived barriers such as logistical constraints, inadequate incentives, or lack of infrastructure.

The survey responses were analysed using percentage calculations of responses. For each question, the number of responses was divided by the total number of respondents. The results are presented in percentages, representing the proportion of participants expressing each opinion or choice.

These insights helped identifying key challenges and potential interventions to assess formal reuse systems to explore compliance of reuse obligations. (The detailed questionnaire used for the survey is provided in Annexure A).





# 5. City Analysis

City level assessments were carried out to understand the factors influencing retailer, wholesale, and distributor behaviour towards return of packaging for reuse. Conducted in Delhi, Bengaluru, Mumbai, Chennai, Kolkata, and Dehradun, the exercise provided critical context to the survey findings, helping to identify location-specific challenges and opportunities on this subject matter. The following section provides the details of each city analysis.

## 5.1 Delhi

In Delhi, the study covered multiple brands across East, West, and South Delhi with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:

### Wholesalers/Distributors:

Among the ratio of wholesalers/distributors, 55% wholesalers and 45% distributors were covered under the survey study.



Figure 1 Survey of wholesaler/distributor

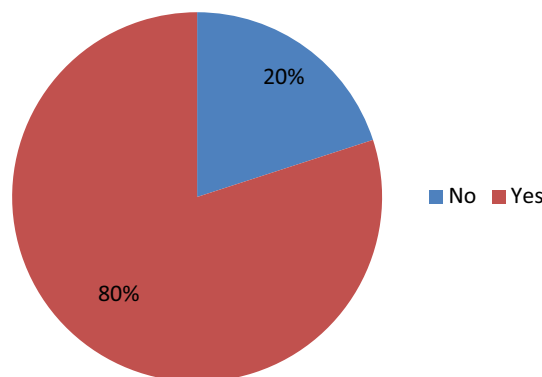


Figure 2 Preference of wholesalers/ distributors for rigid plastic containers



### Volume of rigid plastic containers handled:

In terms of sales volume, the respondents reported a wide range in the quantity of rigid plastic containers they sell, ranging up to 4000 containers per month, depending on the product type. Around 50% of the respondents sold more than 500 containers/month, indicating potential for return or reuse of such rigid plastic containers as a significant number of such containers are flowing through this network.

### Preference for rigid plastic containers:

Majority respondents (80%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. As the respondents are involved in storage and transportation of the products, they highlighted various functional advantages for favouring rigid plastic containers. Key reasons cited were durability, ease of handling in terms of storage and transportation, and product safety as less damage happens while transportation. On the other hand, 20% of the respondents stated that they prefer alternatives such as cardboard over plastic material.

### Willingness to collect and return rigid plastic containers:

Of the surveyed respondents, 93% were unwilling to collect and return the empty rigid plastic packaging. Major barriers cited were as follows:

- » Space constraints emerged as a significant bottleneck with 59% stating they do not have space to store empty containers until them being collected or returned.
- » 29% highlighted the absence of a fixed timeframe for collection, with monthly pickups seems as the only feasible option.
- » 29% mentioned that expenditure on labour will increase, as either more labour would be hired for collection and returning of the empty containers or existing labour will have to work extra.
- » 21% expressed their disinterest in any incentive citing unwillingness to take on extra tasks.

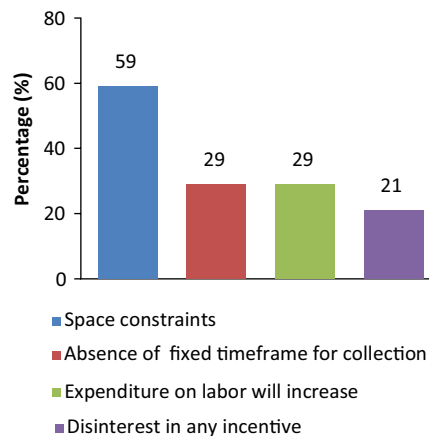


Figure 3 Willingness of wholesalers/distributors to collect and return rigid plastic containers



These responses highlight operational challenges such as limited space, labor expenses, and time constraints reflect infrastructure and resource gaps for building a reverse supply for rigid plastic packaging.

### Retailers:

The Delhi retail sample covered kirana stores, general provision shops, paan shops, and hardware/adhesive sellers. Retailers were categorised as:

- » Type A – Selling from containers (61%)
- » Type B – Selling with containers (39%)

### Type A:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges up to 100 containers per month, depending on the product type. The same range of containers also get empty every month. Approximately 90% of respondents considered themselves the rightful owners of the empty. Among them, 80% found the empty containers to be valuable after the product inside is sold out.



Figure 4 Survey of type A retailers

#### *Post-Use Handling of Empty Plastic containers and value to business:*

On priority listing, around 42% reuse them for household purposes, while others 35% sell them to customers or kabadiwalas, 13% for store reuse, 10% of retailers give away the containers for free to customers for reuse or kabadiwalas, with a smaller number 10% giving it to waste collectors from MCD (Municipal Corporation of Delhi) for disposal. Unfit or broken containers were either retained for scrap sale (at ~₹10/kg) or handed over to MCD (which are then picked up by recyclers or channelized through the informal sector) by 19% of the respondents. 45% of retailers highlighted giving away empty containers to costumers helps in gaining the customer loyalty.



Given their moderate inventory levels, and their behavioural ways of post-use handling of empty containers, making the regular return of empty containers to the brand seems logistically challenging.



Figure 5 Post-use handling of empty rigid plastic containers



Figure 6 Post-use handling of empty plastic containers by Type A retailers in Delhi

**Rigid plastic containers littering:**

Majorly around 90% have not noticed empty rigid plastic containers littered in their vicinity. This highlights that majority of the containers are reused or recycled in some way and are not part of the waste stream.



### Preference for rigid plastic containers:

Majority respondents (90%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, product safety from rat bites, display and product visibility. Only 10% of the retailers did not find benefit in the use of rigid plastic packaging over the non-plastic materials like cardboard boxes etc.

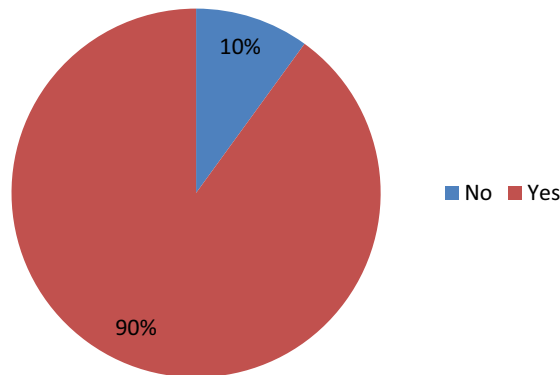


Figure 7 Preference of type A retailer for rigid plastic containers

### Willingness to return rigid plastic containers:

With regard to willingness to return empty containers, a significant proportion of retailers (57%) are unwilling to return empty containers, primarily due to space constraint to store empty containers (19%) and time constrain (15%). Whereas 43% are ready to do so, primarily due to absence of post-use utility (39%).

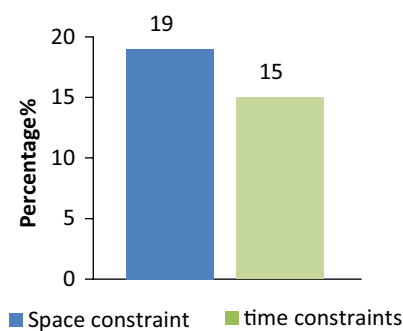


Figure 8 Willingness of type A retailers to return rigid plastic containers



The responses highlight that the majority containers enter reuse or recycling channels, which is either by personal reuse, resale, or customer/kabadiwala giveaways. Many retailers associate container distribution with customer loyalty, space clearance, and social support, yet logistical barriers, especially storage constraints, limit their willingness to return them to brands.

**Type B:**

***Rigid Plastic Container Usage and Value Perception:***

Among the surveyed Type B retailers, the volume of products bought in rigid plastic containers ranges up to 300 kgs containers per month. The same range of containers also gets sold every month. In this category of retailers, only 10% of respondents considered themselves the rightful owners of the empty containers whereas the rest of the respondents did not consider themselves as the rightful owner of the containers as the container are sold with the product.



Figure 9 Survey of type B retailers

***Rigid plastic containers littering:***

Regarding littering concerns, 85% of the respondents did not noticed littering of the containers highlighting that the containers are reused multiple times. Whereas, 8% did observe littering around their vicinity.

***Preference for rigid plastic containers:***

Majority respondents 85% find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, and product safety.



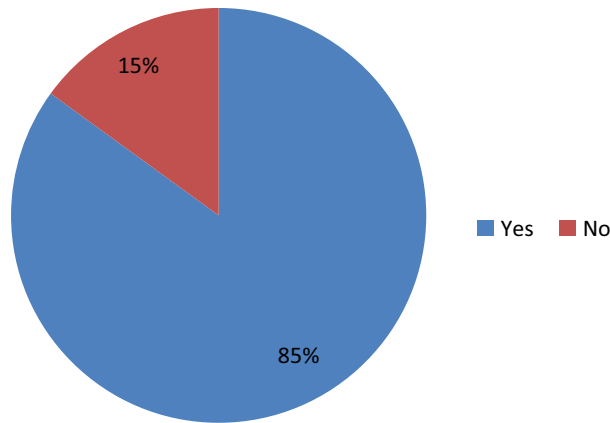


Figure 10 Preference of type B retailer for rigid plastic containers

**Willingness to return rigid plastic containers:**

With regard to willingness to collect and return empty containers, 75% of the respondents were unwilling to return the containers. Only 25% of the respondents responded with a willingness to return as post-use utility is absent for them.

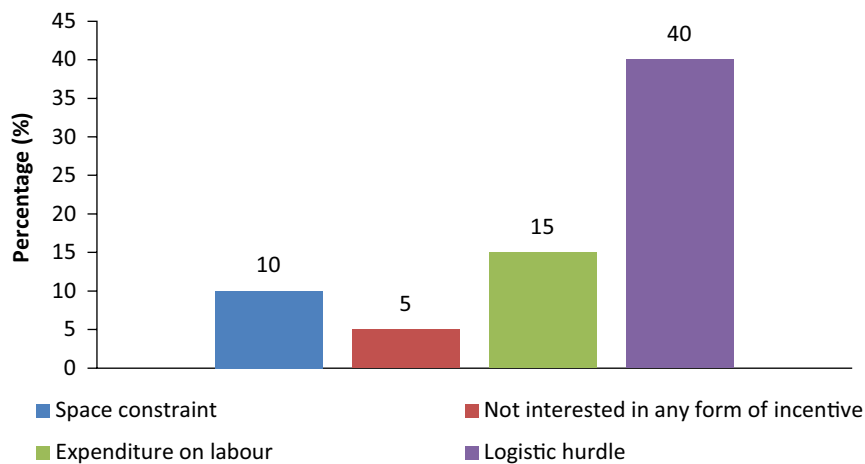


Figure 11 Willingness of type B retailers to return rigid plastic containers.



Major barriers highlighted are as follows:

- » 10 % retailers mentioned space constraints to store empty containers.
- » 5 % are not interested in any incentive to work in this manner, as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.
- » 15 % mentioned that expenditure on labour will increase, as existing labour will have to do the extra work.
- » 40% highlighted that it can't be collected from customers who use such products for building and construction purposes, as their work location might be far away from the store and returning empty containers for them is not practically feasible.

The responses highlight that Type B retailers handle significant volumes of rigid plastic containers, but ownership perceptions vary, as the container is sold along with the product. A strong preference exists for rigid plastic packaging over alternatives, mainly due to durability, ease of handling, and product safety. However, 25% are willing to return empty containers, with others citing barriers such as space constraints, increased workload, higher labour costs, and the impracticality of collecting containers from distant customers. These findings indicate that operational challenges outweigh environmental or reuse considerations for most Type B retailers.

The figure below depicts the limiting parameters of Delhi for returning empty rigid plastic containers.

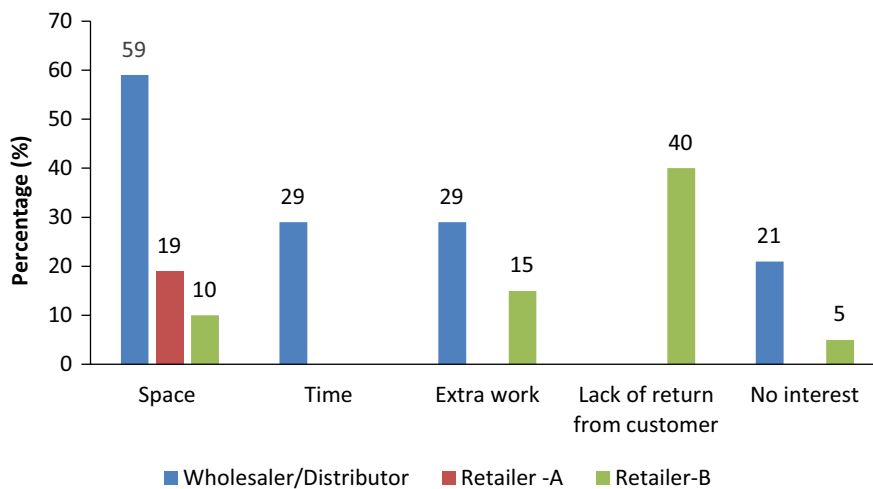


Figure 12 Limiting parameters of Delhi for returning empty rigid plastic containers

## 5.2 Mumbai

In Mumbai, the study covered multiple brands across North-Western Suburbs, Central Suburbs, and South Mumbai with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:



## Wholesalers/Distributors:

Among the ratio of wholesalers/distributors, 78% wholesalers and 22% distributors were covered under the survey study.



Figure 13 Survey of wholesaler/ distributor

### *Volume of rigid plastic containers handled:*

In terms of sales volume, the respondents reported a wide range in the quantity of rigid plastic containers they sell which ranges between upto 30,000 containers per month, depending on the product type. Around 44% of the respondents sold more than 500 containers/month, indicating potential for return or reuse of such rigid plastic containers as a significant number of such containers are flowing through this network.

### *Preference for rigid plastic containers:*

The majority of respondents (81%) reported finding clear advantages in using rigid plastic containers compared to non-plastic alternatives such as cardboard or paper boxes. Given their role in product storage and transportation, respondents emphasized several functional benefits that drive this preference, including durability, ease of handling during storage and transit, and enhanced product safety due to reduced damage during transportation. A moderate proportion (19%) indicated that the choice of material does not matter to them.



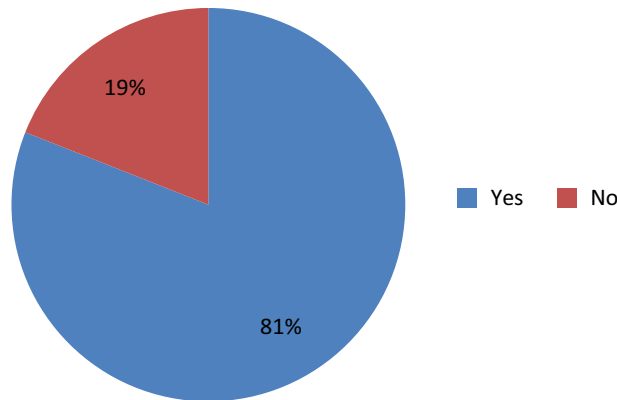


Figure 14 Preference of wholesaler/distributor for rigid plastic containers

**Willingness to collect and return rigid plastic containers:**

Regarding willingness to collect and return empty containers, a significant proportion of respondents (88%) did not respond affirmatively. Whereas of the 12% respondents are willing to collect and return plastic containers, primarily as they are environmentally conscious (50%) and because of brand loyalty (50%). Major barriers cited for unwillingness were as follows:

- » Space constraints emerged as a significant bottleneck with 60% stating they do not have space to store empty containers until them being collected or returned.
- » 36% mentioned that expenditure on labour will increase, as either more labour would be hired for collection and returning of the empty containers or existing labour will have to work extra.

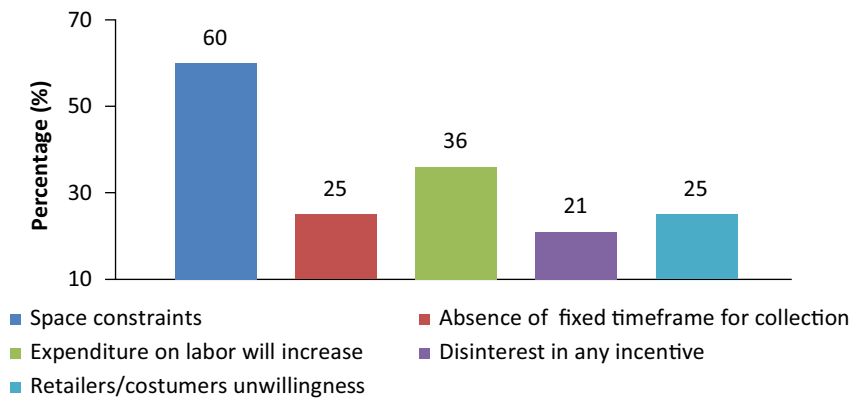


Figure 15 Willingness of wholesaler/distributor to collect and return rigid plastic containers

- » 25% highlighted that as there is no fixed time frame for when a sufficient number will be accumulated for collection.
- » 25% highlighted that it can't be collected from retailers as they give it away to customers and returning empty containers to wholesalers/distributors will affect their customer loyalty.



- » 21% is not interested in any incentive to work in this manner as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.

The above findings highlight multiple operational and attitudinal barriers to establish an effective reverse supply chain for rigid plastic packaging. The most cited barrier of return flow from wholesaler/distributor are space, labour, and time constraints which all together point to the infrastructure and resource limitation faced by stakeholders at this level of supply chain. Moreover, the fact that 21% of respondents remain disinterested even if incentives are offered and only 12% of respondents expressed willingness to return empty plastic containers suggest operational/logistical challenges outweigh environmental and reuse obligations.

### Retailers:

The Mumbai retail sample covered kirana stores, general provision shops, and hardware/adhesive sellers. Retailers were categorised as:

- » Type A – Selling from containers (72%)
- » Type B – Selling with containers (28%)

### Type A:

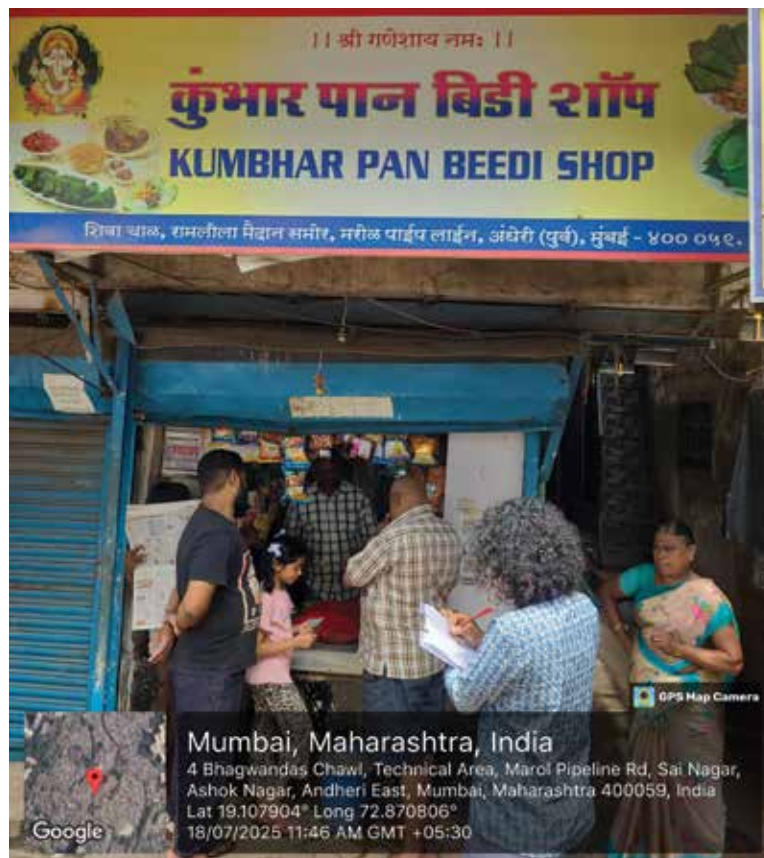


Figure 16 Survey of type A retailers



### **Rigid Plastic Container Usage and Value Perception:**

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges upto 25 containers per month, depending on the product type. The same range of containers also get empty every month. Approximately 89% of respondents considered themselves the rightful owners of the empty containers.

### **Post-Use Handling of Empty Plastic containers and value to business:**

Among the respondents, 81% found the empty containers to be valuable after the product inside is sold out. On priority listing, 74% of retailers give away the containers for free to customers for reuse or kabadiwalas. Around 21% use them for store reuse purposes, 22% sell them to customers or kabadiwalas, while other (18%) reuse them for household. When containers are unfit, broken, or dented, 78% hand them over to the Brihanmumbai Municipal Corporation (BMC) (which are then picked up by recyclers or channelized through the informal sector), while a smaller percentage of respondents (8%) simply store them until they are completely exhausted.

From the above analysis, it is observed that given their moderate inventory levels, and their behavioural ways of post- use handling of empty containers, making the regular return of empty containers to the brand seems challenging due to traceability and logistical challenges.

### **Observation on rigid plastic containers littering:**



Figure 17 Post-use handling of empty rigid plastic containers



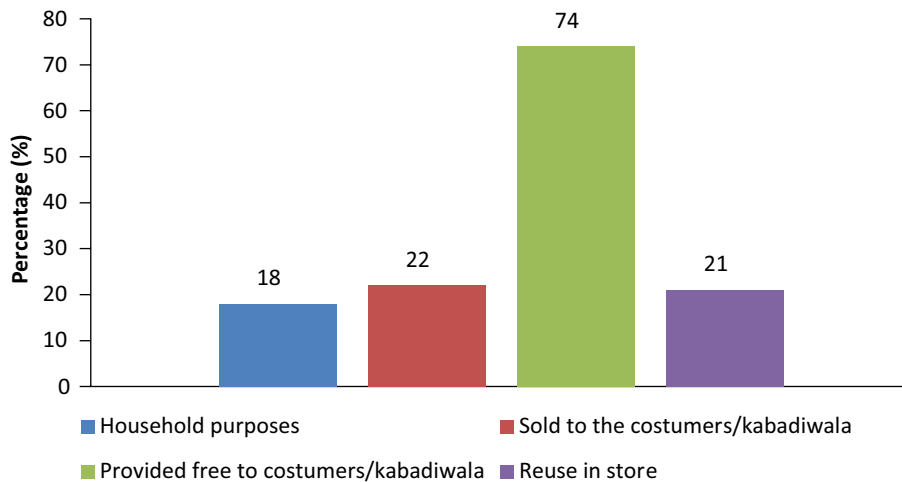


Figure 18 Post-Use handling of Empty plastic containers in Mumbai

With regard to littering concerns 92% observed no littering in their vicinity, whereas only 8% noticed empty rigid plastic containers littered in their vicinity. This highlights that majority of the containers are reused or recycled in some way and are not part of the waste.

**Preference for rigid plastic containers:**

Majority respondents (75%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, product safety from rat bites, display, and product visibility. Only 25% showed indifference, because they are environmentally conscious.

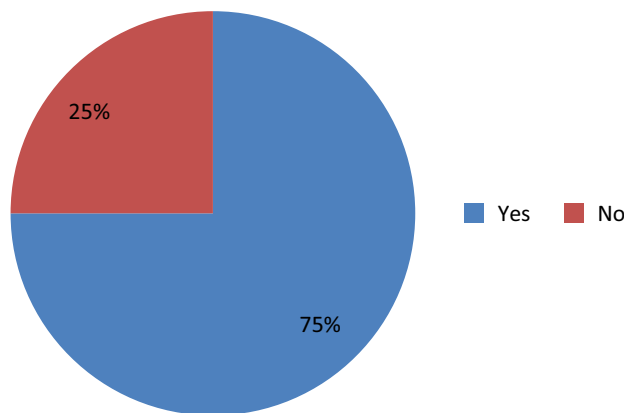


Figure 19 Preference of type A retailer for rigid plastic containers



### Willingness to return rigid plastic containers:

With regard to willingness to return empty containers, a significant proportion of retailers (62%) are not ready to do so, Major bottlenecks mentioned are as follows:

- » 61% retailers mentioned space constraints to store empty containers.
- » 22% mentioned time constraints as there is no fixed time frame for when enough will be accumulated for collection by the supplier.
- » 22% mentioned that they will lose customer loyalty.

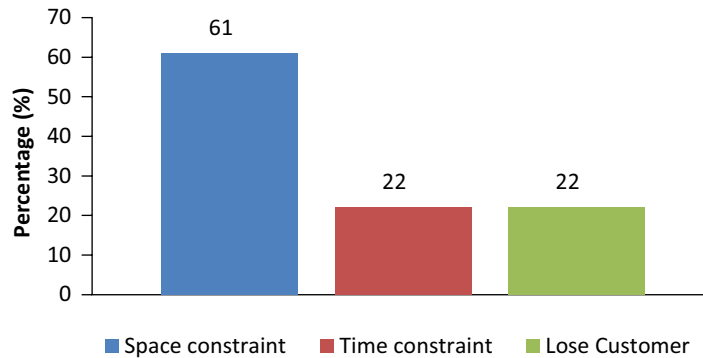


Figure 20 Willingness of type A retailers to return rigid plastic containers

38% retailers are ready to return primarily due to absence of post-use utility (83%), and as they are environmentally conscious (59%).

The above findings highlight multiple logistical, operational, behavioral, attitudinal, and economical barriers to establish an effective reverse supply chain for rigid plastic packaging. These findings suggest that these barriers outweigh the commitment to obligations of reuse.

### Type B:

#### Rigid Plastic Container Usage and Value Perception:

Among the surveyed Type B retailers, the volume of products bought in rigid plastic containers ranges upto 480 containers per month. The same range of containers also get sold every month. In this category of retailers, none of respondents considered themselves the rightful owners of the empty containers. As the container is sold with the product, retailers don't have ownership and value perception for the product.

#### Observation on rigid plastic containers littering:

With regard to littering concerns, none of the respondents noticed empty rigid plastic containers littered in their vicinity.





Figure 21 Survey of type B retailer

**Preference for rigid plastic containers:**

Majority respondents (82%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, and product safety. Only 18% showed indifference where 7% stated environmental concerns and 11% favoured pouches over plastic as from pouches maximum product can be extracted than containers.

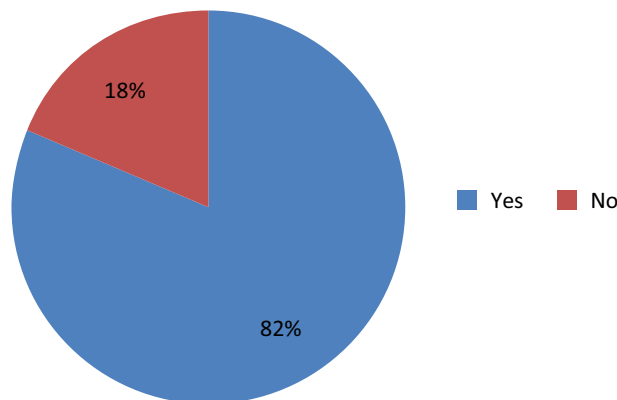


Figure 22 Preference of type B retailers for rigid plastic containers



### Willingness to return rigid plastic containers:

With regard to willingness to collect and return empty containers, a significant proportion of respondents (61%) did not respond affirmatively. Whereas a 39% of retailers are ready to return empty containers, primarily as they lack of post-use utility (57%) and as they are environmentally conscious (43%). Major barriers cited for unwillingness to return empty plastic containers were as follows:

- » 55% retailers mentioned space constraints to store empty containers.
- » 55% mentioned that expenditure on labour will increase, as existing labour will have to do the extra work.
- » 36% highlighted that containers can't be collected from consumers, who use such products for building and construction purposes, as their work location might be far away from the store and returning empty containers for them is not practically feasible.

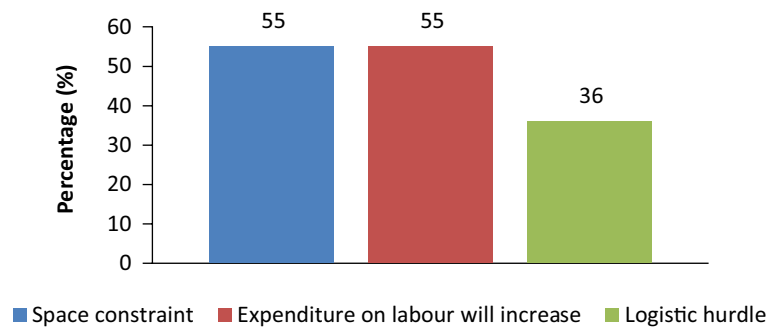


Figure 23 Willingness of type B retailers to return rigid plastic containers.

The above findings highlight multiple operational, logistic, resource, and attitudinal barriers to establish an effective reverse supply chain for rigid plastic packaging. The most cited barrier of return flow from retailers are space, labor, and transportation constraints.

The figure below depicts the limiting parameters of Mumbai for returning empty rigid plastic containers.

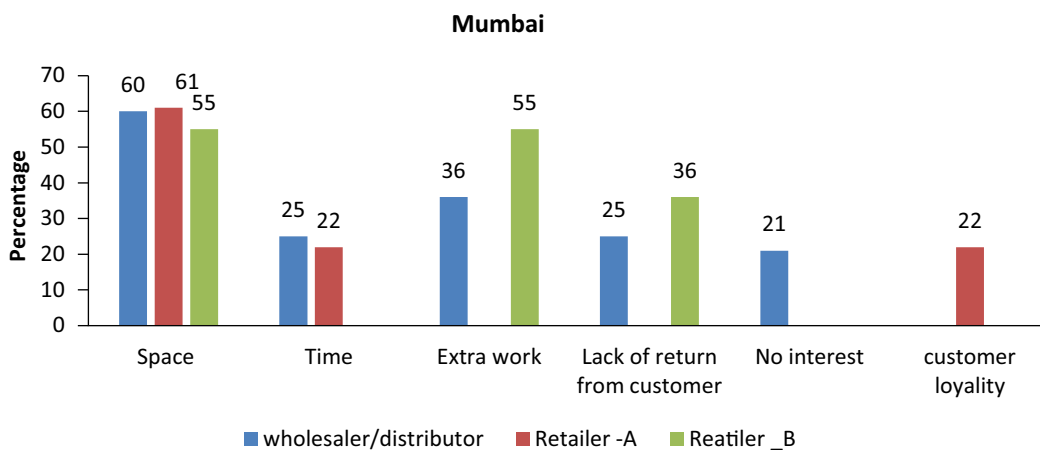


Figure 24 Limiting parameters of Mumbai for returning empty rigid plastic containers



## 5.3 Bengaluru

In Bengaluru, the study covered multiple brands across East Zone, Mahadevapura Zone (East/Northeast), and North Zone with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:

### Wholesalers/Distributors

Among the wholesalers and distributors surveyed, 80% wholesalers and 20% distributors were covered under the survey study.



Figure 25 Survey of wholesaler/distributor

### *Volume of rigid plastic containers handled:*

The rigid plastic containers sold per month from their dealership ranged upto 30,000 containers, depending on the product type and brand.

### *Preference for rigid plastic containers:*

An assessment of packaging material preference revealed that 87% of respondents expressed a clear interest in rigid plastic packaging over alternatives such as cardboard or paper-based containers. This preference was largely due to functional advantages, like durability, resistance to environmental factors, enhanced visual appeal, and easy handling. A minority (13%) showed an interest in non-plastic packaging alternatives, primarily due to environmental concerns. This indicates the attitudinal preference of the majority of wholesalers and distributors are influenced more by operational efficiency and marketability.



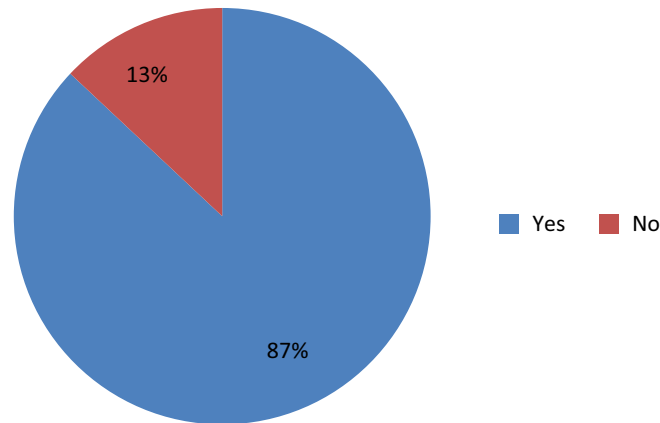


Figure 26 Preference of wholesaler/distributor for rigid plastic containers

### Willingness to collect and return rigid plastic containers:

The survey revealed a low willingness among wholesalers and distributors to return empty plastic packaging to FMCG brands, with 90% of respondents expressing unwillingness to engage in the reverse logistic initiatives. Key factors contributing to this reluctance are as follows:

Lack of returns from retailers/customers was identified as the most significant barrier, reported by 51% of respondents.

- » Space constraints for storage were cited by 46% respondents
- » Additional workload and manpower requirements were mentioned by 40%
- » Time constraints for storage were cited by 34% of respondents.
- » 9% expressed disinterest in participating in return schemes even when incentives were offered.
- » Logistical issues like transportation difficulties were noted by 3% of respondents.

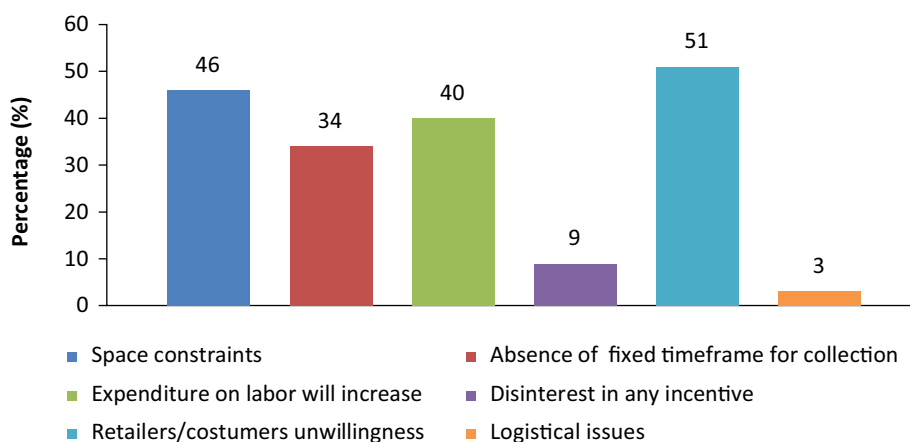


Figure 27 Willingness of wholesaler/distributor to collect and return rigid plastic containers



These findings highlight multiple operational and attitudinal barriers to establishing an effective reverse supply chain for rigid plastic packaging. The most cited reason for the absence of return flow from retailers or customers is a critical break in the collection loop, thereby preventing the development of a closed-loop system for packaging material recovery. This is further compounded by space labor and time constraints which all together point to the infrastructure and resource limitations faced by stakeholders at this level of supply chain.

**Retailers**

The Bengaluru retail sample covered kirana stores, general provision shops, and hardware/adhesive sellers. Retailers were categorised as:

- » Type A – Selling from containers (74%)
- » Type B – Selling with containers (26%)



Figure 28 Survey of type A retailers



## Type A

### *Rigid plastic container usage and value perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges upto 100 containers per month, depending on product type. The same range of containers also get emptied every month. The majority of the respondents (93%) considered themselves the rightful owner of the empty containers.

### *Post-use handling of empty plastic containers and value to business:*

Among the respondents, 42% perceived empty containers to hold value after the product inside was sold, with 57% of them prioritizing reuse for household, 12% for store purposes and 17% selling surplus containers to Kabadiwalas, and 74% gave them away free of cost to customers for reuse or to kabadiwallas. Furthermore, 51% disposed of broken, dented, or unfit containers through the Bruhat Bengaluru Mahanagara Palike (BBMP) waste management system.

Given their moderate inventory levels and prevailing behavioral patterns in post-use handling, the regular return of empty containers to the brand appears logistically challenging, with informal reuse and free distribution, dominating over formal brand-led recovery mechanisms.



Figure 29 Post-use handling of empty rigid plastic containers



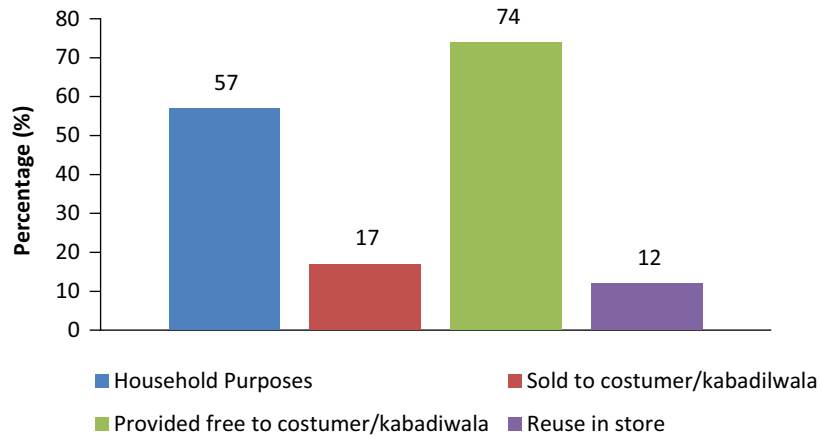


Figure 30 Post-Use handling of Empty plastic containers in Bengaluru

### Observation on rigid plastic containers littering:

Around 92% of respondents reported that they do not observe rigid plastic containers littered in their surroundings. This suggests that the packaging appears to have a practical after-use value, which may help to keep it out of the visible waste stream.

### Preference for rigid plastic containers:

A majority of respondents (60%) reported finding greater benefits in using rigid plastic containers compared to non-plastic alternatives such as cardboard or paper boxes. The primary reasons cited were durability, ease of handling, and enhanced product safety. In contrast, 40% of respondents identified advantages in using non-plastic rigid containers, driven mainly by environmental concerns and a preference for alternative materials.

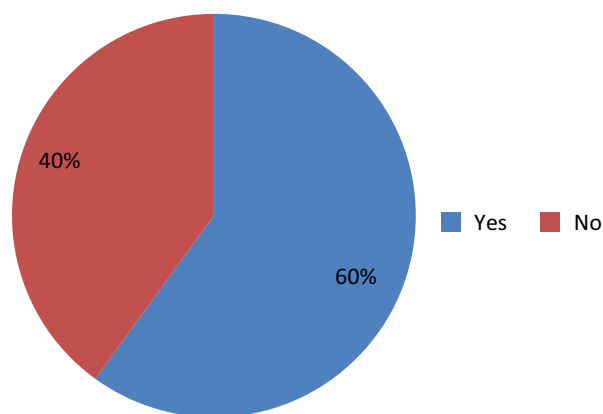


Figure 31 Preference of type A retailer for rigid plastic containers



### Willingness to return rigid plastic containers:

The survey found that 66% of retailers indicated an unwillingness to return empty containers, citing several barriers:

- » 30% mentioned time constraints as there is no fixed time frame for when a sufficient number will be accumulated for collection by the supplier
- » 18% retailers mentioned space constraints to store empty containers.
- » 11% mentioned their reuse in store and household level
- » 7% mentioned that they will lose customer loyalty

Also, 34% of retailers expressed willingness to return empty rigid plastic containers, with 20% citing the absence of post-use utility, 13% motivated as they are environmentally conscious, and rest didn't have any specific reason to give.

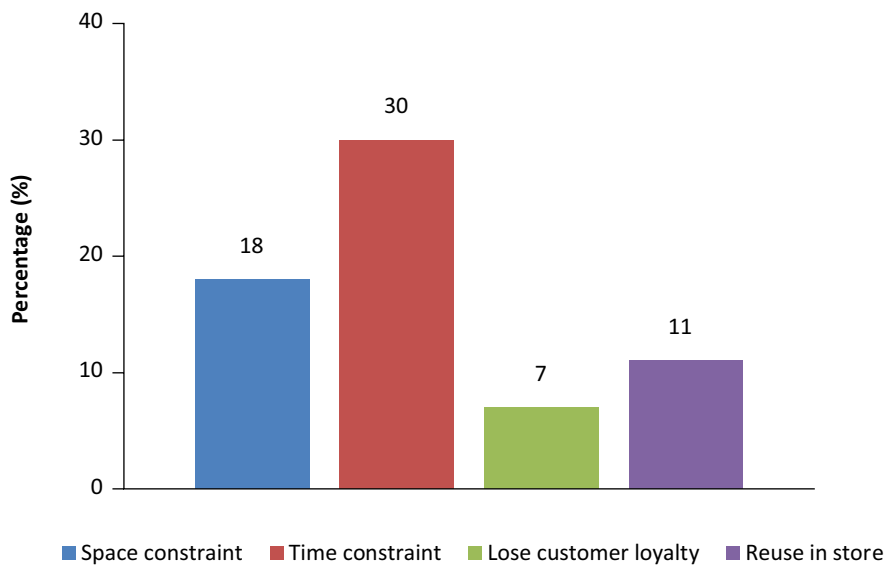


Figure 32 Willingness to return rigid plastic containers

These findings reveal a combination of infrastructural, operational, behavioral, attitudinal, and economic barriers to implementing an effective reverse supply chain for rigid plastic packaging. The most frequently cited challenges, space and time constraints, reflect both logistical and financial limitations faced by retailers.

### Type B

#### Rigid plastic container usage and value perception

Among Type B retailers, the monthly inflow of products packaged in rigid plastic containers ranges up to 150 containers, with a similar volume being sold to customers each month. A significant majority (70%) of respondents do not perceive any ownership responsibility for these rigid plastic containers. This attitudinal stance is linked with pass-through approach, since products are sold along with containers the ownership shifts immediately to the customer and they believe their role ends at the point of sale.





Figure 33 Survey of type B retailer

**Observation on rigid plastic containers littering**

Around 92% of respondents reported that they do not observe rigid plastic containers littered in their surroundings. This suggests that the packaging appears to have a practical after-use value, which may help to keep it out of the visible waste stream.

**Preference for rigid plastic containers**

Majority respondents (61%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, and product safety. Only 19% showed benefits in using non plastic rigid containers due to environmental concerns.

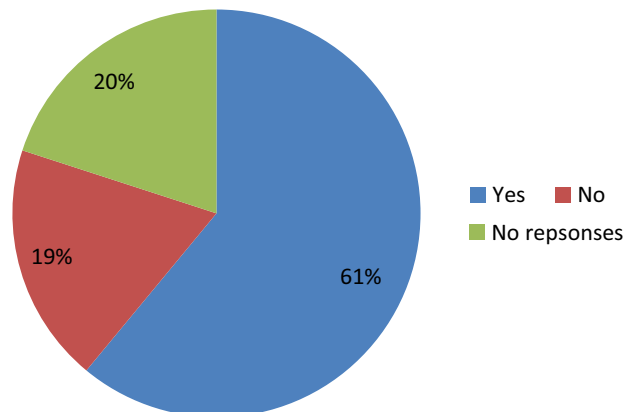


Figure 34 Preference of type B retailers for rigid plastic containers



### Willingness to return rigid plastic containers

The survey found that 67% of the retailers responded not affirmatively to returning the plastic containers, while 12% of retailers expressed some willingness to return empty rigid plastic containers, primarily because they are environmentally conscious (67%) and absence of post-use utility (33%).

The study indicated a low willingness among retailers to collect and return empty containers, with 88% of respondents stating they were unwilling to participate in such initiatives. The main barriers reported were:

- » 60% highlighted the infeasibility of consumer returns, since they use such products for construction purposes, as their work location might be far away from the store, and returning is not practically possible.
- » Limited availability of time to manage the additional process was suggested by 40%
- » 30% raised concerns that existing staff would need to take on extra workload.
- » 20% of Type B retailers mentioned space constraints for storing empty containers.
- » 5% mentioned that the wholesalers and distributors won't have space to store the containers.

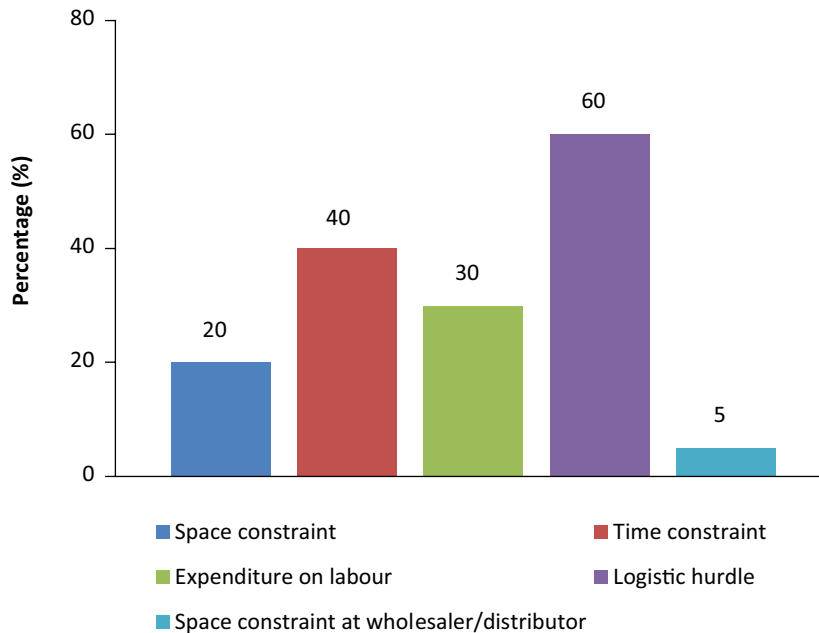


Figure 35 Willingness of type B retailers to return rigid plastic containers

These findings reveal both operational and attitudinal barriers to the adoption of reverse collection systems at the retail level. The most prominent barrier, the impracticality of customer returns, reflects a break in the collection chain, which undermines the potential for a closed-loop packaging recovery system. Additionally, space, time, and labour constraints point to infrastructural and resource limitations faced by retailers.

The following figure depicts the limiting parameters of Bengaluru for returning empty rigid plastic containers.



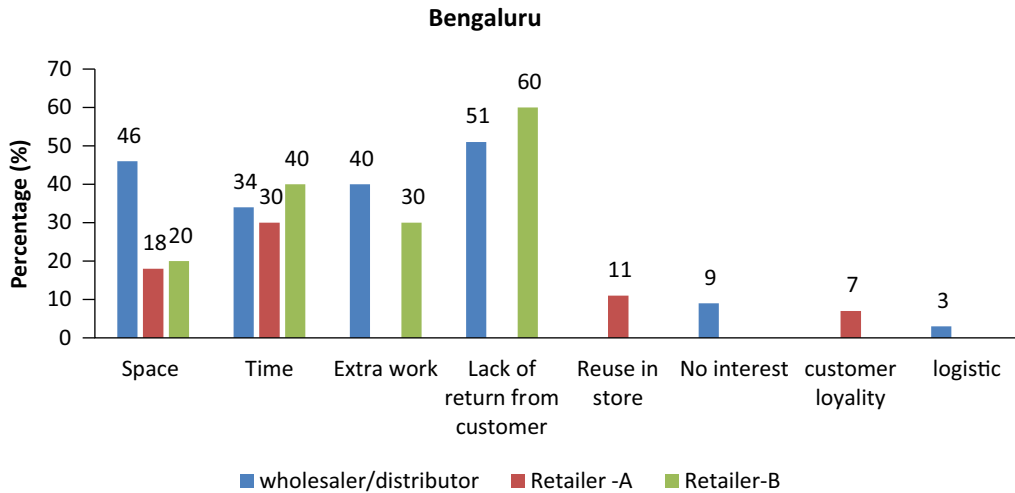


Figure 36 Limiting parameters of Bengaluru for returning empty rigid plastic containers

## 5.4 Chennai

In Chennai, the study covered multiple brands across Central, North, and South-West Chennai, with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:

### Wholesalers/Distributors:

Among the ratio of wholesalers/distributors, 83% wholesalers and 17% distributors were covered under the survey study.

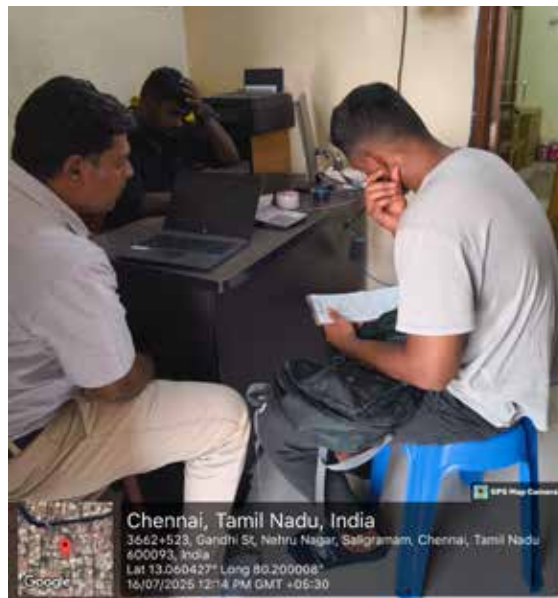


Figure 37 Survey of wholesaler/distributor



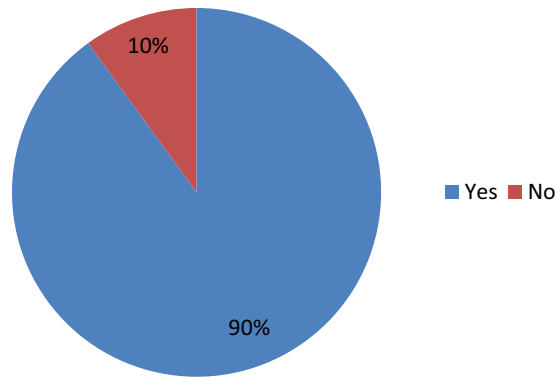


Figure 38 Preference of wholesaler/distributor for rigid plastic containers

### *Volume of rigid plastic containers handled:*

In terms of sales volume, the respondents reported a wide range in the quantity of rigid plastic containers they sell which ranges up to 200000 containers per month, depending on the product type. Around 50% of the respondents sold more than 1000 containers/month, indicating potential for return or reuse of such rigid plastic containers as a significant number of such containers are flowing through this network.

### *Preference for rigid plastic containers:*

A majority of respondents (90%) reported finding greater benefits in using rigid plastic containers compared to non-plastic alternatives such as cardboard or paper boxes. Given their role in the storage and transportation of products, respondents highlighted several functional advantages, including durability, ease of handling during storage and transit, and enhanced product safety due to reduced risk of damage during transportation. In contrast, 10% of respondents expressed indifference in their packaging preference, indicating no strong inclination toward rigid plastic containers.

### *Willingness to collect and return rigid plastic containers:*

The survey revealed that 93% of respondents were unwilling to collect and return empty rigid plastic containers, while only 7% expressed willingness, primarily as they are environmentally conscious (50%). Among those unwilling, the major barriers identified were:

- » Space constraints emerged as a significant bottleneck with 82% stating they do not have space to store empty containers until them being collected or returned.
- » 46% mentioned that expenditure on labour will increase, as either more labour would be hired for collection and returning of the empty containers or existing labour will have to work extra.
- » 43% highlighted that as there is no fixed time frame for when a sufficient number will be accumulated for collection.



- » 29% is not interested in any incentive to work in this manner as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.
- » 11% highlighted that it can't be collected from retailers as they give it away to costumers and returning empty containers to wholesalers/distributors will affect their customer loyalty.

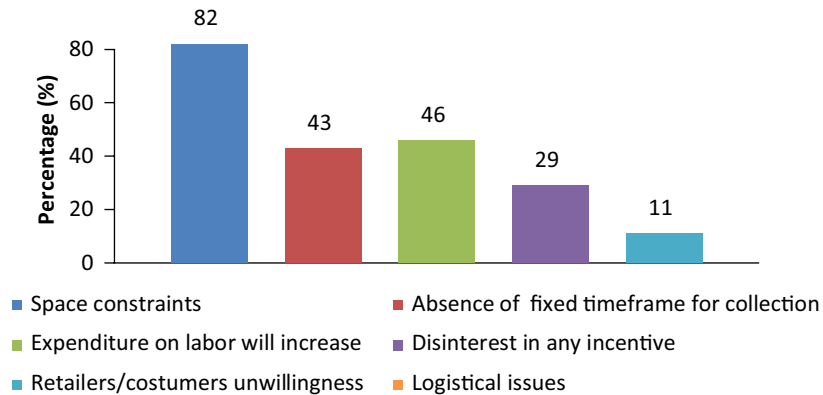


Figure 39 Wholesalers/distributor willingness to return rigid plastic containers

These findings highlight multiple operational and attitudinal barriers to establishing an effective reverse supply chain for rigid plastic packaging. The most frequently cited challenges—space, labour, and time constraints—reflect significant infrastructure and resource limitations at this stage of the supply chain.

### Retailers:

Out of the surveyed retailers there were 75% of Type A and 25% Type B retailers.



Figure 40 Survey of type A retailer





## Type A:

### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges from upto 100 containers per month, depending on the product type. The same range of containers also get empty every month. Approximately 95% of respondents considered themselves the rightful owners of the empty containers.

### *Post-Use Handling of Empty Plastic containers and value to business:*

Among the respondents, 88% considered empty containers to hold value once the product inside was sold. Of these, 54% gave the containers away free of cost to customers for reuse or to kabadiwallas, 28% reused them for household, 20% store purposes, and 18% sold them directly to customers or kabadiwallas. For containers that were unfit, broken, or dented, 53% were disposed of, while 39% were sold to kabadiwallas as part of bulk scrap sales. These findings indicate that informal reuse such as for household purposes, giving away to costumers and kabadiwalas and recycling channelised through informal recyclers dominate the post-use handling of rigid plastic containers.

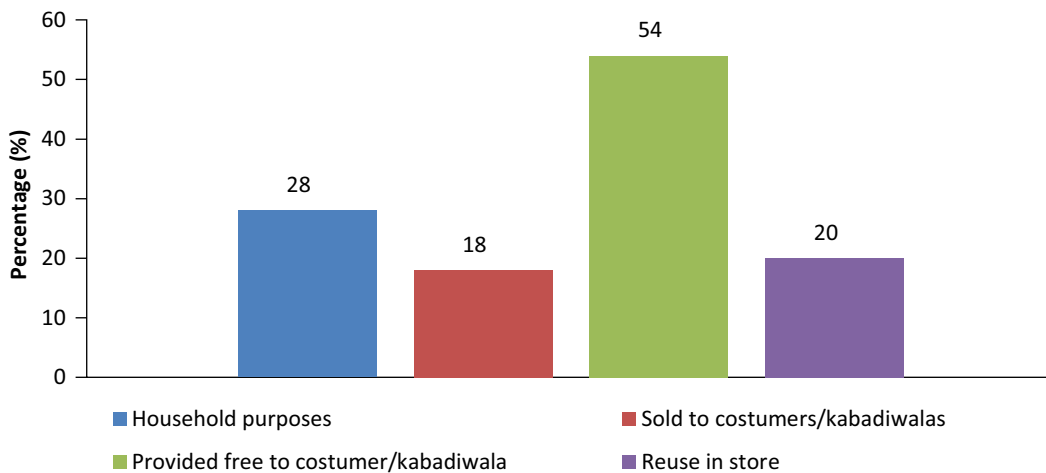


Figure 41 Post-Use handling of Empty plastic containers in Chennai

Given the moderate inventory levels maintained by most retailers and their prevailing post-use handling practices, establishing a regular return flow of empty containers to the brand appears logistically challenging, with informal reuse and give aways to costumers and kabadiwalas continuing to dominate over formal reverse logistics systems.



### Observation on rigid plastic containers littering:

91% of the respondents observed no littering in their vicinity, with 6% noticing empty rigid plastic containers littered in their vicinity. This highlights that majority of the containers are reused or recycled in some way and are not part of the waste.

### Preference for rigid plastic containers:

A majority of respondents (83%) reported finding greater benefits in using rigid plastic containers compared to non-plastic alternatives such as cardboard or paper boxes. The key advantages cited included durability, ease of handling, better display, and enhanced product visibility. In contrast, only 17% preferred non-plastic containers, primarily due to their ease of disposal. These findings suggest that for most respondents, the functional and marketing advantages of rigid plastic containers outweigh considerations related to end-of-life management.

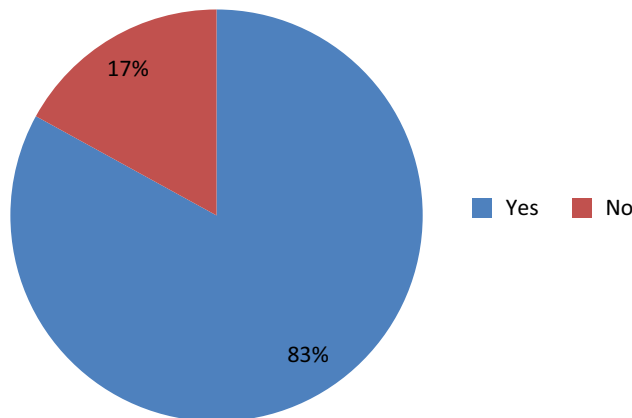


Figure 42 Type A retailer preference for rigid plastic containers

### Willingness to return rigid plastic containers:

The survey revealed 54% of retailers reported unwillingness to return empty containers, identifying several key barriers:

- » 28% mentioned that it is difficult to handle returned containers
- » 24% retailers mentioned space constraints to store empty containers.
- » 17% mentioned time constraints as there is no fixed time frame for when a sufficient number will be accumulated for collection by the supplier

Also, 46% of retailers expressed willingness to return empty rigid plastic containers, out of which 35% motivated as they are environmentally aware and 62% citing the absence of personal reuse as the primary reason.



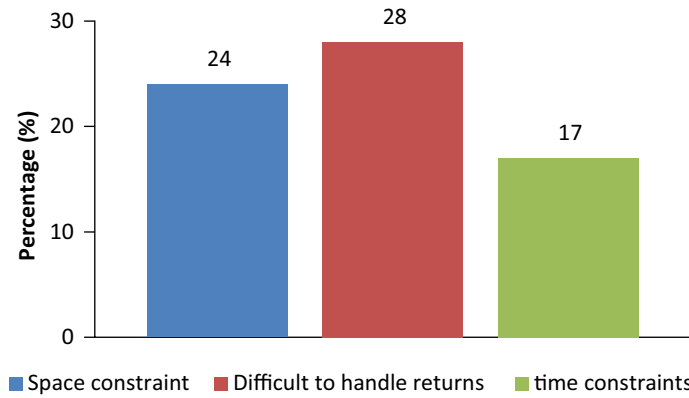


Figure 43 Type A retailer willingness to return rigid plastic containers

These findings indicate that the unwillingness to return empty rigid plastic containers is largely driven by practical and logistical challenges. Issues such as handling difficulties, inadequate storage space, and uncertainty over collection timelines create operational burdens for retailers, making the process inconvenient and disruptive to their workflow.

### Type B:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges from 10-300 containers per month. The same range of containers also get sold every month. In this category of retailers, none of respondents considered themselves the rightful owners of the empty containers. As the container is sold with the product, retailers don't have ownership and value perception for the product.



Figure 44 Survey of type B retailer



### Observation on rigid plastic containers littering:

With regard to littering concerns, none of the respondents noticed empty rigid plastic containers littered in their vicinity.

### Preference for rigid plastic containers:

A majority of respondents (89%) reported perceiving greater benefits in using rigid plastic containers compared to non-plastic alternatives such as cardboard or paper boxes. The primary advantages cited included durability, ease of handling, and product safety. In contrast, 11% expressed indifference, indicating no strong preference for any specific packaging material. Notably, none of the respondents cited environmental concerns as a factor influencing their choice, underscoring the dominance of functional and operational priorities over sustainability considerations in packaging preferences.

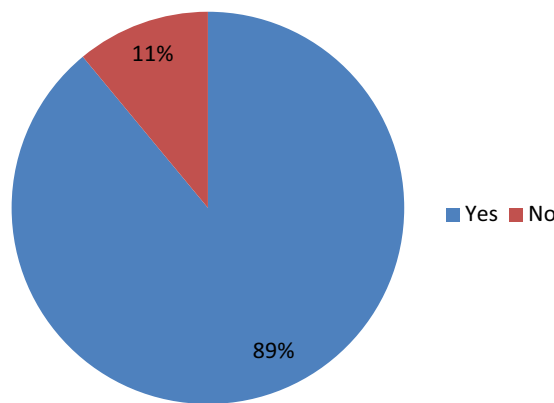


Figure 45 Type B retailer preference for rigid plastic containers

### Willingness to return rigid plastic containers:

The survey found that 32% of respondents expressed unwillingness to collect and return empty rigid plastic containers. Among those unwilling, the most frequently cited barrier (83%) was the impracticality of obtaining returns from customers, particularly those using such products for building and construction purposes, as their work locations are often far from the store, making the return of empty containers logistically unfeasible. 26% also highlighted customers would be unwilling to return the containers after use. This highlights a critical break in the reverse logistics chain, indicating that even when retailers are motivated, the absence of a reliable return flow from end-users significantly hinders the establishment of a closed-loop recovery system.





Figure 46 Type B retailer willingness to return rigid plastic containers

The findings show that retailers purchase and sell significant volumes of rigid plastic containers each month but do not view themselves as owners of the empty containers, as these are sold along with the product. While 89% prefer rigid plastic packaging for its durability, ease of handling, and product safety, sustainability or any alternative material is not a consideration in their choice. Although 68% are willing to return empty containers, practical barriers—especially the difficulty of retrieving containers from distant customers—remain a major challenge.

The figure below depicts the limiting parameters of Chennai for returning empty rigid plastic containers.

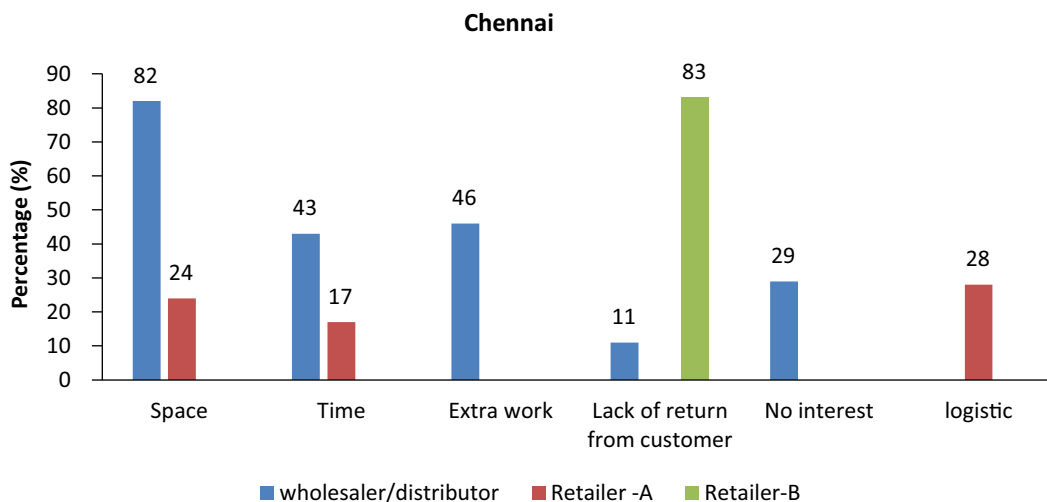


Figure 47 Limiting parameters of Chennai for returning empty rigid plastic containers.

## 5.5 Kolkata

In Kolkata, the study covered multiple brands across North-East, Central, and South Kolkata, with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:



## Wholesalers/Distributors:

Among the ratio of wholesalers/distributors, 70% wholesalers and 30% distributors were covered under the survey study.



Figure 48 Survey of wholesaler/ distributor

### *Volume of rigid plastic containers handled:*

In terms of sales volume, the respondents reported a wide range in the quantity of rigid plastic containers they sell which ranges up to 900 containers per month, depending on the product type.

### *Preference for rigid plastic containers:*

Majority respondents (85%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. As the respondents are involved in storage and transportation of the products, they highlighted various functional advantages for favouring rigid plastic containers. Key reasons cited were durability, ease of handling in terms of storage and transportation, and product safety as less damage happens while transportation. Only 15% showed indifference, in their preference for rigid plastic containers.



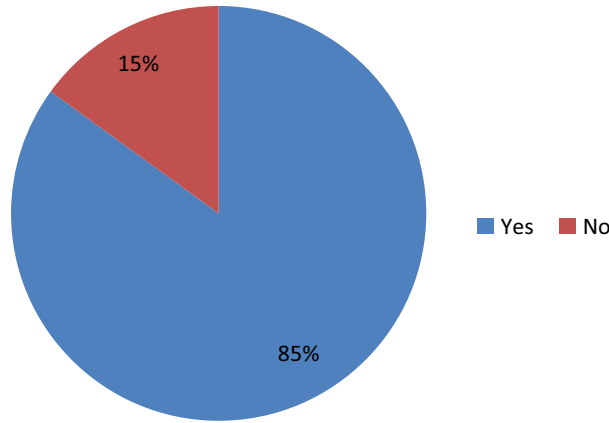


Figure 49 Wholesalers/ distributors preference for rigid plastic containers

**Willingness to collect and return rigid plastic containers:**

Regarding willingness to collect and return empty containers, a significant proportion of respondents (90%) did not respond affirmatively. Whereas of the 10% respondents are willing to collect and return plastic containers, primarily due to sustainability reasons and to show brand support. Major barriers cited for unwillingness were as follows:

- » Space constraints emerged as a significant bottleneck with 78% stating they do not have space to store empty containers until them being collected or returned.
- » 27% of respondents mentioned logistics issues like transportation.
- » 18% highlighted that it can't be collected from retailers as they give it away to customers and returning empty containers to wholesalers/distributors will affect their customer loyalty.

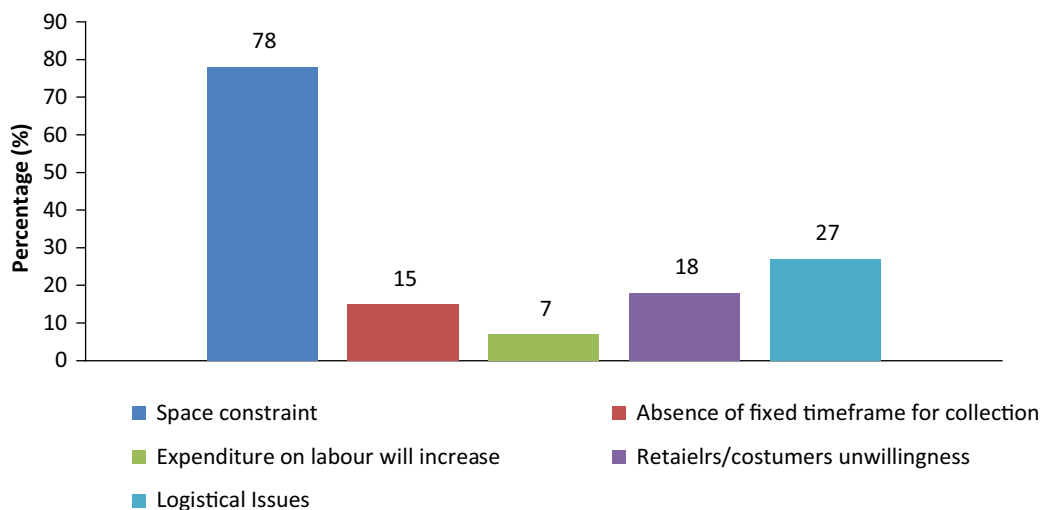


Figure 50 Willingness of wholesalers/distributors to collect and return rigid plastic containers



- » 15% highlighted that as there is no fixed time frame for when a sufficient number will be accumulated for collection.
- » 7% mentioned that expenditure on labour will increase, as either more labour would be hired for collection and returning of the empty containers or existing labour will have to work extra.

The above findings highlight multiple operational and attitudinal barriers to establish an effective reverse supply chain for rigid plastic packaging. The most cited barrier of return flow from retailers are space and logistics issues which all together point to the infrastructure and resource limitation faced by stakeholders at this level of supply chain.

### Retailers:

Out of the surveyed retailers there were 42% of Type A and 58% Type B retailers.

### Type A:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges upto 40 containers per month, depending on the product type. The same range of containers also get empty every month. Only 35% of respondents considered themselves the rightful owners of the empty containers.



Figure 51 Survey of type A retailer



**Post-Use Handling of Empty Plastic containers and value to business:**

Among the respondents, 22% found the empty containers to be valuable after the product inside is sold out. On priority listing, 35% of retailers give away the containers for free to customers for reuse or kabadiwalas. Around 22% reuse them for household purposes and 23% for store reuse, while others (35%) sell them to customers or kabadiwalas, with a smaller number (9%) disposing of them due to low quality. When containers are unfit/broken/ dented, 78% habded them over to Kolkata Municipal Corporation (KMC).

Given their moderate inventory levels, and their behavioural ways of post-use handling of empty containers, making the regular return of empty containers to the brand seems logistically challenging.

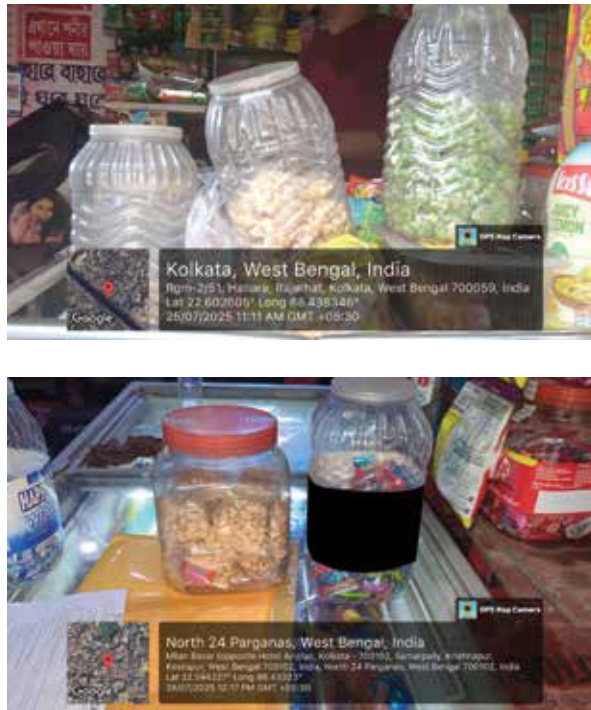


Figure 52 Post-use handling of empty rigid plastic containers



Figure 53 Post-Use handling of Empty plastic containers in Kolkata



### Observation on rigid plastic containers littering:

Littering concerns are low, as 95% noticing no littering in their vicinity. This highlights that majority of the containers are reused or recycled in some way and are not part of the waste.

### Preference for rigid plastic containers:

Majority respondents (83%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, product safety from rat bites, display, and product visibility. Only 17% showed indifference by favouring non-plastic packaging.

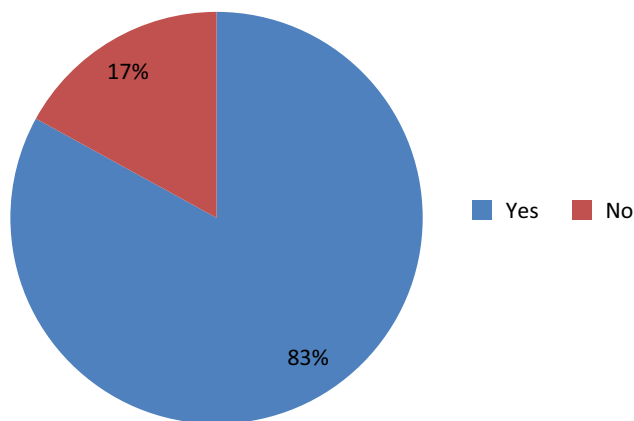


Figure 54 Preference of type A retailers for rigid plastic containers

### Willingness to return rigid plastic containers:

With regard to willingness to return empty containers, 48% of retailers are unwilling to return empty containers, the major bottlenecks mentioned are as follows:

- » 45% retailers mentioned space constraints to store empty containers.
- » 27% mentioned that they will lose customer loyalty.
- » 9% mentioned time constraints as there is no fixed time frame for when a sufficient number will be accumulated for collection by the supplier.

Whereas 52% retailer are ready to return empty containers, primarily as they are environmentally conscious (8%) and absence of post-use utility (42%).



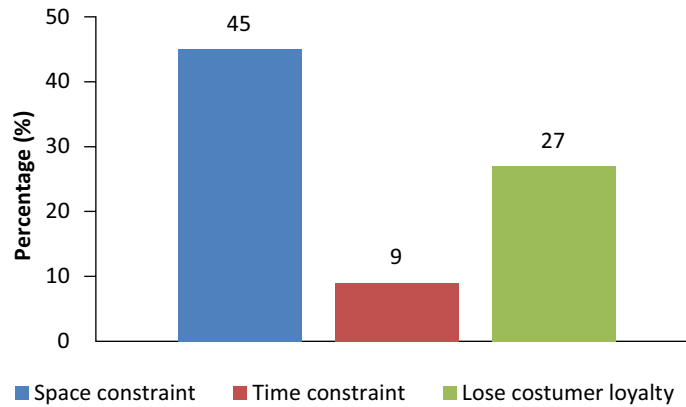


Figure 55 Type A retailer willingness to return rigid plastic containers.

The above findings highlight multiple infrastructural, operational, behavioral, attitudinal, and economic barriers to establishing an effective reverse supply chain for rigid plastic packaging. The most cited barriers of return flow from retailers are space constraints and fear of losing customer loyalty. These barriers together point to the resource and logistic limitation faced by stakeholders. This suggests a deeper issue of low environmental motivation and reveals a lack accountability within the value chain.

### Type B:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges up to 300 containers per month. The same range of containers also get sold every month. In this category of retailers, none of respondents considered themselves the rightful owners of the empty containers. As the container is sold with the product, retailers don't have ownership and value perception for the product.

#### *Observation on rigid plastic containers littering:*

With regard to littering concerns, 80% respondents observed no littering with very few (10%) of the respondents noticed empty rigid plastic containers littered in their vicinity.

#### *Preference for rigid plastic containers:*

Majority respondents (59%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability, ease of handling, and product safety. While 14% showed indifference, citing environmental and ease of disposal.





Figure 56 Survey of type B retailer

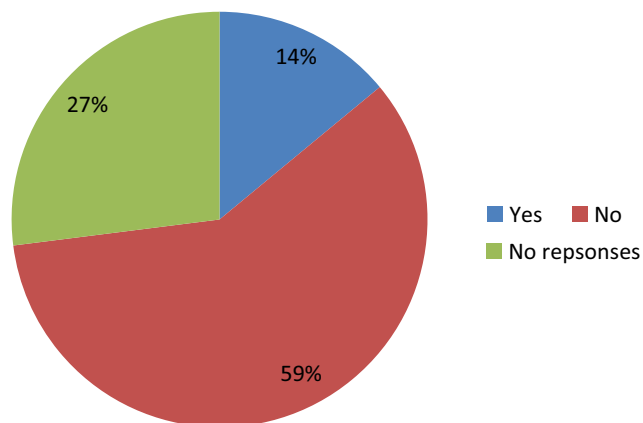


Figure 57 Type B retailer preference for rigid plastic containers



### Willingness to return rigid plastic containers:

With regard to willingness to collect and return empty containers, a significant proportion of respondents (91%) did not respond affirmatively. Whereas a 9% of retailers are ready to return empty containers, primarily as they are environmentally conscious. Major barriers cited for unwillingness to return empty plastic containers were as follows:

- » 66% retailers mentioned space constraints to store empty containers.
- » 45% retailers mentioned the time constraint to collect back the empty containers from the customers
- » 17% is not interested in any incentive to work in this manner as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.
- » 7% mentioned that expenditure on labour will increase, as existing labour will have to do the extra work.
- » 7% highlighted that it can't be collected from customers, products are taken far away from the store and returning empty containers for them is not practically feasible.

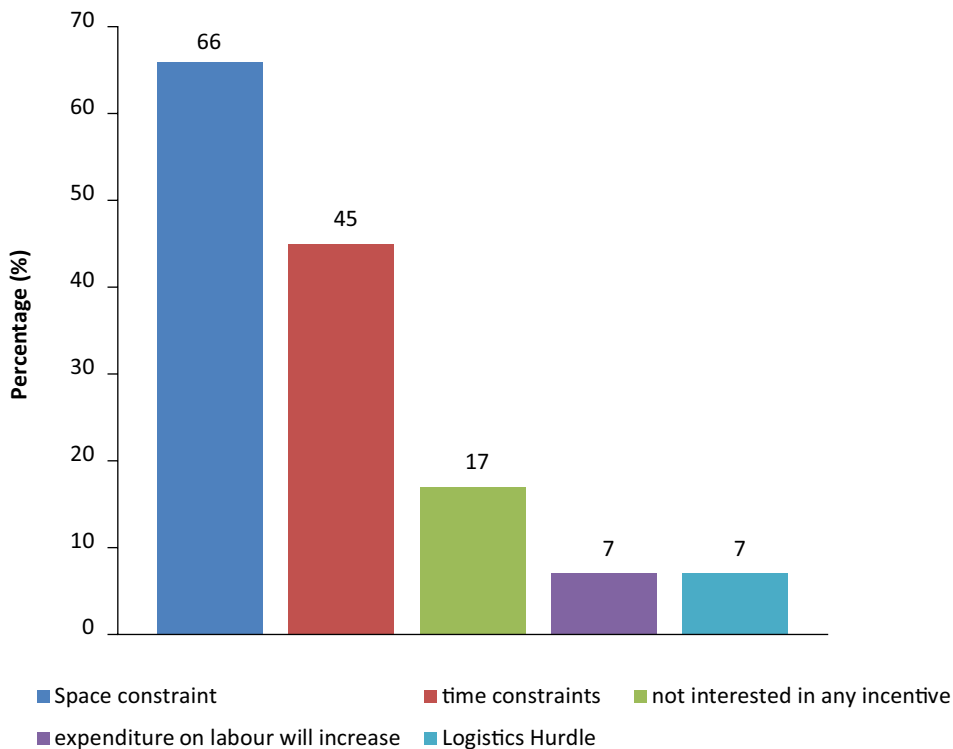


Figure 58 Type B retailer willingness to return rigid plastic containers

The above findings highlight multiple infrastructure, operational, logistic, resource, and attitudinal barriers to establish an effective reverse supply chain for rigid plastic packaging. The most cited barrier of return flow from retailers are space and time constraints.

The figure below depicts the limiting parameters of Kolkata for returning empty rigid plastic containers.



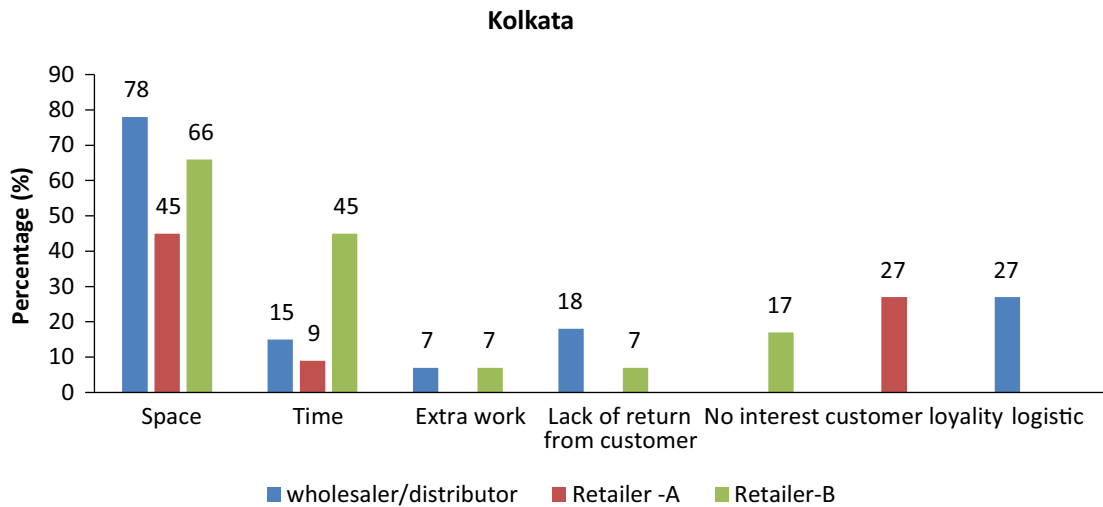


Figure 59 Limiting parameters of Kolkata for returning empty rigid plastic containers

## 5.6 Dehradun

In Dehradun, the study covered multiple brands across Northwestern, Central, and Northeastern Dehradun, with respondents consisting of retailers and wholesalers/distributors in a 60:40 ratio. The following section presents the findings, categorized by respondent type:

### Wholesalers/Distributors:

Out of the total surveyed 63% retailers and 37% wholesalers/distributors were covered under the survey study.



Figure 60 Survey of wholesaler/distributor



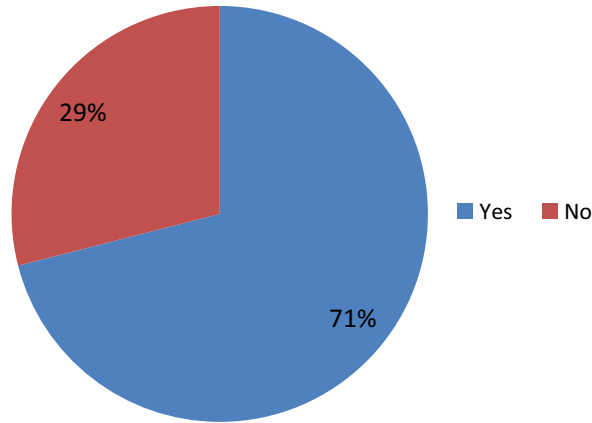


Figure 61 Wholesaler/distributor preference for rigid plastic containers

### *Volume of rigid plastic containers handled:*

In terms of sales volume, the respondents reported a wide range in the quantity of rigid plastic containers they sell which ranges up to 5000 containers per month, depending on the product type. More than 50% of the respondents sold more than 1000 containers/month, indicating potential for return or reuse of such rigid plastic containers as a significant number of such containers are flowing through this network.

### *Preference for rigid plastic containers:*

Majority respondents (71%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. As the respondents are involved in storage and transportation of the products, they highlighted various structural advantages for favouring rigid plastic containers. Key reasons cited were durability, ease of logistics, and product safety as less damage happens while transportation and storage.

### *Willingness to collect and return rigid plastic containers:*

Regarding willingness to collect and return empty containers, a significant proportion of respondents (81%) did not respond affirmatively. Major barriers cited were as follows:

- » Space constraints emerged as a significant bottleneck with 62% stating they do not have space to store empty containers until them being collected or returned.
- » 44% highlighted that as there is no fixed time frame for when a sufficient number will be accumulated for collection.
- » 19% mentioned that expenditure on labour will increase, as either more labour would be hired for collection and returning of the empty containers or existing labour will have to work extra.
- » 25% is not interested in any incentive to work in this manner as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.



- » Other major concerns raised by the respondents were hygiene issues related to storing containers from multiple places.
- » The possibility of duplication was also a major concern raised by some respondents.

Whereas of the 19% respondents are willing to collect and return plastic containers, primarily for because they are environmentally conscious, but at the same time many raised the need of proper awareness need among retailers.

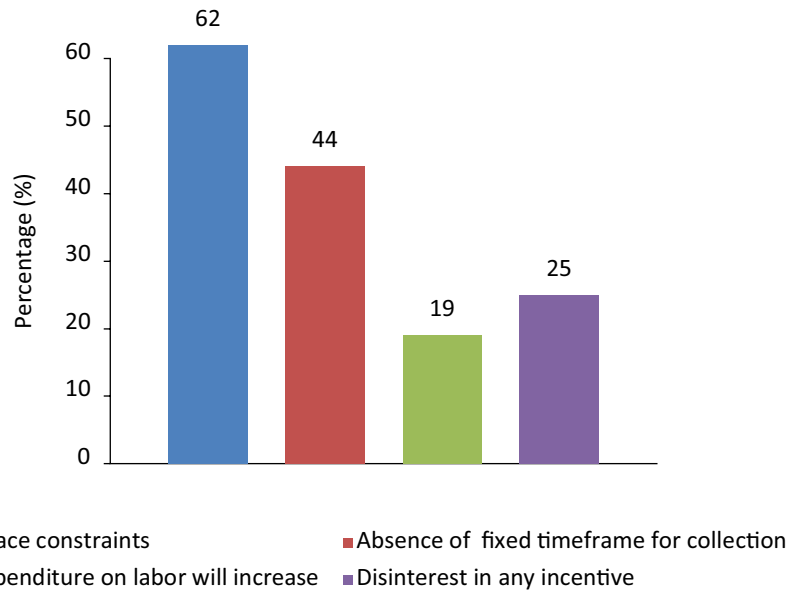


Figure 62 Wholesalers/distributor willingness to return rigid plastic container

The above findings highlight that there are multiple operational and attitudinal barriers to establish an effective reverse supply chain for rigid plastic packaging. The most cited barrier of return flow from retailers are space, labor, and time constraints which all together point to the infrastructure and resource limitation faced by stakeholders at this level of supply chain.

### Retailers:

Out of the surveyed retailers there were 41% of Type A and 59% Type B retailers.

### Type A:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type A retailers, the volume of products bought in rigid plastic containers ranges upto55 containers per month, depending on the product type. The same range of containers also get empty every month. Approximately 82% of respondents considered themselves the rightful owners of the empty containers. Among them, 73% found the empty containers to be valuable after the product inside is sold out.





Figure 63 Survey of type A retailer



Figure 64 Post-use handling of empty rigid plastic container

**Post-Use Handling of Empty Plastic containers and Value to Business:**

On priority listing, around 64% reuse them for household purposes, 64% provide them for free to customers/kabadiwalas, 36% sell them to customers or kabadiwalas, with a smaller number (9%) disposing of them with Dehradun Municipal Corporation (DMC). When containers are unfit/ broken/ dented, 73% dispose through DMC which is which is further picked up by informal recyclers for recycling through informal sectors, with few others (27%) retaining them to be sold to kabadiwalas.

Given their moderate inventory levels, and their behavioural ways of post- use handling of empty containers, making the regular return of empty containers to the brand seems logistically challenging.

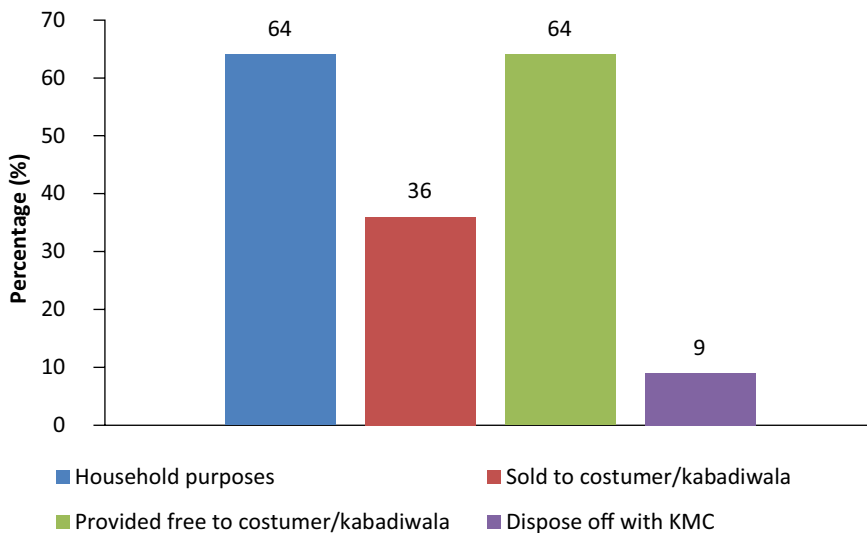


Figure 65 Post-Use handling of Empty plastic containers in Dehradun



### Observation on rigid plastic containers littering:

Littering concerns are almost nil, with no one reported empty rigid plastic containers littered in their vicinity. This highlights that majority of the containers are reused or recycled in some way and are not part of the waste.

### Preference for rigid plastic containers:

While majority (64%) respondents supported non-plastic materials like cardboard boxes, paper boxes, etc over rigid plastic containers due as they are environmentally conscious, while 36% find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favoring rigid plastic containers. Key reasons cited were durability, ease of handling, product safety from rat bites, display and product visibility.

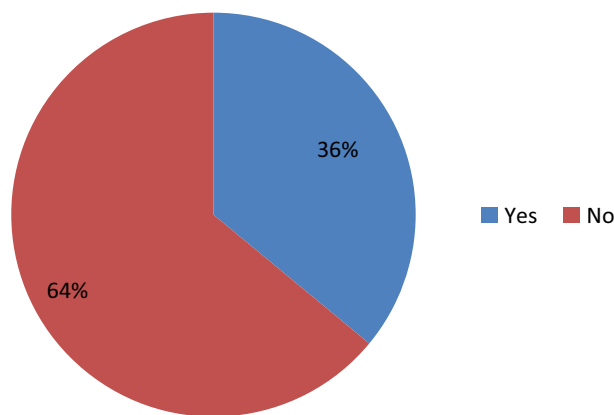


Figure 66 Type A retailer preference for rigid plastic containers

### Willingness to return rigid plastic containers:

With regard to willingness to return empty containers, a significant proportion of retailers (73%) are ready to do so, primarily because they are environmentally conscious (100%) and absence of post-use utility (62%).

Out of the 27% of retailers, who are unwilling to return empty containers, 100% of them mentioned space constraint to store empty containers, 67% raised concern over the Wholesaler/Distributor's space to accommodate take back and 33% mentioned time constraints as there is no fixed time frame for when a sufficient number will be accumulated for collection by the supplier.

The responses from Type A retailers show that most purchase ranges up to 55 rigid plastic containers/month and consider themselves the rightful owners of the empties, with 73% valuing them for reuse or resale. Post-use handling is dominated by customer giveaways, household reuse, and informal scrap sales, with almost no littering observed—indicating strong informal reuse and recycling. While sustainability concerns drive a majority to be willing to return containers (73%), logistical barriers such as storage space, distributor/wholesaler storage capacity, and collection timing remain key challenges.



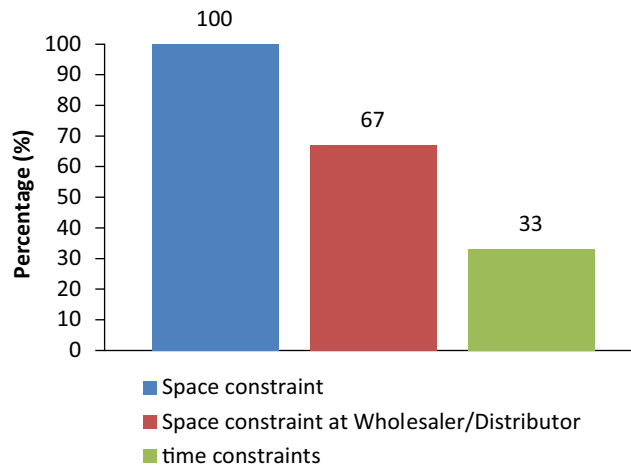


Figure 67 Type A retailer willingness to return rigid plastic containers

### Type B:

#### *Rigid Plastic Container Usage and Value Perception:*

Among the surveyed Type B retailers, the volume of products bought in rigid plastic containers ranges from 20-up to 200 containers per month. The same range of containers also get sold every month. In this category of retailers, none of respondents considered themselves the rightful owners of the empty containers. As the container is sold with the product, retailers don't have ownership and value perception for the product.



Figure 68 Survey of type B retailer



### Observation on rigid plastic containers littering:

With regard to littering concerns, none of the respondents noticed empty rigid plastic containers littered in their vicinity.

### Preference for rigid plastic containers:

Majority respondents (44%) find benefits in using rigid plastic containers over other non-plastic materials like cardboard boxes, paper boxes, etc. They highlighted various reasons for favouring rigid plastic containers. Key reasons cited were durability and reusability. 56% respondents favoured materials like tin, cardboards over plastic rigid containers because they are environmentally conscious.

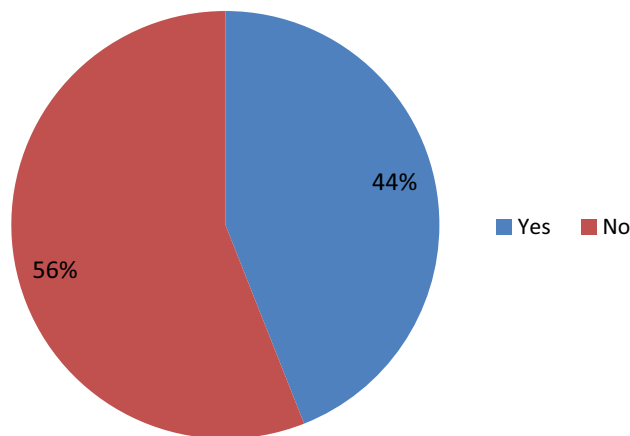


Figure 69 Type B retailer preference for rigid plastic containers

### Willingness to return rigid plastic containers:

With regard to willingness to collect and return empty containers, majority proportion of respondents (94%) did not respond affirmatively. Major barriers cited were as follows:

- » 40% retailers mentioned space constraints to store empty containers.
- » 27% is not interested in any incentive to work in this manner as collecting and returning of empty containers would increase their workload and they do not want to spend extra time on this.
- » 20% of respondents raised concerns about the hygiene and safety of the containers, as they are collected from multiple customers using in varying conditions.
- » 60% of the respondents commented issue with time constraints as there is no fixed time frame for when enough will be accumulated for collection from the customers as the containers are taken away by different customers to different locations
- » Few respondents also raised concerns about the duplication of products that might arise from the unauthorized collection of empty branded containers.

Furthermore, a significant proportion of retailers (6%) are ready to return empty containers, primarily as they lack personal reuse of those containers.



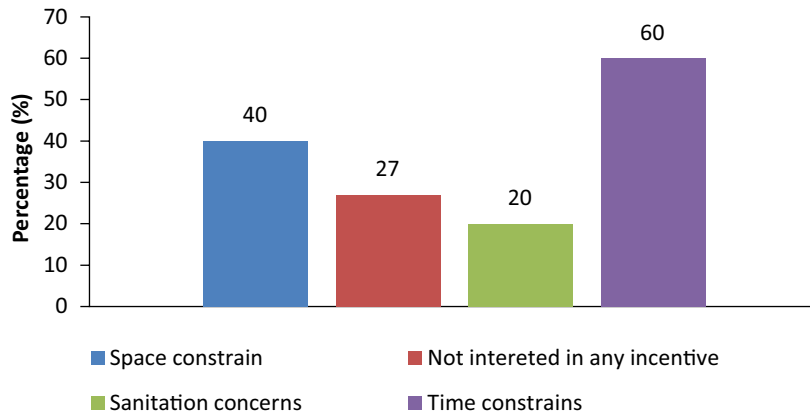


Figure 70 Type B retailer willingness to return rigid plastic containers

Type B retailers typically purchase and up to 200 rigid plastic containers/month but do not see themselves as owners of the containers, as they are sold with the product. No littering was reported, indicating reuse or proper disposal. A large majority (94%) are unwilling to return them, citing barriers such as space constraints, added workload, hygiene concerns, irregular collection timelines, and fears of product duplication. Only 6% express willingness to return, mainly due to an absence of post-use utility, operational, and risk-related issues.

The figure below depicts the limiting parameters of Dehradun for returning empty rigid plastic containers.

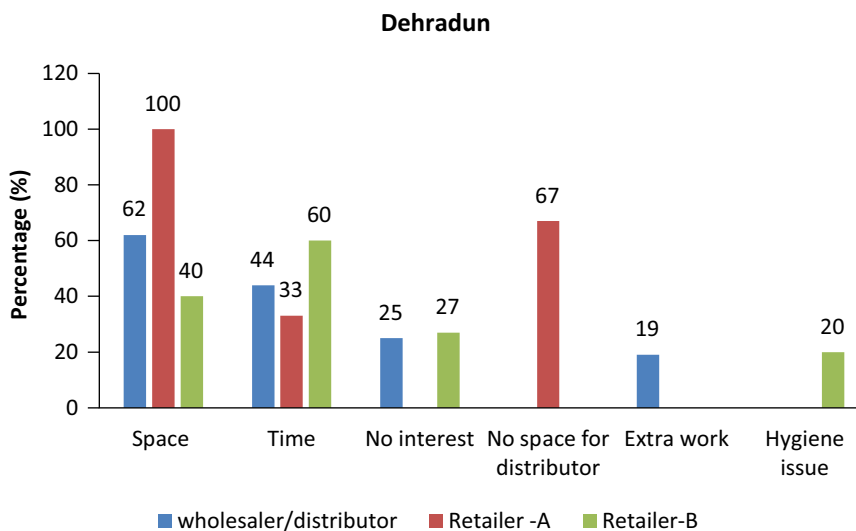


Figure 71 Limiting parameters of Dehradun for returning empty rigid plastic containers





# 6. Drivers and Barriers to Willingness to Return: A Priority Matrix Analysis

Following the individual city analyses, a combined dataset of all six cities was examined to identify the overarching drivers and barriers to willingness to return empty rigid plastic containers. The percentage of respondents supporting each factor was calculated. Additionally, to support decision-making, a 'Priority Matrix' was developed where the deterring factors for returning the empty plastic containers were plotted on (figure 72, 73, and 74). The priority matrix plot effectively highlights the key factors influencing stakeholders' willingness to return empty containers by categorizing them into distinct quadrants based on their impact and the effort required. Further, the matrix allows to prioritize resources efficiently for resolving major constraints, while simultaneously reinforcing motivators like support for recycling and brand requirements.

## 6.1 Wholesalers/Distributors:

The analysis revealed few motivating and several operational challenges. The table below summarises the results.

**Table 2 Responses of wholesalers/distributors on drivers to the willingness to return empty plastic containers**

Factors	Responses (%)
Environmentally conscious	4%
Brand loyalty	2%

**Table 3 Responses of wholesalers/distributors on barriers to the willingness to return empty plastic containers**

Factors	Responses (%)
Space constraint	61%
logistic issues	38%
Labour expense	36%
Time constraint	34%
Extra Workload	26%
Retailer/customer unwillingness	18%
Damaged container	5%
Refill tampering	2%

Table 1 and 2 indicate that there are very few positive motivators were identified. Only 4% cited environmental consciousness and 2% brand loyalty as reasons for willingness to return containers. Responses for motivating factors are very low which shows that wholesalers and distributors don't have much personal motivation or loyalty to brands when it comes to returning empty containers. Furthermore, the major challenges dominate is space constraint (61%). Operational burdens such as logistic constraints (38%), labour expenses (36%), and time constraint (34%) are also significant. Additional deterrents include retailer/customer unwillingness (18%), damaged container (5%), and tampering concerns (2%).



Overall, the barriers far outweigh drivers, with space, workload, and time pressures emerging as the most critical issues. This highlights the need for perceptual and operational/logistical interventions if a return system is to succeed.

### Priority Matrix for decision making:

The priority matrix has been developed based on the survey responses. The percentage responses for each factor were treated as their level of impact, and corresponding effect scores were assigned on a scale of 1 to 5 (with the highest response receiving a score of 5 and the lowest a score of 1). Accordingly, the matrix reflects the responses of the respondents, indicating which factors are considered high-impact high effort and which are viewed as low-impact low-effort.

The priority matrix depicts four most significant challenges which are Space constraints, Labour expenses, Logistic issues, and Time constraints and all require substantial effort. These are strategic priorities and will likely need careful planning and resource allocation to solve. As depicted from the figure, there are no high-impact low-effort issues that are easy to solve. This suggests that the most significant problems are also the most complex ones. However, there is a long list of low-effort low-impact issues. These are the 'fill-in/easy-wins' tasks that can be addressed on low priority while not distracting from the major projects. Further, in the matrix, extra workload falls on the dividing line between low and high effort, while remaining in the low impact zone. This means it is seen as an issue, requiring uncertain effort but offering low benefits if addressed. The matrix suggests that most impactful solutions in this case are not "quick wins" and will require substantial planning or investment.

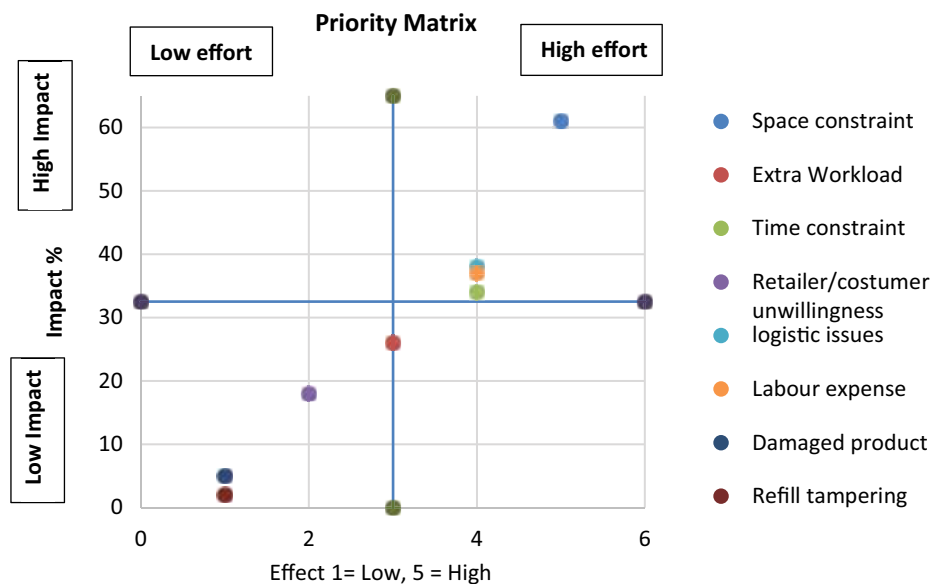


Figure 72 Priority Matrix – Wholesalers and Distributors



## 6.2 Retailers

The analysis revealed few motivating and several operational challenges. The table below summarises the results.

Table 4 Responses of retailers (Type A and B) on drivers to the willingness to return empty plastic containers

Type A:	
Factors	Responses (%)
Lack of utility	32%
Environmentally conscious	19%
Type B:	
Factors	Responses (%)
Environmentally conscious	6%

Table 5 Responses of retailers (Type A and B) on factors affecting the willingness to return empty plastic containers

Type A:	
Factors	Responses (%)
Space constraints	65%
Time Constraints	39%
Customer loyalty	36%
Sanitation issue	10%
Space constrains at wholesaler/distributor	4%
Reuse in Store	4%
Type B:	
Factors	Responses (%)
Space constraints	31%
Logistic constraints	31%
Time Constraints	21%
Expenditure on labour	19%
Customers unwillingness	12%
Extra workload	4%
Refill Tampering	3%
Space constrains at wholesaler/distributor	2%
Sanitation issue	2%



Table 3 indicate that the main driver for type A retailers are lack of post-use utility of containers (32%), meaning they return them because containers are of little further use. Another main driver of type A retailer are environmental consciousness (19%). Similarly for Type B retailers 6% cited environmental consciousness. The aforementioned factors are very weak positive motivators.

Table 4 indicate that the main barriers for type A retailers are space constraints (65%),-reflecting their preference to stick with familiar practices, followed by customer loyalty (36%), and time constraints (39%). Other minor barriers include sanitation issues (10%), reuse in store (4%), space issues at wholesaler/distributor (4%). Similarly for Type B retailers major challenges are space constraints (31%) and logistic constraints (31%), followed by time constraint (21%). Other factors include customer unwillingness (12%), sanitation (2%), wholesaler/distributor space issues (2%), refill tampering (3%), and extra workload (4%).

The overall findings depict that motivations are weak across all groups, with Type A retailers showing slightly higher drivers (mainly lack of utility and some environmental concern) compared to Type B retailers. Barriers are much stronger than drivers. Customer loyalty, expenditure on labour, space, time, and logistic constraints dominate across retailer types. Type B retailers perceive more challenges overall compared to Type A. The findings highlight the need for practical solutions to reduce operational/logistical constraints if a return system is to be effective.

### Priority Matrix for decision making:

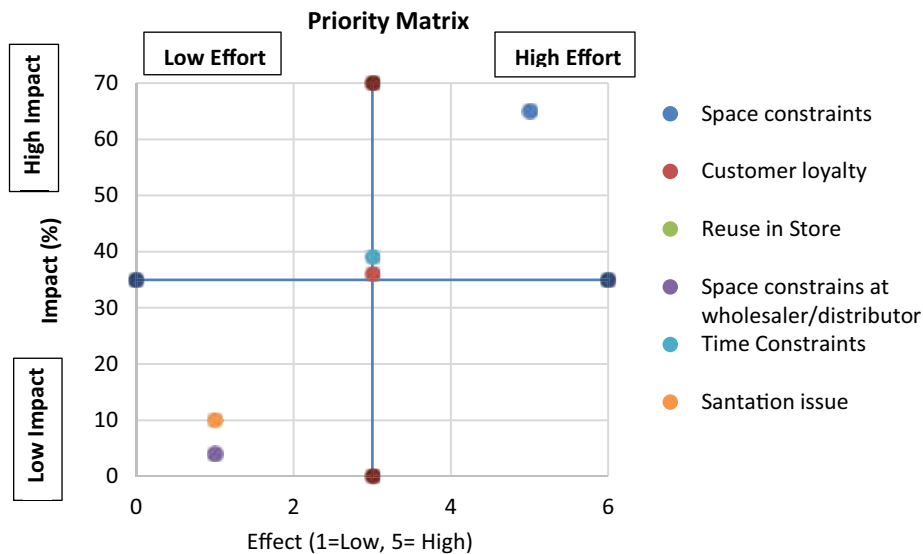


Figure 73 Priority Matrix – Retailers (Type A)



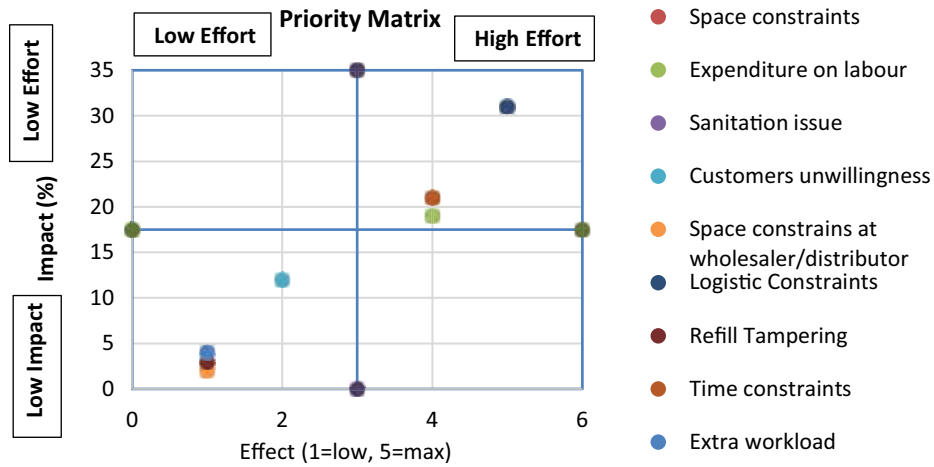


Figure 74 Priority Matrix – Retailers (Type B)

The matrix for both the retailers shows that the high impact – high effort quadrant contains three key factors: customer loyalty, space constraints, time constraints, logistic constrains, and labour expenses. These factors are highly influential on willingness to return containers but require significant resources or systemic changes to address. Whereas the low effort – high impact quadrant is notably empty, highlighting a gap in easily implementable, high-value interventions. This suggests that most impactful solutions in this case are not “quick wins” and will require substantial planning or investment.

In the low impact – low effort quadrant, factors such as retailer/customer unwillingness, sanitation issues, reuse in store, space constraints at wholesaler/distributor, extra workload, and refill tampering are present. Their low effort requirement means they could be addressed in parallel with tackling high-effort challenges.

Overall, the priority matrix indicates that addressing the factors in the high impact – high effort quadrant is critical for meaningful change, but these will require substantial operational or infrastructure adjustments. Parallel low-effort interventions could help remove minor barriers, creating a smooth reverse logistic chain for returning empty plastic containers.





# 7. Inferences



The survey was conducted in six cities to identify factors of retailer, wholesalers, and distributors to participate in the reuse system, assessed under the broad parameters of behavioural, perceptual, and operational/ logistical factors. Across these cities, the survey observed the following:

## 7.1 Behavioural/Attitudinal

The survey found that most respondents reuse empty plastic containers in practical ways, such as for in-store storage, household purposes, or by giving or selling them to customers, kabadiwalas, or scrap dealers. While these informal practices make it harder to track containers within formal reverse logistics systems, they reflect established habits that deliver tangible value to both businesses and communities.

From a business perspective, giving containers to customers can strengthen trust and loyalty, fostering repeat visits and long-term relationships. For members of the informal recycling sector, such as kabadiwalas and scrap dealers, these containers provide a steady source of income, supporting local micro-economies and offering livelihood opportunities for those with limited access to stable employment. In this way, the informal flow of containers meets functional needs while also sustaining social and economic benefits.

Reusing containers within stores or at home also brings notable environmental and economic advantages. It extends the life cycle of containers, reduces the need for new storage purchases, and helps lower waste generation, improving resource efficiency and reducing the burden on municipal waste systems. As such, any future interventions to improve container recovery should aim to integrate these existing behaviours, ensuring that strategies enhance such reuse practises.

## 7.2 Perceptual

From the survey, it was observed that while a moderate number of respondents were aware of the broader debates on plastic usage, many perceived rigid plastic containers more positively, due to their marketability, durability, and ease of reuse. This indicates that although there is some awareness, preference is largely driven by practical and commercial benefits. This finding suggests that retailers' inclination towards retaining plastic containers for their own reuse or resale purposes may limit their readiness or motivation to return them to the brand.

Additionally, several retailers raised concerns about the condition of the returned containers, noting that containers would often come back in a damaged or unhygienic state, which limits their potential for reuse or resale. These practical and quality-related challenges further reduce the willingness and preparedness of retailers to participate in a jar return system.

## 7.3 Operational/logistic

The survey revealed several operational barriers that limit retailers' ability and readiness to return plastic containers to the brand. Many retailers face severe space constraints, making it difficult to store empty containers until collection. Even for those with some storage capacity, the associated expenses of maintaining space for items that cannot be immediately resold are seen as an unnecessary burden. Collecting, sorting, and storing containers also adds to retailers' workload, which is particularly challenging for smaller shops where staff already manage multiple tasks. They highlighted that if a reuse system is



applied, they would either need to hire more staff or pay extra to the current staff for additional work, **both of which** would increase their labour expenditure.

Time constraints further limit participation, as handling returns consumes valuable hours that could be devoted to sales and customer service. Logistic challenges were especially noted by type B retailers, that the products they purchase are often transported to far-off locations, making it impractical to expect customers to return the empty containers after use.

Quality concerns also discourage participation, with scenarios of containers being returned in dented, filthy, scratched or unhygienic conditions, including pest damage such as rat bites, rendering them unsuitable for reuse. Together, these challenges highlight that practical constraints in space, cost, labor, time, logistics, interest, and quality of the container significantly reduce respondents' preparedness to engage in a plastic container return system.

## 7.4 SDG Goals linked to the study:

Additionally, from this study several SDGs are linked, which are as follows:

- » **SDG 12 (Responsible Consumption and Production):** By observing reuse practices of the rigid plastic container such as in-store storage, household purposes, or by giving or selling them to customers, kabadiwalas, or scrap dealers, the survey highlights the direct contribution to sustainable consumption patterns and reduction of waste.
- » **SDG 11 (Sustainable Cities and Communities):** The survey findings indicate that retailers and wholesalers/distributors actively repurpose empty rigid plastic containers, thereby minimizing their contribution to littering. Damaged or dented containers are typically handed over to municipal corporations, from where kabadiwalas collect them and channel them into recycling streams. Overall, these practices demonstrate how respondents contribute to reducing waste generation and strengthening urban waste management systems.
- » **SDG 13 (Climate Action):** The survey findings indirectly support climate mitigation by repurposing the rigid plastic containers and thereby reducing demand for virgin plastic production.
- » **SDG 8 (Decent Work and Economic Growth):** By recognizing and integrating kabadiwalas, your survey outcomes may contribute to inclusive economic opportunities and safer working conditions.

## 7.5 Emissions from Reverse Flow of Rigid Plastic Containers:

The transportation of empty rigid plastic containers, of 2.5L volume each, from retailers across the country, back to the brand has been included in this carbon footprint assessment. Considering the reverse flow of ~663 million jars empty containers over a distance of 800 km, the associated carbon footprint is estimated at 1.6 lakhs tones of CO<sub>2</sub>e, representing the emissions impact of this reverse logistics operation. That is equivalent to the annual emissions of around 36,500 cars (assuming ~4.5 t CO<sub>2</sub>e per car per year).

Additionally, If we only consider a fraction of the confectionery industry for rigid jars, the annual emissions could be approximately 164.5 thousand metric tonnes of CO<sub>2</sub>e per year alone. Capturing similar data for the entire industry would result in significantly higher values.





# 8. Conclusion

The study reveals that retailers actively repurpose empty rigid plastic containers and generally do not contribute to littering (figure 75). In Delhi and Dehradun, containers are largely reused for household purposes (42% and 64% respectively), while Bengaluru also shows a significant share at 57%. A large proportion of retailers in Mumbai and Bengaluru (both 74%) provide containers free of cost to customers or ragpickers, ensuring their diversion to recycling channels, followed closely by Dehradun (64%) and Chennai (54%). Selling containers to customers or ragpickers is most common in Dehradun, Delhi, and Kolkata (36%, 35%, 35%), indicating strong engagement with the informal recycling sector. Additionally, reuse within stores is more prominent in Kolkata (24%) and Mumbai (21%), with other cities reporting moderate levels of 10–20%. Overall, the figure highlights that retailers across cities are actively engaged in recovery and reuse practices—whether by repurposing containers at the household level, channelling them to the informal sector, or reusing them within stores—thereby contributing to resource efficiency and reducing the risk of plastic littering.

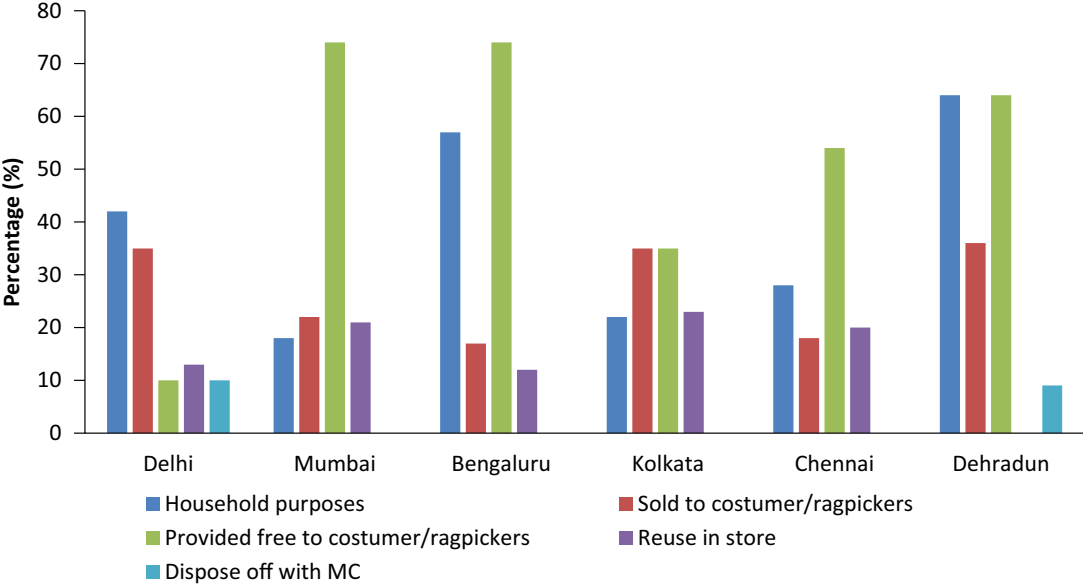
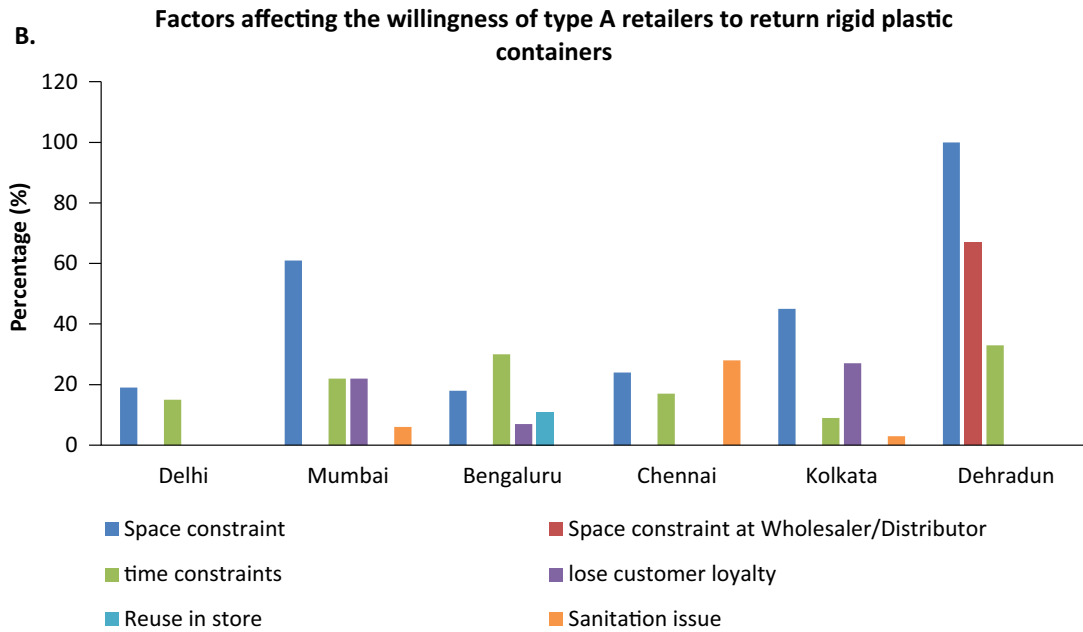
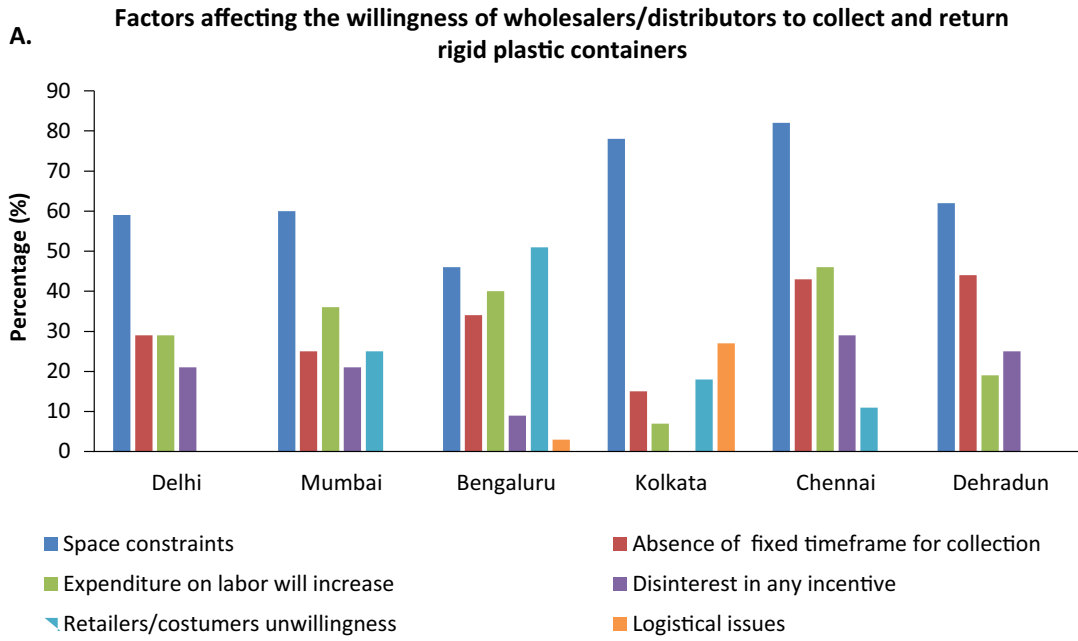


Figure 75 Post-use handling of empty plastic containers by type A retailers

However, they face significant logistical, perceptual, and operational barriers in complying with reuse obligations under rigid plastic packaging PWM Rules. The three figures below highlight the barriers faced by wholesalers/distributors (figure 75A), retailers- Type A (figure 75B), and Type B (figure 75C) in returning and managing rigid plastic containers. Across wholesalers/distributors, Type A, and Type B retailers, the figures show that space and time limitations, logistical challenges, and labour expenditure are the most critical barriers to effective container return and reuse. At the same time, perceptual concerns such as customer loyalty, retailer/costumer unwillingness, and sanitation issues by stakeholders add more difficulty.





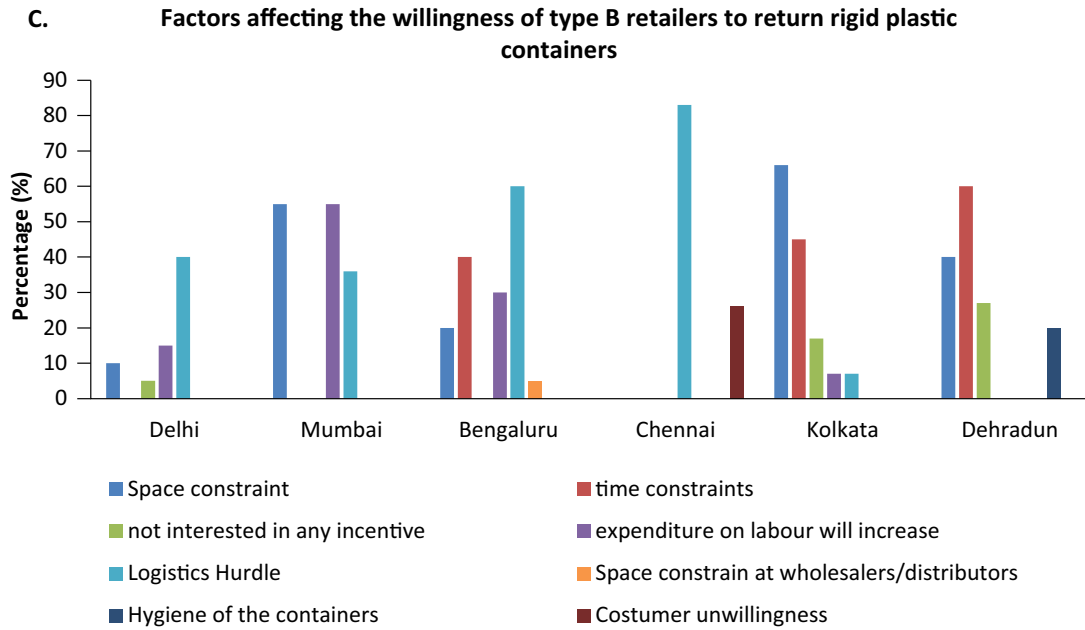


Figure 76 Factors affecting the willingness of respondents to collect and return rigid plastic containers

The following recommendations address these barriers, maximizing the effectiveness of rigid plastic packaging reuse mandates under PWM Rules.





## Recommendations

We recommend, based on ease of business and trade-related economic challenges faced by brand owners and businesses, that the following points be considered by authorities and regulators:

- » Data show that littering of rigid plastic jars is negligible. Unlike flexible plastics, rigid containers are already entering the recycling value chain through kabadiwalas and are commonly repurposed for in-store storage, household use, or sold to customers and scrap dealers. Hence, policy by the government should formally recognize practices such as:
  - Household repurposing of rigid jars and containers.
  - Free distribution of used containers to ragpickers and costumers.
  - Store-level refilling and reuse models.

These existing practices already contribute to circularity by preventing littering and ensuring recovery. These practices also reflect established habits that deliver tangible value to both businesses and communities. From a business perspective, providing containers to customers builds trust and loyalty, while for the informal recycling sector it offers steady income and supports local livelihoods. Furthermore, reusing containers at stores or at home extends their life cycle, reduces waste generation, reduces the use of virgin plastic materials, and eases pressure on municipal systems. These existing practices already contribute to circularity by preventing littering and ensuring recovery. Thus, future interventions should integrate and strengthen these existing reuse practices.

- » Implement flexible compliance pathways under the EPR framework for rigid plastic container reuse, recognizing the practical constraints faced by retailers and wholesaler/distributers. Brands currently have a target of achieving 10% reuse obligation under the PWM Rules' EPR framework by 2025-26, but significant logistical and operational barriers leave stakeholders unprepared, making this target challenging to achieve in practice.

To address these challenges, flexible or voluntary compliance mechanisms may be further recommended to regulatory authorities. Brand-owners should have flexibility to meet circularity goals through increasing recycled content in packaging based on available recycling technologies, and by effectively managing EPR targets.

- » The study findings reinforce MoEFCC's primary objective of reducing virgin plastic use and minimizing waste generation. As shown in Fig. 75, rigid packaging already has, by and large through formal and informal channels, an established recycling and repurposing value chain, unlike flexible/non-rigid plastics.
- » Introduce clear labeling on the reusable containers to indicate suitability for reuse and environmental benefits. As the survey indicates plastics are often favored for their functional advantages, labeling will make these containers easier to identify encourage people to handle them properly. Such labeling will also enable regulatory authorities to ensure that rigid plastic containers remain within reuse systems rather than entering the waste stream.
- » To conduct targeted awareness campaigns for retailers to clearly distinguish rigid plastic containers from single-use plastics. These campaigns should emphasize that rigid plastic containers are more beneficial, have a longer lifespan, and can be reused multiple times, unlike single-use plastics bags, which reveal that majority of respondents are actively reusing rigid plastic containers, with only a very small fraction observing them being discarded or littered.



- » Formalize the role of Kabadiwalas in the post-use handling of rigid plastic containers, as evidenced by the survey findings showing that most containers are managed either directly or indirectly through them. Formal recognition of kabadiwalas as key stakeholders can improve their access to resources, training, and collaboration with brands and authorities.
- » Reverse logistics for reuse should include quantification of potential annual emissions (per 50 km transport) if 1–5L bottles/containers are sourced back. This is critical, as the emissions from such operations may offset the intended environmental gains from reuse.
- » Reuse strategies involving large-scale reverse logistics may negatively impact India’s carbon commitments under the Paris Agreement. Quantification of these impacts should be included to ensure alignment with national carbon reduction goals.



# Annexures

## Annexure A: Structure of the Questionnaire

Research Study on Traceability and Collection of Rigid Plastic Containers (> 1 Litre capacity) for Re-use

A. General Details	
Date	
City	
Shop Name	
Address	
Name (Optional)	
Contact Details	

<b>B. Respondent (Type of Store)</b>	» Retail Outlet	» Wholesaler	» Distributor
--------------------------------------	-----------------	--------------	---------------

C.1 – Retail outlets					
S.No	Questions	Remarks			
1.	Inventory of FMCG product-filled rigid plastic packaging (jars/containers) (>1 litre capacity) in your store? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">&lt; 20</td> <td style="width: 33%; text-align: center;">&lt; 50</td> <td style="width: 33%; text-align: center;">&gt; 50</td> </tr> </table>	< 20	< 50	> 50	<b>How many jars do get empty in a week/months out of total filled jars ?</b>
< 20	< 50	> 50			
1A	How many units of jars/containers/bottles do get empty in a week/months out of total filled ones?				
2.	Do you consider yourself the rightful owner of the empty plastic jar? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Yes</td> <td style="width: 50%; text-align: center;">No</td> </tr> </table>	Yes	No		
Yes	No				
3.	Are these empty rigid plastic packaging highly valuable to you (once the product inside is sold out)? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Yes</td> <td style="width: 50%; text-align: center;">No</td> </tr> </table>	Yes	No		
Yes	No				
4.	If yes, then state why » I <b>use for household purposes</b> , like storing oil, grains, etc. » The surplus empty containers/jars/bottles are <b>sold to the customer/kabadiwala</b> , for reuse. » The surplus empty containers/jars/bottles are <b>provided free of charge to customers or kabadiwala for reuse</b> . » Any other, please specify	<b>Please fill the response in priority listing, marking ‘1’ for most used option and ‘4’ as least use option</b> [   ] [   ] [   ] [   ]			



C.1 – Retail outlets						
S.No	Questions	Remarks				
5.	<p>What value does it add to your business while give away free rigid plastic packaging?</p> <p>Choose the best possible option:</p> <p>1. My shop does not have space for empty plastic packaging to it helps in efficient space utilisation by getting rid of empty jars</p> <p>2. Helps in gaining the customer loyalty</p> <p>3. Helps in giving some value to weaker sections of society</p>	<p><i>How many units of jars/ containers/bottles are given for free (per month)=</i></p> <p><i>How many are kept for personal reuse purposes (per month)=</i></p> <p>[   ]</p> <p>[   ]</p> <p>[   ]</p>				
6.	<p>What do you do with the unfit/ broken/ dented plastic packaging once the intended use is accomplished?</p> <p>» Retaining for selling to kabadiwalas/ scrap dealers</p> <p>» Others: _____</p>					
7.	<p>How often do you sell empty plastic packaging to customers for informal reuse, or broken/ damaged ones to scrap dealers?</p> <table border="1"> <tr> <td>Weekly</td> <td>Fortnightly</td> </tr> <tr> <td>Monthly</td> <td>Unable to say</td> </tr> </table>	Weekly	Fortnightly	Monthly	Unable to say	
Weekly	Fortnightly					
Monthly	Unable to say					
8.	<p>If sold to scrap collectors, what is the monthly average quantity sold?</p> <p>Number of packaging units: _____</p>					
9.	<p>Have you seen any rigid plastic packaging littered around?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
10.	<p>Do you find benefits in the use of rigid plastic packaging over other non-plastic materials like cardboard boxes, paper boxes, etc?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
11.	<p>Will you return the empty rigid plastic packaging which are in good condition, to the distributors?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
12.	<p>If yes, state why:</p> <p>Sustainability reasons</p> <p>We don't have any use for the empty jars</p>					
13.	<p>If no, state why</p> <p>Wholesaler/ Distributor does not have any space to accommodate take back</p> <p>Space constrains</p> <p>Time constrains as there is no fixed time frame for when a sufficient number will be accumulated for collection by the supplier</p>					



C.2- Distributor and wholesaler		
S.No	Questions	Remarks
14	How much FMCG product-filled rigid plastic packaging (jars/containers/bottles) (>1 litres capacity) are sold from your dealership/ wholesale business?	
15	Have you seen any empty rigid plastic packaging littered around?	
	Yes	No
16	For wholesaler: Will you be willing to collect back the empty rigid plastic packaging (jars or containers) from the retailers?	<b>Please document top three reasons for the choice (YES/NO) opted</b>  1.  2.  3.
	If yes, state why <i>(illustrative response mentioned below)</i>  Resale of empty rigid plastic packaging to kabadiwala	
17	For distributor: Will you return back the empty rigid plastic packaging to the FMCG brands received from the sales channels?	<b>Please document top three reasons for the choice (YES/NO) opted</b>  1.  2.  3.
	If yes, state why          If no, state why	



