ANALYSIS OF REVERSE LOGISTICS

Analysis of Reverse Logistics in Soft-Drink Bottling Industry of Pakistan

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Abstract

Globalization of economy has heightened the strategic importance of Supply Chain in diverse business environment.

In today's highly competitive business environment, the success of any business depends to a large extent on the efficiency of the supply chain. Competition has moved beyond firm-to-firm rivalry to rivalry between supply chains. Management now has clear understanding that profitability of the company will be affected by mistake of any member of Supply Chain. Though reuse of products and materials is a common phenomenon, companies have long ignored this part of the supply chain, known as reverse supply chain or backward supply chain. Such reverse flow of logistical activities is known as reverse logistics.

Reverse logistics is define as a

“Process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal” (Rogers & Tibben L,2006)

Reverse Logistics refers to the movement of goods from the end point of usage to the initiation point in order to add more value or to dispose it. Reverse Logistics is not limited to reusing of containers or recycling of packaging material. Reverse Logistics will not exist, if the goods or materials does not send backward. Returned goods are because of seasonal inventory, damage, recalls and wrong forecasting are the major reasons of Reverse logistics. (Chuck P., 2006).

Soft drink bottling industry industries are the main pioneers of reverse logistics in Pakistan. The empty bottles returned from the point of consumption back to the yard for refilling and reusability purposes. Unlike tradition forward logistics network does not support RL, though
requires new horizon of backward distribution keeping efficiency and effectiveness in the entire backward chain.
Broad Problem Area

If we analyze different industries of Pakistan, we tend to realize that RL has not been a medium of efficient and effective practice in business sector due to lack of infrastructure and knowledge. Soft-drink bottling industry unconsciously tends to practice RL for the reuse purpose of glass bottles.

Analysis of reverse logistics practiced in soft-drink bottling industry is the subject of this study in which we will develop a framework dictating the current needs of market.

Problem Identification

Due to the lack of framework to access RL network and more attention on the forward distribution, Soft-drink manufacturers are bearing high rate of inefficiencies and ineffectiveness within the backward chain.

Problem Statement

Due to lack of information on reverse flow of logistical activities from point of consumption to point of origin, soft drink manufacturers are bearing high loss due to lack of appropriate framework.

Research Questions

- What is current business model of reverse logistics practices soft-drink bottling industry of Pakistan?
- What are the critical failures factors effecting leading towards efficiency and effectiveness?
Objectives of the Research

- To find out the current trends of Reverse Logistics in soft drink bottling industry of Pakistan?
- To develop a framework to achieve lean supply chain practices in the soft drink bottling industry of Pakistan.

Scope of the Study

Scope of the study is to create effective and efficient reverse logistics frame work which will guides soft drink manufacturer and reverse logistics implementers to optimize their supply chain in the current market scenario of soft drink bottling distribution. It will also help future researchers to quantify all the variables effecting reverse flow of soft drink bottling industry from point of distribution to point of origin.

Theoretical Frame Work

Based on the review of literature, following variables were identified to be key in finding the practices on Reverse Logistics in soft drink industry of Pakistan.

1. Distribution channel in RL
2. Reusability of return products
3. Feed back
4. Shelf life of typical product
5. Return glass bottles
6. Barriers of implementing RL

*Shelf Life*

All products have different lifespan, for example, an item of "trendy" clothing will have a very short lifespan, while other products may have a very long lifespan. In this variable we will see what life span of soft-drink product is and how life span of product effects on reverse logistics.

*Feedback*

Feedback is very important variable in terms of customer satisfaction, in this variable we will see how reverse logistics help in feed back from customer end

*Reversed Products as share in Sales*
Mostly manufacturer are not concern after consumption products but in soft-drink bottling industry they are reusing return products which has a possibility impact on sales as well.

**Distribution Channel**

From point of consumption to point of end there are numbers of actors involve in it for example retailer, wholesaler and distributor in this variable we will who are main actors in reverse logistic channel of soft-drink bottling industry

**Reusability**

Most of the time return products is not in status to reuse it, this is one of the important variable that how much there is a possibility to reuse products after treatment.

**Barriers of implementing RL**

Every new system has to be faced many challenges, this variable help study to analyze barriers of practicing **RL RGB return glass bottles**

After treatment retrieval of empty bottles known as Return glass bottles, RGB is a major part in RL of soft drink bottling industry.

**Literature Overview**

**Reverse Logistics**

Reverse logistics stands for all operations related to the reuse of products and materials. It is "the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of
consumption to the point of origin for the purpose of recapturing value or proper disposal. More precisely, reverse logistics is the process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. Remanufacturing and refurbishing activities also may be included in the definition of reverse logistics. (Hawks, Karen, 2006).

Reverse Logistics in Supply Chain

Having reverse logistics company can operate their supply chain management effectively. According to chuck Poirier Reverse logistics is an enabler of supply chain management it gives better customer satisfaction, its lean supply chain management in that way in which we get better customer feedback from it, moreover reverse logistics can also be a reason to maximize profit and sales. (Chuck P, 1998).

Though reuse of products and materials is a common phenomenon, companies have long ignored this part of the supply chain, known as reverse supply chain or backward supply chain. A
common example of reverse supply chain is the soft drinks bottles pickup and delivery system, where soft drink bottles are returned and reused repeatedly. Companies were so long under the impression that returns compared to sales generate little or no money. However, with the growth of direct-to-consumer channels like catalogs and Internet, sales returns of merchandize by the consumers have increased. (Anindya R, 2003)

Reverse Logistics in Bottling Industry

Reverse logistics Enhanced diagnostic reporting and status visibility for business partners and end consumers by taking this statement we can analyze current operation of soft-drink bottling industry with in Pakistan.

Return Glass Bottles (RGB)

For every order of beverages, the retailer pays the bottler the associated deposits and then charges them to customers (CRI, 1998).
Customers return their empty containers to stores or depots, and the bottlers retrieve them for refilling. While stores and depots may keep a minimum portion of the deposit to compensate themselves for handling and storage costs, most stores fully refund the deposit to customers. Soft-drink bottlers keep the unredeemed deposits, which compensate them for unreturned bottles. In 1999, this system brought Prince Edward Island a 98 percent recovery rate for soft-drink containers the highest among all of the provinces (PEIS, 1999).

The results indicate that the ban on non-refillable has helped control beverage container litter and has made Islanders more aware of the need to reduce litter and waste, according to Darin MacKinnon of the Department of Fisheries, Aquaculture, and Environment (MACK, 2006).

The province's policies have also brought economic benefits. Seaman's Beverages, the only soft-drink bottler in the province, employ nearly 100 full-time workers and 20 seasonal workers. About 10 of the 20 production workers at Seaman's help wash and process empty bottles. Rundell Seaman, chairman of Seaman's Beverages, guesses that he would probably employ 37 persons in all if he used only non-refillable containers (SEAM, 2006).

So it indicates that implementing reverse logistics we can improve quality of product and customize it as need of customer, at this point question arises that how reverse logistics help soft-drink bottling industry to improve their quality.

Feedback

"Improving Customer Service Quality" concluded that many organizations are realizing that reverse logistics can provide a significant opportunity for competitive advantage whereby customer service can be improved while simultaneously reducing operating cost. Reverse
logistics is and will continue to be a growing filed and should be viewed as an integral part of the organizations overall supply chain. (Mohammad, 2000)

Reusability

Practically all businesses must deal with returns of some nature because of issues such as marketing returns (i.e., customers change their minds or find the product unacceptable), damage or quality problems, overstocks, or merchandise that is brought back for repairs, refurbishing, or remanufacturing Norek, provides an indication of the sheer volume of returns generated in many companies. He notes that returns range from 3% to as high as 50% of total shipments across all industries; various industry studies put the true costs of returns at 3–5% of sales; and, for traditional brick-and-mortar retail operations, returns are three to four times more expensive than outbound shipments (Norek, 2002).

Shelf Life

Shelf life is the recommendation of time that products can be stored, during which the defined quality of a specified proportion of the goods remains acceptable under expected (or specified) conditions of distribution, storage and display. The length of the product life cycle varies across products and industries (Rogers and Tibben L, 1999).

Since it is not easy to identify where a real product is in the life cycle once it moves past the introductory and growth stages, every firm must look for demand turning points. These can be seen if the company understands past history and the marketplace, and will allow the firm to understand the expected behavior for the volume of units returned through its RL system.
Competitive environments have caused the product life cycle for many consumer goods to continually shrink (Guide and van Wassenhove, 2003).

As an example, many consumer electronics, such as mobile telephones, have less than six months between new model introductions. Products such as these that have a very short shelf-life and that can be restocked without furthering handling may best be returned to the originating distribution center (Gooley, 2003).

**Barriers of Reverse Logistics**

Reverse supply chains differ from forward supply chains in information flow, physical distribution flow and cash flow. To manage reverse supply chain, companies need sophisticated information systems. Some of the technology involved in reverse Supply chain is similar while in some areas the technology used differs from that of traditional supply chain. (Anindya R, 2003)

<table>
<thead>
<tr>
<th>Table 1: Barriers to Reverse Logistics</th>
<th>Percenta</th>
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</thead>
<tbody>
<tr>
<td>Importance of reverse logistics relative to other issues</td>
<td>39.2%</td>
</tr>
<tr>
<td>Company policies</td>
<td>35.0%</td>
</tr>
<tr>
<td>Lack of systems</td>
<td>34.3%</td>
</tr>
<tr>
<td>Competitive issues</td>
<td>33.7%</td>
</tr>
<tr>
<td>Management’s inattention</td>
<td>26.8%</td>
</tr>
<tr>
<td>Financial resources</td>
<td>19.0%</td>
</tr>
<tr>
<td>Personnel resources</td>
<td>19.0%</td>
</tr>
<tr>
<td>Legal issues</td>
<td>14.1%</td>
</tr>
</tbody>
</table>
Successfully implementing reverse supply chain is still a problem for companies, as they face a number of obstacles. Mike Nardella views that reverse supply chain are still treated more like a necessary evil of the back end process of a logistics process. Another barrier according to him is that there is lack of commitment on the part of senior management. Senior management should show commitment in the form of dedicating a team of individuals, software and conveyor systems for reverse supply chain. Devangshu Dutta opines that there are two types of barriers, internal and external barriers. Internal barriers include preparedness in terms of processes, systems and infrastructure of the company to handle returns, while external barriers include amenability of the customer. (Anindya R, 2003)

*Channel Distribution*

Part of the possessions which are sold by the means of direct distribution chain returns to the business or productive cycle by reverse distribution channels. The post sale possessions, with little or no use at all, constitute the post-sale reverse channels, while the post consuming possessions which were used and don’t show interest to the first possessor, will be returned to post consuming reverse channels.”

The post consuming reverse logistics is an acting area of reverse logistics that equalizes and operates the physical flow equally and the corresponding information of post consuming possessions discarded by society in general that return to the business cycle or to the productive cycle by the means of specific reverse distribution channels.

Post consuming possessions are the ones that are at the end of useful life or used with reutilization possibility and the industrial residue in general. Its strategic objective is to aggregate value to a logistics product constituted by possessions that can be inserted to the original owner,
or that still have utilization conditions, by discarded products, by the fact of having achieved the end of useful life and by industrial residue (leite, 2003)

**Methodology**

The research was Qualitative in nature. More classical approach has been adopted, research based on primary data and secondary data as well.

*Sources of Data*

Data has been collected from two largest soft drink bottling manufacturer of Pakistan, which includes Coca-Cola Beverage Industry and Pepsi Co.

*Secondary Data*

Secondary data collected from Coca-Cola and Pepsi Co office of Islamabad/Rawalpindi Region. We collected official data from the sales and Supply chain department of Pepsi co and Coca-Cola depot located in the peripheries of Islamabad and Rawalpindi.

*Primary Data*

Primary data collected in the form of in-depth structure interviews of distribution and logistics manager of Cola-Cola and Pepsi Co. Interview conducted based on our knowledge of reverse logistics and given variables.

*Procedure*

Articles, Books, related Supply Chain Magazines were referred to for building basic understanding of the topic. Based on the Literature review it was decided to further explore the soft drink industry practices for reverse logistics in Pakistan. This industry was picked on the basis of the nature of RL adopted business.
For this purpose, Coca-cola beverages and Pepsi co sleeted. As the topic was new and unexplored, a questionnaire was developed for interviews. The questionnaire included descriptive open-ended questions. The interviews were conducted to gather the responses and were later punched in to have a comparative analysis across companies to find out similarities and unique patterns.

*Data Analysis Tool*

We used Ms Excel to tabulate the secondary data gathered from the various sources of soft drink bottling industry of Rawalpindi/Islamabad. In which we drew a bar charts, tables to enrich a significant findings.

Due to the qualitative nature of our research a framework based on the current trends of market will be developed based on our knowledge of supply chain.

*Result And Discussion*

*Secondary Data*

Secondary data has been selected from organizational record of both coca-cola and Pepsi co, which facilitate us to draw result according to our variables. It will also be helpful in the making of RL Framework and can provide a baseline with which the collected primary data results can be compared to.

*Coca-Cola Beverages Limited*

Following are collected from organization record of year 2010-2011 of Islamabad /Rawalpindi region in which listed sales per month of case; it is a typical unit of carrying bottles, each case carry 24 soft drink bottles of 250-300ml, in second column RGB return glass bottles, RGB
means empty bottles which has been return after usage, and in third column damages in return of empty bottles.

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales/case</th>
<th>RGB/case</th>
<th>Damages RGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>930000</td>
<td>558000</td>
<td>61380</td>
</tr>
<tr>
<td>July</td>
<td>950000</td>
<td>570000</td>
<td>62700</td>
</tr>
<tr>
<td>Aug</td>
<td>870000</td>
<td>522000</td>
<td>57420</td>
</tr>
<tr>
<td>Sep</td>
<td>800000</td>
<td>480000</td>
<td>52800</td>
</tr>
<tr>
<td>Oct</td>
<td>780000</td>
<td>468000</td>
<td>51480</td>
</tr>
<tr>
<td>Nov</td>
<td>650000</td>
<td>422500</td>
<td>46470</td>
</tr>
<tr>
<td>Dec</td>
<td>530000</td>
<td>371000</td>
<td>40810</td>
</tr>
<tr>
<td>Jan</td>
<td>450000</td>
<td>301000</td>
<td>33110</td>
</tr>
<tr>
<td>Feb</td>
<td>470000</td>
<td>405000</td>
<td>44550</td>
</tr>
<tr>
<td>March</td>
<td>490000</td>
<td>455000</td>
<td>50050</td>
</tr>
<tr>
<td>April</td>
<td>650000</td>
<td>390000</td>
<td>42900</td>
</tr>
<tr>
<td>May</td>
<td>820000</td>
<td>492000</td>
<td>54120</td>
</tr>
</tbody>
</table>

Table 4.1
Above bar chart may help to arrive at the following significant findings:

1. This figure shows the per month sales of coca-cola soft drink bottling in Islamabad /Rawalpindi region and RGB per month , and it shows sales are fluctuating according to season but there is minor fluctuation in RGB.

2. In above figure clearly tell us that there is very short quantity of return bottling as compared to sales if we take 1st month its 930000 sale of cases and just 55800 case has been returned which shows the only 60% return of product.

3. It means still there is 40% empty bottles are roving in the market, this information clearly shows that coca-cola has to bear huge shortage of empty bottles, to decrease this loss company should decrease empty bottles roving in the market.
4. Above figure also illustrating that Return glass bottling retrieval network is very much inefficient and slow, Coca-cola should increase the retrieval process in market.

![RGB V.S DAMAGES](image)

**Figure 4-2**

**Analysis**

Above bar chart may help to arrive at the following significant findings:

1. Above bar chart showed that at every return of 100 bottles there are 11 damages bottles.

2. These damages add a delay process in RL because these damages bottles has to reach in repair bottling industry, for that Coca-cola has to bear a cost a repairing cost transportation cost ,and it s also become a source of delay in process.

3. Damages has a major impact on reusability process of soft drink bottles ,as we know reusability is one of the cheapest way to Re-manufacture ,company should minimize damages so that they have competitive edge on competitor.

**Pepsi co**

Pepsi co is one the largest selling brand in Pakistan which covers at least 49% of soft drink market in allover the country. Following are collected from organization record of year 2010-
2011 of Islamabad /Rawalpindi region in which we have sales per month of case; it is a typical unit of carrying bottles, each case carry 24 soft drink bottles of 250-300ml, in second column we have RGB return glass bottles, RGB means empty bottles which has been return after usage, and in third column we have damages in return of empty bottles

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales/case</th>
<th>RGB/case</th>
<th>Damages</th>
<th>RGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>1069500</td>
<td>748650</td>
<td>67378</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>1125000</td>
<td>787500</td>
<td>70875</td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td>930000</td>
<td>651000</td>
<td>58590</td>
<td></td>
</tr>
<tr>
<td>Sep</td>
<td>910000</td>
<td>637000</td>
<td>57330</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>850000</td>
<td>595000</td>
<td>53550</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>750000</td>
<td>525000</td>
<td>47250</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td>720000</td>
<td>504000</td>
<td>45360</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>690000</td>
<td>483000</td>
<td>43470</td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>712300</td>
<td>498610</td>
<td>44874</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>935000</td>
<td>654500</td>
<td>58905</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>985000</td>
<td>689500</td>
<td>62055</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>1025000</td>
<td>717500</td>
<td>64575</td>
<td></td>
</tr>
</tbody>
</table>

Table 4-2
Above bar chart may help to arrive at the following significant findings:

1. Above chart shows the per month sales of Pepsi Co soft drink bottling in Islamabad/Rawalpindi region and RGB per month, and we can see sales are fluctuating according to season but there is miniature fluctuation in RGB.

2. Return Glass bottles of Pepsi Co is quite better as shown as figure in 1st month there is 1069500 cases has been sold and RGB of this month is 746850 which 70% of sold cases.

3. There is still a huge gap between selling cases and retrieval of RGB in market its about 30% empty bottles has left in market of Islamabad/Rawalpindi region.

4. In this point Pepsi co we can see that Pepsi Co is failed to retrieve an empty bottles from market.

5. Pepsi co should enhance their retrieval process of empty return bottles.
Analysis

Above bar chart may help to arrive at the following significant findings:

1. As we seen on Return glass bottles there is factor of damages as well, data showed us that every 100 bottles there is 9 bottles are damaged.

2. These damages causes a major impact on return process because the more damages you have the more most you have to bear on it

3. For reusability these damages has to go throw with some major cost including transportation cost, repairing cost and waste of time, to minimize these waste company should focus on its retrieval safety process so that they curtail this cost.

Figure 4-4
Analysis

Above bar chart may help to arrive at the following significant findings:

1. Above chart describes the comparative bar of coca cola beverages and Pepsi co, according to chart sales of coca cola in Islamabad/Rawalpindi region is less than Pepsi co, despite of Coca cola is number of selling brand in all over the world but in Pakistan Pepsi has more sales as compare to coca cola.

2. Return Glass bottles retrieval system is efficient in Pepsi co, its about 70% RGB rate in Pepsi and 60% retrieval rate in coca cola, its one of the reason why Pepsi industry have largest sales than coca cola.

3. Graph clearly showed that Pepsi has 30% empty bottles roving in market and Coca cola has 40% empty bottles roving in market.
4. So we can say that if Soft drink bottling companies has less number of empty bottles in market it increase the chances to improve their sales.

![Bar Chart]

**Figure 4-6**

*Analysis*

Above bar chart may help to arrive at the following significant findings:

Above chart is comparative bar of Damages against Return of Glass bottles. Coca cola has bit large number of damages as compared to Pepsi co.

1. About 11% of damages are facing by Coca cola beverages and 9% of damages are facing by Pepsi co in Islamabad/Rawalpindi region.
2. Due to less number of damages Pepsi co is able to sustain in Pakistan market leader, it shows that the less damages company has in result in increase in sales.
Primary Data

For primary we have conducted an in-depth structured interview from both companies official, I have asked 10 different question related to study, in coca-cola I have interviewed with Mr.Ashfaq Ahmed butt, he is a Distribution manager in Coca-cola beverages Pakistan limited Islamabad, and in Pepsi I have interviewed with Taimoor Ali Khan, he is an logistics Manager in Pepsi co Pakistan limited.

The very first question that I have asked is about the current logistics and reverse logistics model of your company? In answer to this question coca cola responded said In Gujranwala coca-cola company has Manufacturing setup, in which they forward finished product to their depot sales center located in peripheral of Islamabad at sihala road in which they have huge setup of

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>COCA COLA BEVERAGES LIMITED</th>
<th>PEPSI CO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reusability</strong></td>
<td>Coca cola has 60% rate reusability after treatment.</td>
<td>Pepsi has 70% rate of reusability after treatment.</td>
</tr>
<tr>
<td><strong>Empty bottles in market</strong></td>
<td>Coca cola has 40% cases in market of Islamabad /Rawalpindi region</td>
<td>Pepsi has 30% empty bottles in market of Islamabad/Rawalpindi region.</td>
</tr>
<tr>
<td><strong>Damages</strong></td>
<td>Coca cola has 11% damages on Return bottles.</td>
<td>Pepsi has 9% damages on return bottles</td>
</tr>
</tbody>
</table>

managing inventory and sales from which they distributes all over Islamabad/Rawalpindi region including azad Kashmir, and for return process it goes to same channel on reverse direction. When the same question asked with Pepsi represented the said they have manufacturing setup in Islamabad region in which they sales and distributes all over distributor in Islamabad/Rawalpindi region including Peshawar and azad Kashmir.

![Logistics Network Of Coca-Cola Beverages Limited](image)

**FIGURE 4-7**
Logistics Network Of Pepsi Co

Figure 4-8

Second question I asked about actors involve in distribution channel of reverse logistics, both answered very much similar that they have three major actors involve in RL channel first is Depot sales point, second is distributor and third one whole seller/retailer.

Third and fourth question I asked about number of distributor and role of distributor in reverse process flow, coca-cola has 150-200 distributors involve all over Rawalpindi/Islamabad region which distributes to whole seller and retailer and involvement of distributor is about 70% of distribution has done by 3PL, 30% distribution done by own company while Pepsi has 110-120 distributors all over Islamabad/Rawalpindi region and involvement of distributor is 90% job has done by outsource distributor while 10% distributor.
Fifth and sixth question I asked about the barriers of practicing of reverse logistic and what will the impact of reverse logistics on quality grade, representative of coca cola has replied that most common barrier we face is slow retrieval of RGB return glass because after treatment of products customer and retailer are not willing to return empty bottles on time ,in answer to same question Pepsi replied that for reverse logistics you need more work force which cost as same as forward logistics, moreover companies normally focus on maximizing their sales ,after sales determination of employees goes down.

In answer to the question of impact on quality grade both companies has replied almost same answer that there is no impact on quality grade of a product in reusing of empty bottles.

Seventh question I asked about the feed back, that Do Reverse logistics help to get feed back from end user and distributor? In answer to this question coca-cola respondent replied that Reverse logistics is one of the best tool of feed back because during retrieval of RGB(return glass bottling you have to have align and connected between with your lower stream partners including customer ,retailer, whole seller, and distributor which gives you continuous information about perception of product, in answer to same question Pepsi co replied that yes ,Reverse logistics make us aware of current situation about market it helps us to generate and forecast future demand it is also a source of evaluation for your distributor and other outsource intermediaries.

In question number eight I asked about what is the shelf life of product and what is the impact of shelf life on RL, in replied to answer both companies gave a similar answer that shelf life of soft drink bottling is about 45-50 days provided good packaging and less leakages, and there is a
impact on reverse logistics because the more shelf life you have you will able to increase safety inventory.

As we know soft drink bottling is a seasonal product as data showed in winter season sale of soft drink bottling goes half down, when I asked question nine about season and its impact on RL they replied due to season and other Islamic months its create a huge impact on demand, which creates the bullwhip effect on supply chain which create a gap between demand and supply, similarly sometimes it create surplus inventory and vice versa, in both situation reverse logistics has been effected, because reverse logistics has a direct impact on demand the more empty bottles roving in market, RL process peace increase simultaneously, exactly same answer we got from Pepsi co respondent.

Final question I asked about the main cause of implementing reverse logistics in reply to answer both companies respond and agreed that due to four major reason RL is in practice one main reason is refilling because it's a cheapest process as compared to develop new one, second reason is expiration due to completion of shelf life soft drink get expire which has to be return anyway, third reason is forecasting error, in this case sometimes on one point supply could be excessive to compensate between sales point RL process has to be implement to facilitate demand and supply and fourth reason is leakages due to hot season company face leakages problem, because due logistical loading, unloading process bottles get leakages which cause a factor to return these products.
Comparative analysis of primary data of Coca-Cola and PepsiCo

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coca-cola Beverages limited</th>
<th>Pepsi co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution channel</td>
<td>• Coca-cola has four major actors in distribution channel included Depot sales point, distributor, whole seller, and retailer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• They have 150-200 distributor in Islamabad /Rawalpindi region</td>
<td>• Pepsi has three major actors involve distributors, whole seller, and retailer</td>
</tr>
<tr>
<td></td>
<td>• 30% distribution has been done by own company while other 70% distribution has been outsourced</td>
<td>• Pepsi has 120 distributor in Islamabad /Rawalpindi region</td>
</tr>
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<td></td>
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<td>• 90% of distribution has been outsourced by Pepsi and only 10% has done by Pepsi.</td>
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<tr>
<td>Barriers of implementing RL</td>
<td>• Slow retrieval of RGB from market</td>
<td>• RL needs extra work force and management to retrieve empty bottles from market</td>
</tr>
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<td></td>
<td>• After consumption end user not concern to return empty bottles</td>
<td>• Its time consuming</td>
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<td></td>
<td>Retailers are not willing to return empty bottles on time</td>
<td>process which effect on forward logistics as well</td>
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| **Shelf life and its effect on RL** | • Shelf life of Coca-cola soft drink is about 45-50 days also depend on season  
• Shelf life has major impact on reverse logistics the more you contain shelf life more you have safety inventory | • Shelf life of Pepsi is about 50-55 provided cool temperature  
• By increasing shelf life you can decrease the RL process. |
| **Feed back** | • Reverse logistics is one of the best tool of feedback because during retrieval of RGB(return glass bottling you have to have align and connected between with your lower stream) | • Reverse logistics make us aware of current situation about market it helps us to generate and forecast future demand it is also a source of evaluation for your distributor and other outsource intermediaries |
partners including customer, retailer, whole seller, and distributor which gives you continuous information about perception of product

Conclusions and Recommendation

Recommendations

- From the findings it is evident that Reverse logistics is a crucial part of any organization specially those who are indulge in soft drink sector, study showed that Reverse logistics can play a vital role to get competitive edge in industry, without any doubt we can say that soft drink company should implement appropriate framework in their system.
- Secondly Company should define their critical success points of RL and create a appropriate framework for implementing in your system.
- Study has defined critical points including damages, reusability, empty bottles in market Feed back, Distribution channel, shelf life, and barriers of implementing reverse logistics, by focusing on these critical variables once can draw a optimum framework of their organization.
• Soft-drink manufacturer should give a primary focus to Distribution channel, and they should distribution channel auditing and see where leakages in your distribution channels are. Selection of new distributor is one of the major decisions as well, company should select that distributor who are fully equipped with technology and have state of the art distribution network.

• Study tell us that RGB Return glass bottling process is a major part of RL network, if a company wants to create efficient RL network then they should increase the rate of retrieval of empty bottles.

• Company can also decrease the cost by prolong the shelf of a product, for increasing shelf life of product company should give shorter travelling point and facilitate vehicles by introducing refrigerated containers. Its not only increase shelf life of a product but also being a reason of great quality.

• Reverse logistics is one the great source of feedback, most of the multi national companies are using RL as a source of feedback, because it provides you current time feedback every day, but its vary to organization to organization how to conceive these feedbacks, its very important for a company to listen customer in order to growth and survival. so company should take RL as an source of Feedback.

**Appropriate framework for Reverse logistics in Soft drink industry**

After analysis study found some critical points of success of reverse logistics in soft drink industry by keeping mind these variables, soft drink manufacture can make a efficient and effective frame work.

Following is the appropriate framework for Soft drink bottling industry according to figure, collection of RGB should be greater than 80% and after washing and inspection damages should
be less than 5% all these operation should be regulated by MRP manufacturing resource planning.

For feedback their should be a lean connection between major actors of distribution channels, and this feedback should cater for under CRM customer relationship management, at the same time CRM should be updated their feedback from customer, distributor and whole seller.

![Diagram](image)

Figure 5-1
Conclusion

Our study showed that soft drink bottling industry has bearing loss due to lack of knowledge about RL, after analyzing this study we come to know that what are major critical failure point of soft drink bottling and industry and in which area they have to focus.

Study tell due to slow rate of retrieval of empty bottles in market soft drink manufacturer has to buy new empty bottles which is quite expensive approach to minimize this cost manufacturer should focus on RL process so that they can increase their retrieval process, manufacturer should increase RGB rate at least to 75%, by increasing not only manufacturer safe this cost moreover it is also tend to increase safety inventory. Empty bottles in market showed that how much your reverse logistics is failed to attain empty bottles back to point of origin, study showed that less quantity of empty bottles shows efficiency of RL of a company.

In return processing Damages has a huge impact in logistics, damages shows two important factors one is either your logistics handling system is inappropriate or your glass quality is not better, in both ways RL cost increase.

In Reverse logistics distribution channel has an important part, although Coca-cola has more than 150 distributor and Pepsi co has 110 distributor but sales of Pepsi is larger than coca cola, it shows that distributor selection is a very critical part in Logistics.

After analyzing current trend of RL in soft drink industry study showed that Companies indulge in soft drink industry is facing huge problem in implementing reverse logistics, including requirement of work force, less determination after sales etc, study proved that by implementing lean Reverse logistics system in your logistics network and by focusing on critical success point you can increase your sales and maximize profit as well, RL also help company to innovate according to the perception of your end customer, because RL help manufacture r to get
continuous connection between major stake holders of supply chain management which gives you real time feedback, and if companies analyze and customize these feedback it help company to get competitive edge in market, as we seen that Pepsi co has quite better RL process in their system that’s why Pepsi is a larger seller in Pakistan despite of Coca-cola is number selling in the world.
References

Anindya Roy (2003), Faculty Associate with ICFAI Press. How Efficient is Your Reverse Supply Chain? CFAI Press


