UNIVERSITY OF PETROLEUM & ENERGY STUDIES DEHRADUN

Dissertation Report

On

"Analysis and improvement of outbound logistics of Varun beverages limited"

Under the Guidance of:

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Batch 2013-15

<u>CERTIFICATE</u>

This to certify that the project titled **"ANALYSIS AND IMPROVEMENT OF OUTBOUND LOGISTICS OF BEVERAGE INDUSTRY" "CASE ON VARUN BEVERAGES"** submitted to University of Petroleum & Energy Studies, Dehradun, by Gaurav.S, in partial fulfillment of the requirement for the award of degree of Masters of Business Administration (Logistics & Supply Chain Management), is a bonafide work carried out by him under my supervision and guidance. This work has not been submitted anywhere else for any other degree. To the best of my knowledge, he has made an earnest and dedicated effort to accomplish this project.

I wish him all the best for his future endeavors.

Prof. R.K.Mandan

College of Management & Economic Studies,

University of Petroleum & Energy Studies,

Dehradun

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CERTIFICATE OF ORIGINALITY

This is to hereby state that this report is very original in every sense of terms and conditions and it carries a sense of credibility and belief and that no shortcuts have been taken and I remained both rigorous and attentive during the research work. I have put in my level best to keep this work as informative and precise as possible.

It may also state here that during the preparation of this report some information has been taken from a gamut of professionally shared information and knowledge, a detailed description of which has been mentioned in the references chapter of this report.

Dated:

Signature:

Gaurav Shivdasan

MBA (Logistics & Supply Chain Management)

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ACKNOWLEDGEMENT

"It is not possible to prepare a project report without the assistance &

Encouragement of other people. This one is certainly no exception."

On the very outset of this report, I would like to extend my sincere & heartfelt

obligation towards all the personages who have helped me in this endeavor.

Without their active guidance, help, cooperation & encouragement, I would not have made headway

in the project.

I am ineffably indebted to **Mr. R.K Mandan** for conscientious guidance and encouragement to accomplish

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I also acknowledge with a deep sense of reverence, my gratitude towards my parents and member

of my family, who has always supported me morally as well as economically.

At last but not least gratitude goes to all of my friends who directly or indirectly helped me to complete

this project report.

Any omission in this brief acknowledgement does not mean lack of gratitude.

Gaurav Shivdasan

MBA-LSCM

CoMES, UPES

EXECUTIVE SUMMARY

The intention of this report is to explain the actual practices of outbound logistics of Varun Beverages.

The report is basically of a Thesis **Project** and hence followed a descriptive mode of research methodology by acquiring information from primary and secondary sources.

First chapter of this report deals with the introduction of the outbound logistical practice in soft drink industry and the importance of outbound logistics in the industry.

Chapter 2 includes the history of the company, practice of outbound logistics in Varun Beverages, its distribution networks and its distribution process w.r.t the distribution channel and the strategy it adopted.

Next chapter tell about the operation of VBL plant1, its production capacity, its warehouse storage capacity and transportation planning.

Chapter 4 is the inferences which are made by the observed data and questionnaire, interview with industry expert.

Chapter 5 includes the problem identified by observing the operation of VBL and also by the questionnaire, interview of the experts.

Last chapter include the potential solution to the problem identified to increase the efficiency of outbound logistics of VBL.

TABLE OF CONTENT

Problem Definition

The study focuses on the issues of outbound logistics of the Varun beverages limited.

Business Problem

- Shipping delays of finished goods.
- Pilferage of finished goods in transit.

Research Problem

- Inefficiency in logistical network.
- Mismatch in supply and demand and its cause.

RESEARCH QUESTIONS

1. How the efficiency could be increase in outbound logistics?
2. What are the measures for improving transportation efficiency in Varun beverages?
3. What are the practices followed by Varun Beverages in outbound logistics?
4. What are the factors effecting the outbound logistics?

RESEARCH OBJECTIVE

- To identify issues in outbound logistics process in beverage industry (Varun Beverages) and provide a solution for improvement and optimization of supply chain.

RESEARCH METHODOLOGY:

The Purpose is to present the research design that will be used to conduct **Descriptive Research** for this study.

Sources of Data	Primary, Secondary
Sampling plan	Convenient sampling
Sampling unit	Varun beverages plant 1
Method of data collection	Interview with industrial expert , observations, research papers and articles
Limitations	may not be possible to implement on every beverage industry

LITERATURE REVIEW:

Authors	Context	Inferences/ Parameters
Lisa terry (April 2008), Inbound logistics	Beverage Companies Thirst for Supply Chain Efficiency.	Various problem faced by the company in TMS, WMS also in the forecasting of the soft drinks.
K.H.D Kumara Siri, Dr.Shiromi Arunathilak	Effective Logistics Process for the Soft Drink Industry	Understanding of supply chain collaboration among distribution channel
Anil Kumar Mishra	STUDY OF DISTRIBUTION CHANNEL STRATEGY OF PEPSICO FOR THE POSITIONING OF THE PRODUCT IN VARANASI"	Strategy, channel used in the distribution of the product to increase the efficiency of the supply chain .

Introduction

The logistics process of a business will determine the long term success of itself to a greater extent. For an industry like Soft Drinks which is highly competitive, the logistics process acts a vital role. Since there are so many competitors trying to increase their market share it is always required to place the right product in the right place at the right time.

In order to meet this challenge both inbound and outbound logistics processes should be configured and tuned to be working at the optimum level.

Support Activities	Firm Infrastructure				
	Human Resource Management				
	Technology Development				
	Procurement				Margin
Inbound Logistics	Operations	Outbound Logistics	Marketing and Sales	Service	
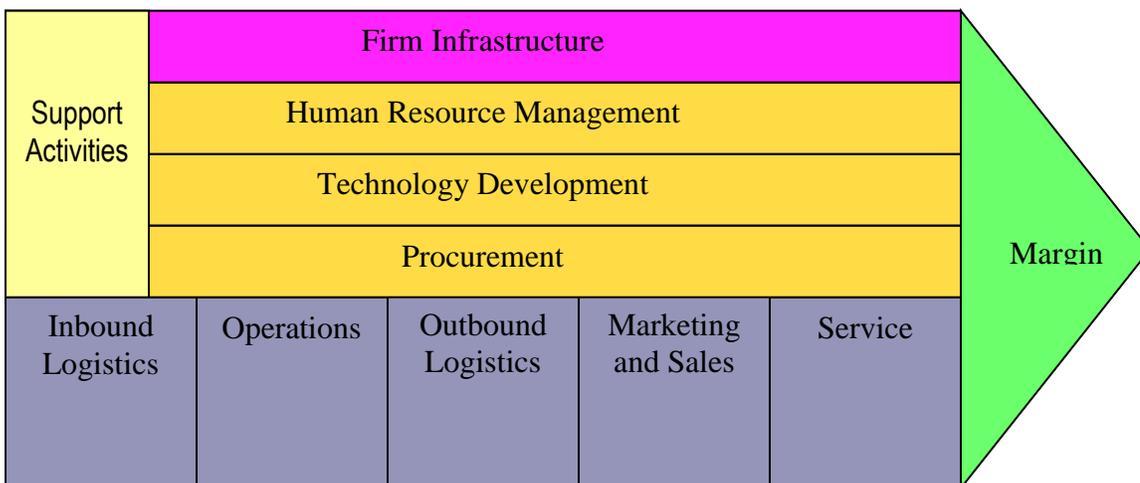
The generic value chain is a tool to identify ways to create value for the customer. This model proposes that every firm is a synthesis of activities performed to design, produce market, deliver and support its product. In order to be more precise only the primary activities in the value chain of the soft drink companies are analyzed..

<u>Primary Activities</u>:

<u>Inbound Logistics</u> – This involves bringing and procuring raw materials for the business. For the carbonated drinks industry only two raw materials are required, they are water and the concentrated salt that is used to produce the final product. For this purpose water is extracted from the ground and the concentrated salt is provided by the soft drink companies to their plant.

<u>Operations</u> – Operations primarily includes all the bottling plants which manufactures the finished goods for further process.

<u>Outbound Logistics</u> – The Outbound logistics of soft drink companies can be divided into three stages. First the finished product from the bottling plants is sent to the depot or the territorial office, from where it is sent to the C & F centers and the Distributor Points according to their demand. From the C & F centers and Distributor Points the product is sent out for sale in the market to the retailers.

<u>Marketing and Sales</u> – The sales and distribution network of soft drink companies are very strong and comprise of different layers and a dedicated sales force. To keep the company abreast with competition and to provide support to its channel partners and to increase the sales, company puts lot of effort in its marketing activities. This includes maintaining excellent relations with its channel partners, making huge investments in Advertising, signing of Megastars as its brand ambassadors, sponsoring various events, launching promotional for any launch or re launch of a product.

Among all the primary activities it is important for all the soft drink industry to make their outbound logistics efficient which could help them to improve the supply chain and create greater margin. Outbound logistics which primarily involves in the transportation of finished goods from the plant to the customers with different distribution channels the below figure shows the general distribution network of soft drink manufacturing industry.

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                    │     COMPANY     │
                    └─────────────────┘
                      ↙             ↘
          ┌──────────┐               ┌──────────┐
          │   COBO   │               │   FOBO   │
          └──────────┘               └──────────┘
                │    ↘             ↙       │
                │      ┌──────────────┐    │
                │      │  WAREHOUSE   │    │
                │      └──────────────┘    │
                ↓           ↓              ↓
     ┌──────────┐                    ┌──────────────┐
     │   C & F  │                    │  DISTRIBUTOR │
     └──────────┘                    └──────────────┘
            ↓                               ↓
     ┌──────────────┐              ┌──────────────┐
     │   SALESMEN   │              │   SALESMEN   │
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  ┌──────────────┐  ┌──────────┐  ┌──────────┐
  │  WHOLESALER  │  │  SLUMS   │  │ RETAILER │
  └──────────────┘  └──────────┘  └──────────┘
           ↘          ↙                  ↓
         ┌──────────────┐          ┌──────────────┐
         │   RETAILER   │          │   CUSTOMER   │
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         │   CUSTOMER   │
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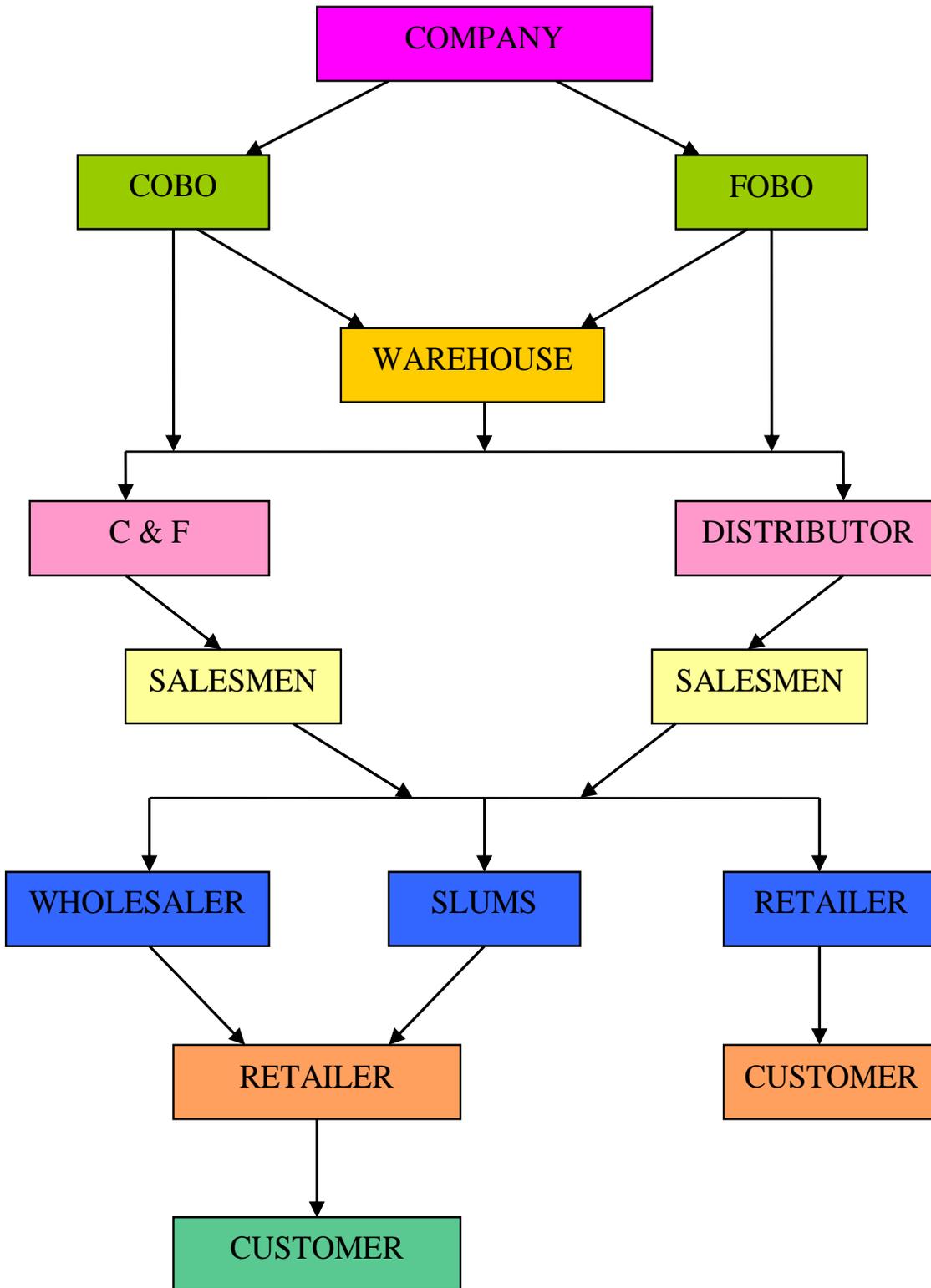
History of Varun Beverages:

Ravi Jaipuria Group has the distinct honor of being the biggest bottler in India of the global giant Pepsi Co. Ravi Jaipuria-promoted RJ Corp is one among of PepsiCo's top three franchise bottlers in the world. RJ Corp's growing clout in the PepsiCo business.

RJ Corp has been associated with PepsiCo since the latter's entry into India. In 1991, a license agreement was signed between the two companies and RJ Corp became PepsiCo's largest Bottling business partner in India through its entity, Varun Beverages Ltd (VBL).

It controls near about 50% of Pepsi's bottling business in India. The Group has been managing a network of scores of distributors and simultaneously proving employment to thousands of people. With state–of–the-art technology and plants equipped with the latest machinery, the Jaipuria Group has occupied a remarkable position in the soft drink industry of India. The company has created a stronghold across the country.

It acquired the beverage maker's entire franchisee bottling operations in Morocco for an estimated $100 million in one of its largest acquisitions that gave it access to the entire North Africa market. Close to 50-55% of RJ Corp's overall business comes from PepsiCo. The group, with a turnover of $1 billion, expects to close 2013 on a turnover of $1.5 billion.

Standard Chartered Bank's private equity arm invested $78 million in two tranches for about 8 percent in Varun, valuing the bottling unit at close to $1 billion. Jaipuria is planning to take the company public "either later this year or in 2014.

Varun Beverages manages 13 PepsiCo bottling plants across Haryana, Western UP, Rajasthan, the North East, Goa and Delhi-NCR. Overseas, RJ Corp operates PepsiCo bottling operations in Nepal, Sri Lanka, Mozambique, Zambia and Morocco. RJ Corp has been consolidating its position as a scale PepsiCo bottler both in India and overseas, especially Africa that is seen as the next growth frontier for consumer companies. PepsiCo's franchisee bottling business contributes about Rs1,500 crore to the Jaipuria group, and the majority of the bottling operations have been consolidated under group company Varun Beverages.

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Varun Beverages Ltd. is the flagship company of the group. The group manufacturers and markets carbonated and non-carbonated soft drinks and package drinking water under the Pepsi brand umbrella. The portfolio includes iconic refreshment brands Pepsi, 7 UP, Miranda and Mountain Dew, in addition to low calorie options such as Diet Pepsi, hydrating and nutritional beverages such as Aquafina drinking water, Juice based drinks- Tropicana, Tropicana Twister and Slice. Also Lehar soda among local brands. The Total turnover of the beverage division is about 800 crores with 52% market share.

VBL has selling & distribution rights in territories of East Delhi, Western U.P., part of M.P., Half of Haryana, Whole of Rajasthan, Goa, 3 districts of Maharashtra, North East and entire country of Nepal. The group has in total 13 bottling & manufacturing plants in India & Nepal and is responsible for producing and marketing 50% of Pepsi's business in India.

The details of the products manufactured by the companies are:

1. Pepsi Cola (200 ml, 600ml, 2..25 ltr)
2. Mirinda Orange (200 ml, 600ml, 2..25 ltr)
3. Mirinda Lemon (200 ml, 600ml, 2..25 ltr)
4. Mountain Dew (200 ml, 600ml, 2..25 ltr)
5. 7 UP (200 ml, 600ml,2.25 ltr)
6. Pepsi-Atom (200 ml)
7. Slice (200 ml, 250 ml,350 ml ,500 ml, 1.2 ltr, 1.8 ltr, Slice Tetra 200 ml)

Outbound logistics in Varun beverage:

The outbound logistics of Varun beverages is extensively complex as its distribution management has two different phases which includes.

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          ┌─────────────────────┐
          │  Outbound logistics │
          └─────────────────────┘
                    │
          ┌─────────────────────┐
          │    Distribution     │
          └─────────────────────┘
              ┌─────────┴─────────┐
    ┌───────────────────┐  ┌───────────────────┐
    │ Warehousing/Storage│  │   Trasportation   │
    └───────────────────┘  └───────────────────┘
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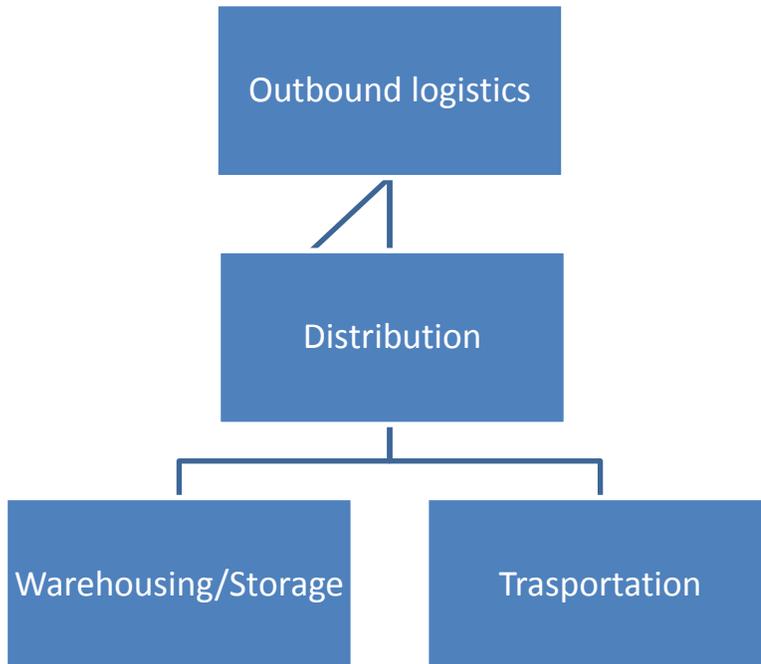
DISTRIBUTION NETWORK OF VARUN BEVERAGES:

The distribution network of Varun beverage is well known for its efficiency but company constantly strives for the betterment of their distribution network system. Emphasis of our study was to focus on the customer of company i.e., the retailers
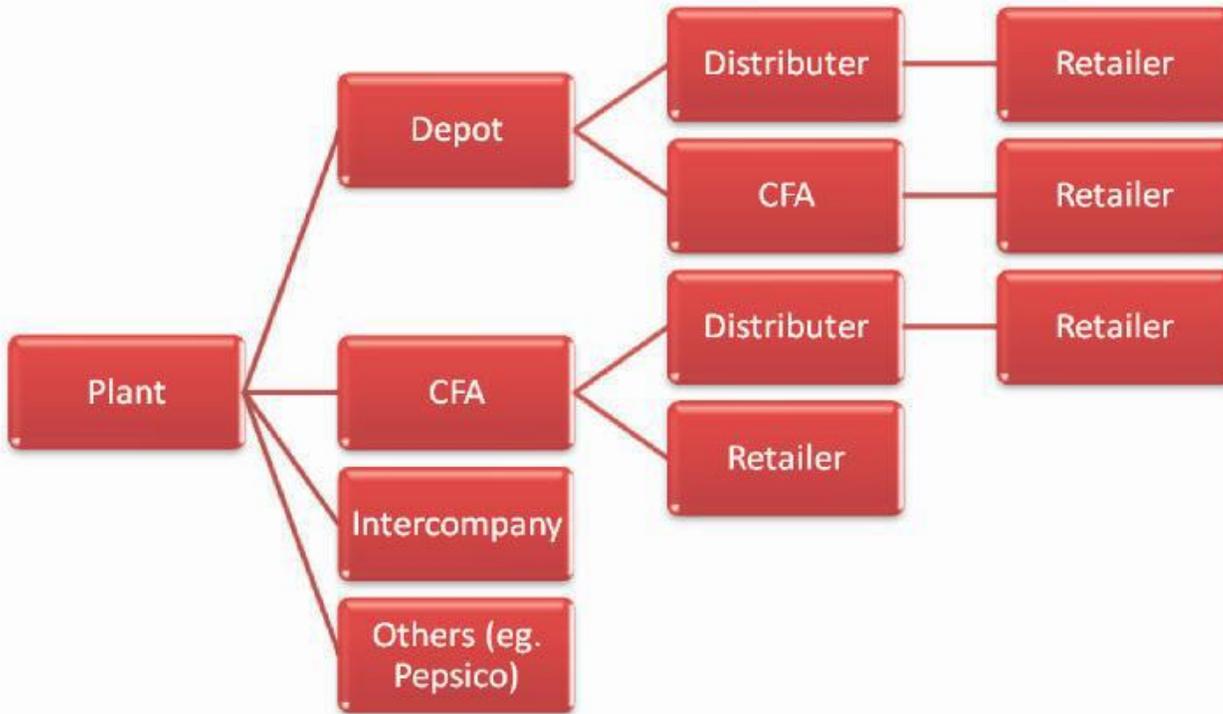
Distribution process of Varun beverages:

- Order of finished goods placed by the Depot, Dealers, and Distributors of Varun beverages through "E-MAIL". Demand Planning Manager who is responsible for maintaining get the order and balance between demand and supply.
- SAP has implemented in the VBL. They use the SAP to check the current status which is updated from the plant.
- Stock checking according production details and if require placed the order to prepare new stock. This work has to be done by Demand planning manager.
- According to demand, production team prepares the stock.
- Stock sends to warehouse and arrange it First In First out basis. Warehouse manager gives the details of all available stock to the shipping department. Actually they maintain a stock record book and provide the details to the relative department through **SAP.**
- Order of the Depot & Distributors and available stock checks by shipping department on **SAP.**
- According to their order they arranged the vehicle.
- They give the first preference to their own vehicle.
- In the peak season they arranged some transport company's vehicle.
- Manage the loading and unloading of products in the vehicle by FORKLIFT.
- Shipping department makes the Bill of products which is going to transport and also issue challan & form.
- Driver gets the 3 documents which are Bill, challan, form (if require) from the shipping department on the time of dispatching.
- Gateman checks the all the documents, stamped on them, make exit entry and gives the permission to the vehicles to go out.
- Vehicle driver after dispatching reached their location means distributors, depot.
- Drivers have to submit challan, bill and driver gets the receipt from the unloading place.

Distribution Strategies:-

A Company can choose any of the following distribution types: -

- Exclusive Distribution
- Selective Distribution
- Intensive Distribution

"PEPSI" HAS ADOPTED THE INTENSIVE DISTRIBUTION STRATEGY.

Intensive Distribution:- A Strategy of intensive distribution is characterized by placing the goods or services in as many outlets as possible. When the consumer requires a great deal of location convenience, it is important to offer greater intensity of Distribution. This strategy is generally used for convenience items such as Tobacco, gasoline, and soap, snack foods & bubblegum. Manufactures are constantly tempted to move from exclusive or selective distribution to more intensive distribution to increase their coverage and sales and you could find Pepsi in nursing homes, confectionery shops, departmental stores; you name it & Pepsi is available there.

Distribution Channel:-

The Greater Noida plant operates through a well-established network of a number of Depots, C&F and distributors. The company has three types of delivery systems.

- **Primary Distribution**
- **Secondary Distribution**
- **Tertiary Distribution**

Primary Distribution: The Distribution process which starts from the plant and deliver products at the depot. The processes in which products are directly deliver from plant to the distributors & C&F are known Primary-Secondary Distribution. Primary Distribution is basically stock transfer from the plant to depot for better serving and feeding of product to the distributors and C&F. In primary distribution the focus is on one product delivery with maximum load.

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Secondary Distribution: The Distribution process which starts from the depot and deliver products at the distributor & C&F location. In secondary distribution the mixing of the product can be done as per the order requirement.

Tertiary Distribution: The distribution process which starts from the depot and C&F and deliver product to the retailers

Varun Beverages Limited Greater Noida Plant serves mainly following depots, C&F and HUBs.

Depots:

1. Dadri
2. Daurala
3. Rourke

C&F Location	No. of C&F
Noida	2
Ghaziabad	2
Sahibabad	1
Meerut	2
Saharanpur	1
Bulandshar	1
Dehradun	2
Total	12

HUBs

- Jwalapur
- Bulandshar
- Hapur
- Saharanpur
- Bagpat

VBL OPERATIONS:

Dependency for products (Plant-1Greater Noida):

- Western U.P
- U.P/M.P
- Haryana
- Rajasthan
- Delhi

Plant 1 production capacity:

Production line capacity is the amount which single production line of a particular SKU in a plant can produce within a day.

UNIT 1 has four different production line in a same unit which produces different SKU`s with different capacity .viz.

➢ Line 1(PET) :- Carbonated drinks (600 ml,2 ltrs,2.25ltrs)

➢ Line 2(PET):-Non Carbonated drinks, Slice (350 ml,600 ml, 1.25 ltrs,1.75ltrs)

➢ Line 3(RGB):- Non Carbonated drinks, Slice(200ml,250ml,300ml)

➢ Line 4(RGB):- Carbonated drinks(200ml,250ml,300ml)

VBL PLANT 1 CAPACITY		BPM(BOTTLE PER MIN)	BPH(BOTTLE PER)	BPD(BOTTLE PER)	NO. OF CASES	ACTUAL CA
LINE NO. 1 PET(CARBONATED)						
PEPSI,DEW,MIRINDA,7UP	600 ML	300	18000	432000	18000	13 TO 14K
	2 LTR	200	12000	288000	32000	24 TO 26K
	2.25 LTR	180	10800	259200	28800	20 TO 24K
LINE NO. 2 PET(NCB)						
SLICE	600 ML	250	15000	360000	15000	12 TO 12.5K
SLICE	1.2 LTR	180	10800	259200	21600	15 TO 17K
SLICE	1.75 LTR	150	9000	216000	18000	15K
NIMBOOZ	350 ML	260	15600	374400	15600	11 TO 12K
LINE NO. 3 GLASS(NON-CARBONATED)						
	200 ML	320	19200	460800	19200	12 TO 13K
	250 ML	300	18000	432000	18000	12 TO 13K
LINE NO. 4 GLASS(CARBONATED)						
PEPSI,DEW,MIRINDA,7UP	200 ML	400	24000	576000	24000	18 TO 19K
	300 ML	370	22200	532800	22200	17 TO 16K

Thus according to different line capacity including CIP(cleaning in process) maximum production of plant can be calculated ,taking maximum production capacity of each line would give the number of inventory to be stored.

Thus total production of a plant when all four lines are running continuously would be:

$= \sum$ (max line 1+max line 2+max line 3+max line 4)

=25000+15000+12000+18000

=70000 cases/day

Therefore replenishment time could be calculated:

= [total storage space/total production per day] days

= 120000/70000

= 1.71 ~ 2 days

Warehouse/Depots:

Warehouse of plant 1 has a given structure, also the other 3 depots has common structure with different storage capacity and space utilization.

Storage capacity:

warehouse/depot	area(feet ^2)	no of pallet	no of cases	type
VBL PLANT 1	17928	2988	119520	mechanised
VBL PLANT 2	25951	4324	172960	mechanised
SURAJPUR	24120	4020	160800	mechanised
DAURALA	9000	1500	60000	manual
ROORKEE	4500	750	30000	manual

Space utilization:

To improve the efficiency of holding and movement of finished goods space utilization plays the major role in any inventory holding area or warehouse. Therefore calculation of maximum space utilization is done and compared with the standard efficient space utilization of palletized and non-palletized warehouses.

Actual space utilization of plant1 warehouse is 3.33 cases per square feet as calculated.

*Efficiency of space utilization: (Actual space acquired by raw materials/ total area of Ware-house) * 100*

Standard space utilization efficiency:

Type of warehouse	Storage area	Movement area
Palletized	60% - 70%	30% - 40%
Non-palletized	80% - 90%	10% - 20%

=67% (space is acquired by finished goods)

Other 33% space is used for material handling like forklift.

Transportation :

Routing and scheduling-

Varun beverages uses mainly use 4 type of self-owned as well as contracted trucks viz.

Types of truck	Volume carrying capacity
Trolla	1300
LP	850
Canter (1109)	650
Tata 407	500

Distance and time taken from VBL plant 1 to other C&Fs ,Depot:

	DISTANCE(1way in kms)	TIME
Surajpur	6	15 min
Dadari	15	1-1.30 hours
Rourke	200	5-6 hours
Jwalapur	250	6-7 hours
Muzzaffarnagar	160	5-6 hours
Hapur	60	2 hours
Saharanpur	210	6 hours
Bulandshar	50	2 hours
Bagpat	90	4-5 hours
Noida	25	1 hours
Ghaziabad	40	1.30-2 hours
Sahibabad	40	1.30-2 hours
Meerut	85	3 hours
Dehradun	300	8-10 hours

LOADING AND UNLOADING TIME REQUIRED –

Min loading time – 1 hour

Max loading time - 1.30 hours

Min unloading time – 1.30 hours

Max unloading time – 2 hours

- 2-3 labors required for completing this min and maximum loading time.
- 3-4 labors required for completing this minimum and maximum unloading time.

Total time from greater Noida plant 1 to C&F, Hubs and Depots including unloading, loading and waiting time :

	One way distance time	Unloading time	Loading time	Extra time including waiting and gate pass	Overall time(Total 2 way time)
Surajpur	20 min	2 hours	1.30 hours	2.30 hours	12 H 40 M
Dadari	2 hours	2 hours	1.30	2.30	16 H
Rourke	6 hours	2 hours	1.30	2.30	24 H
Jwalapur	7 hours	2 hours	1.30	2.30	26 H
Muzzaffarnagar	6 hors	2 hours	1.30	2.30	24 H
Hapur	2 hours	2 hours	1.30	2.30	16 H
Saharanpur	6 hours	2 hours	1.30	2.30	24 H
Bulandshar	2 hours	2 hours	1.30	2.30	16 H
Bagpat	5 hours	2 hours	1.30	2.30	22 H
Noida	1 hour	2 hours	1.30	2.30	14 H
Ghaziabad	2 hours	2 hours	1.30	2.30	16 H
Sahibabad	2 hours	2 hours	1.30	2.30	16 H
Meerut	3 hours	2 hours	1.30	2.30	18 H
Dehradun	10 hours	2 hours	1.30	2.30	32 H

MINIMUN ROUNDS AND CAPACITY –

	1 Round time (overall)	Total time including shifting(add 3-4 hours in overall time)	Total round per month	Total average capacity per month
Surajpur	12 H 40 minutes	16 H	24*30/16 = 45	45000
Dadari	16	20	24*30/20 = 36	36000
Rourke	24	28	24*30/28 = 26	26000
Jwalapur	26	30	24*30/30 =24	24000
Muzzaffarnagar	24	28	24*30/28 = 26	26000
Hapur	16	20	24*30/20 = 36	36000
Saharanpur	24	28	24*30/28 = 26	26000
Bulandshar	16	20	24*30/20 = 36	36000
Bagpat	22	26	24*30/26 = 28	28000
Ghaziabad	16	20	24*30/20 = 36	36000
Noida	14	18	24*30/18 = 40	40000
Sahibabad	16	20	24*30/20 = 36	36000
Meerut	18	22	24*30/22 = 33	33000
Dehradun	32	36	24*30/36 = 20	20000

Transportation planning 2015:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Volume	496,437	409,103	1,309,020	1,773,622	2,153,457	1,346,052	883,254	1,005,016	983,987	728,140	293,698	170,952	11,552,736
Less:- Direct to Depot/Customer													
Aqua	25,308	20,457	42,290	29,051	35,406	27,565	19,681	26,911	28,671	23,509	23,517	19,459	321,824
Can	7,307	9,834	23,371	20,492	27,444	18,272	11,993	9,710	13,168	19,140	10,077	3,736	174,544
PMX	2,451	565	1,385	1,098	2,222	2,620	2,552	1,920	2,490	1,125	1,547	773	20,748
Net Volume Plant(1 & 2)	461,370	378,248	1,241,974	1,722,980	2,088,386	1,297,595	849,028	966,474	939,659	684,365	258,557	146,985	11,035,620
Volume in First 10 Days	92,274	75,650	248,395	344,596	417,677	259,519	169,806	193,295	187,932	136,873	51,711	29,397	2,207,124
Volume in Last 20 Days	369,096	302,598	993,579	1,378,384	1,670,709	1,038,076	679,222	773,179	751,727	547,492	206,845	117,588	8,828,496
Requirement													
Avg Per C/s	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Total Vehicle Load													
1st 10 Days	92	76	248	345	418	260	170	193	188	137	52	29	2,207
Last 20 Days	369	303	994	1,378	1,671	1,038	679	773	752	547	207	118	8,828
Avg Per Day Volume	14,149	11,600	38,087	52,838	64,044	39,793	26,037	29,639	28,816	20,987	7,929	4,508	338,426
1st 10 Days	9,227	7,565	24,839	34,460	41,768	25,952	16,981	19,329	18,793	13,687	5,171	2,940	220,712
Last 20 Days	17,576	16,811	47,313	68,919	79,558	51,904	32,344	36,818	37,586	26,071	10,342	5,599	430,842
Total	26,803	24,376	72,153	103,379	121,325	77,856	49,324	56,148	56,380	39,758	15,513	8,539	651,554
Lead Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days	2 Days
Vehicle Requirement													
1st 10 Days	9	8	25	34	42	26	17	19	19	14	5	3	221
Last 20 Days	18	17	47	69	80	52	32	37	38	26	10	6	285

Availability	*No. of Vehicle in 2014*	*In 2013*	
Ashish	6	38	
New Daurala	40	40	675
Satish	18	18	540
SBT	6	6	60
Amrit pal	15	15	
Total	*85*	*117*	

| *Own Vehicle*		*Avg Load*	
Trolla	10	1200	
LP	3	900	
Canter	4	500	*Avg Load*
Total	*17*	*16700*	*982*

Dispatch system in Varun beverages:

The dispatch system in Varun beverages is done by company owned vehicles and by the transporters. The total dispatch operation includes the following things:

- **Reporting of trucks at factory gate**: Trucks report at the factory gate and after noting their truck no. and quantity it passed inside for unloading of empties.
- Empty order generated from the shipping department and empties are unloaded from the truck.
- After unloading the loading slip is given for the loading of the trucks. Before giving loading slip following checks done in shipping department.
- Check the sales order.
- Check the payment confirmation from the party.
- Loading slip generated for no. of cases to be load.
- After loading of the vehicle the loading slip submitted to the shipping department and then all the documentation part is done. And invoice given to the truck and truck will be released from the plant.

## Vehicle turnaround time in VBL Plant 1:

The Turnaround time is calculated inconsideration by entry of the truck in the plant gate and exit of the truck from plant gate with the load after invoicing. Thus turnaround time is 4.2 hours.
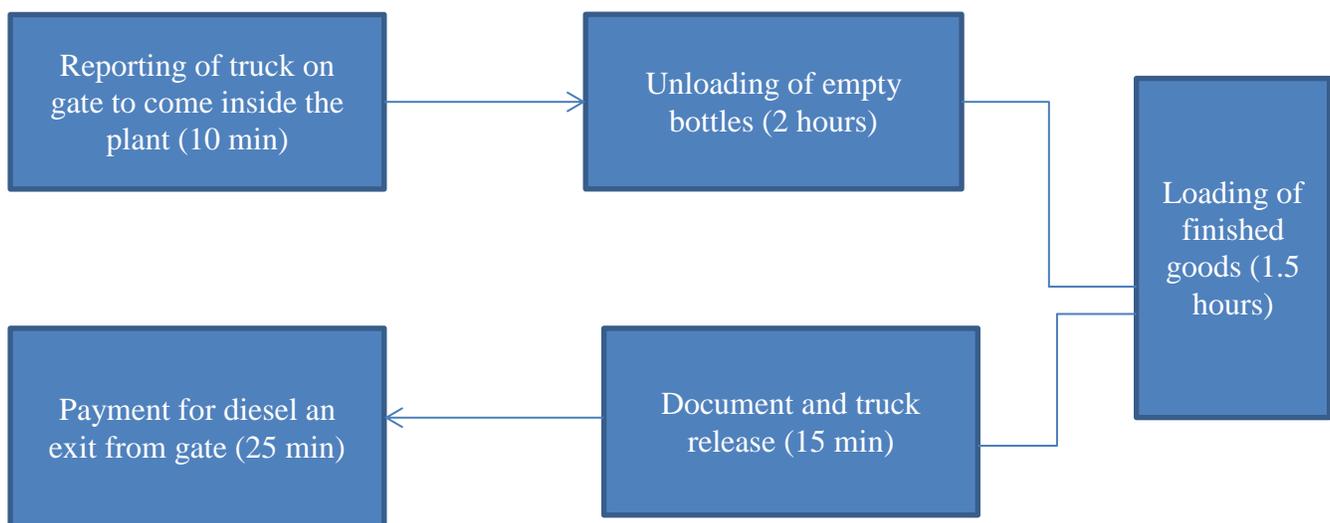
- **Inferences:**

Varun beverages practices traditional way of warehousing as well as distribution system , data is observed and the following inferences can be made from the observed data .

1. Annual operating plan is made for the year 2014 for the western U.P which is mentioned in the given annexure, it shows the trend of the forecasted demand for that given year and it shows the season trend which is high in the month or March, April, May, June. Seasonal hike in the AOP also shows the increase in the inventory level.
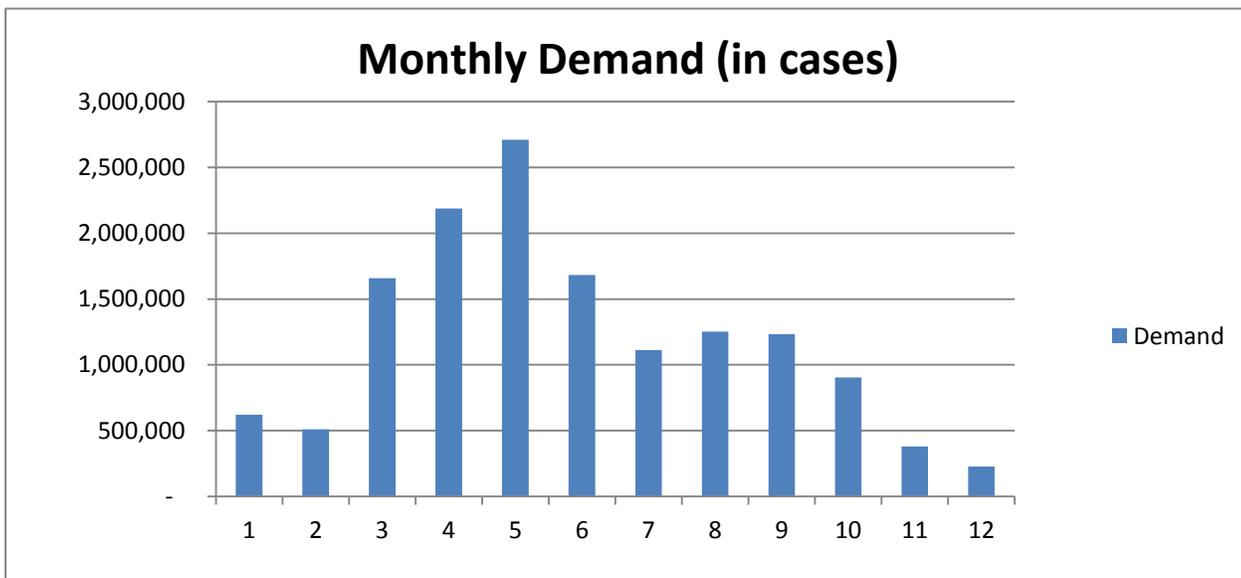

In the given figure x axis shows the month in number and y axis shows the monthly demand in cases , which show the trend of demand in 1st month then gradually it increases in the month of March , April, May ,June and then demand goes down by the end of the season.

2. VBL plant 1 has a production capacity of 70000 cases per day operating with its maximum capacity distributed to the various geographical area, hence with the increase in demand and in order to serve to the retailer on time plant should increases the warehouse capacity and thus control its inventory, as by the given data it has a replenishment time of 2 days which could leads to mismatch in demand and

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supply.

3. Space utilization capacity and efficiency of the plants warehouse, depots and hubs are less than standard space utilization efficiency for palletized as well as non-palletized warehouses which could create inefficiency in outbound logistics.

4. Varun beverages uses four different types of self-owned and transporter's truck to carry out distribution to its different depot, hubs, C&Fs , thus routing and scheduling is done on the basis of given transport planning for the year for the western U.P, in accordance with the demand for the given month in the given year truck is scheduled . From the given data it can be seen that there is lead time of 2 days, it could also been seen that the number of truck carrying the volume decreases in 2015 from year 2014.there is also a variation in the volume flow of demand in first 10 days and other 20 days in the given month which tend to the increase in the first 10 days of the month.
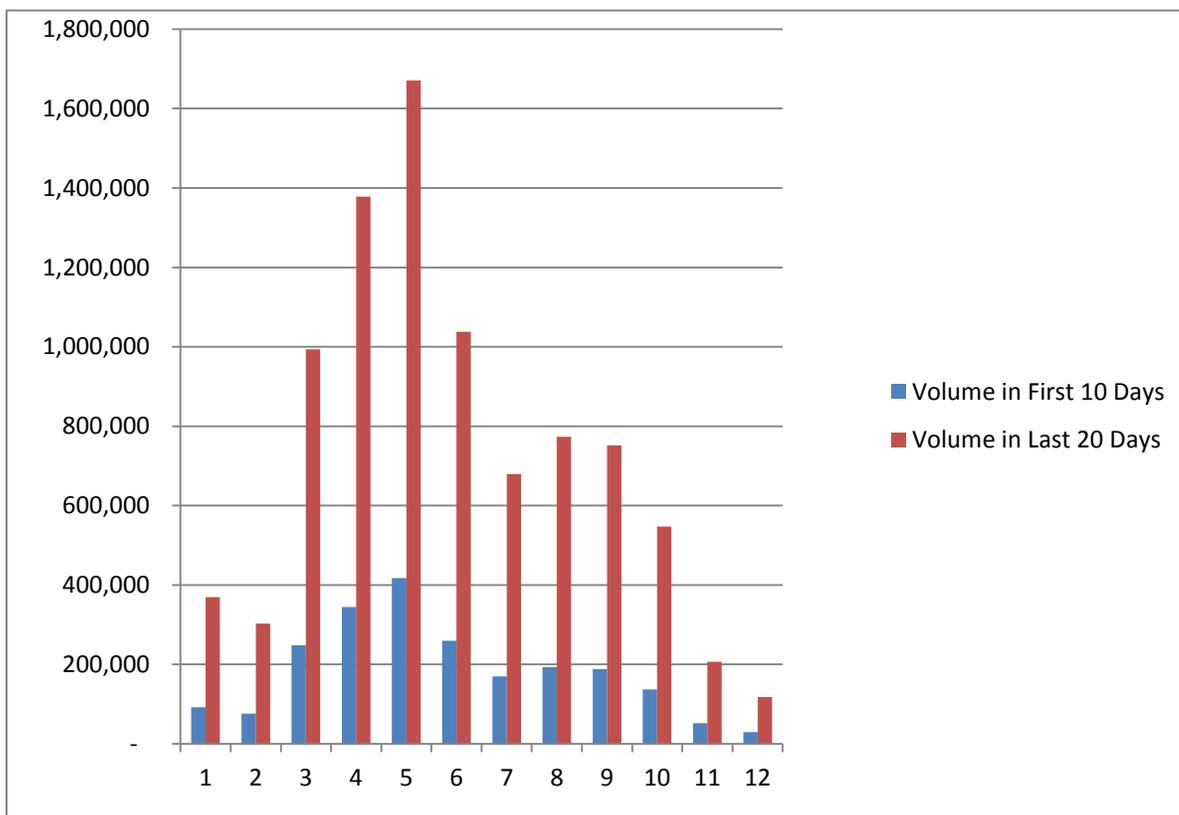
5. Vehicle turnaround time calculated and observed is 4.2 hours for the VBL plant 1 which could increase the time of shipping from the time order is been placed. Various issues has been observed which increases the turnaround time of the vehicle which leads to the inefficiency in logistical network.

Inference from questionnaire:

Meanwhile a questionnaire has been made and used as the research tool for the collection of data for the outbound logistics of the VBL, AVP supply chain has interviewed and the following information has been collected.

1. Annual forecasting is done by YAGO method which is done by increasing the last year demand with the certain rate. Sometimes demand is forecasted on the basis of lifting trend as it done on the basis of variation in demand of particular month for the particular days hence it can be changed in relation with the ordered volumes.

2. Push-pull strategy is used in order to match the uncertainty in demand

3. There is a bullwhip effect in the supply chain from the retailer side as it increases with the change in pricing policy and the scheme issued by the company for the retailers. Thus certain action should be implemented to reduce the bullwhip effect.

4. 2 days stock is carried in plants and depot as well as 5 days stocks are carried in each C&Fs to restrict uncertainty in demand in the supply chain.

5. According to the industrial experts there are various challenges faced in warehousing of finished goods.

Maintaining of FEFO reports for large SKUs is quite difficult.
FEFO report of SKUs of different MRP is difficult.

Maintaining FEFO for SKUs of different territory with different promos.

6. Company doesn't have a centralized physical structure of logistical activities as it could increase the complexities, thus they have dispersed network. The current logistical structure in general might increase the complexities as increase in demand could lead to increase in storage capacity.

7. Routing and scheduling is also create problems as there is a variation in timely order to come, also time taken between margin of orders and vehicle placement is 2 hours which could lead to delay in supply.

8. Major cost includes in distribution of finished goods are:

1. Empty vehicle return.
2. Loading and unloading labor charges.
3. Cost of pallets.

There is certain pilferage of products in transit which could also leads to increase in the cost but it is so minimal comparing with large demand.

Problem identified:

1. Increased inventory level:

   There is an increased in inventory level in the monthly demand as initial first 10 days has less demand and last 20 days of the month has increased in demand which leads to the inefficiency in distribution channel.

2. Bullwhip effect:
   Due to improper information sharing among the trading partners and fluctuation in schemes given to the retailer bullwhip effect is created.

3. Pilferage of finished goods in transit:
   Improper handling while loading and unloading, severe environmental conditional could leads to pilferage of finished goods.

4. Lesser storage capacity:
   With the increase in demand the storage capacity of the warehouse, depots is facing problem which lead shortage in storage of FG.

5. Routing and scheduling:
   Due to change in demand volume in the month, allocating of transporter is an issue, also the variation in timely order leads to routing of trucks.

6. Vehicle turnaround time:
   Time taken inside the plant to unload and load the FG is higher which lead to delay in shipping of products to the depots and C&Fs, which further get delayed to reach to reach the retailers.

Potential solutions:

1. Bullwhip effect could be reduced by two possible ways in VBL.

- Aligning of all the trading partner for information sharing related to demand and supply with the demand planner to know the actual demand raised.

- Introduction of scheme at the same day to avoid excessive supply.

- Less variation in price change as well as scheme changes.

2. Vehicle turnaround time could possibly be improved to reduce shipping delays by various ways:

- Right surveillance system at the gate with adequate infrastructure
- Strict Orderly entry of trucks in the plant area.
- A fixed SOP should to be made for overall dispatch in which no objection will occur from the transporter side.
- A time frame should to be adopting for placing the sales orders.
- High level of Coordination required between gate staff, shipping and loading supervisor.
- Adequate infrastructure to be developed for loading & unloading
- Gate entry register should be filled strictly as per the headings given. Data should be reliable.
- Adequate no. of loader and unloader should be assigned for truck loading & unloading.
- Skilled/experienced manpower for loading and unloading required.

3. Pilferage of FG in transit could be reduced by applying the condition in the contract with the transporter, minimum number of breakage are restricted to particular bottles or else breakage cost is bear by the transporter.

4. Fluctuation of inventory in first 10 days and last 20days could be improved by :

   - Using push strategy by allowing price discounting and schemes in the starting of the month to balance the stock fluctuation.

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Annexure1:

QUESTIONNAIRE

1. What is the various logistical issues VBL face?

    - Increased inventory level
    - Increased overhead
    - Shipping delays
    - Bullwhip effects

2. Which method you use to forecast demand?

3. What is the accuracy of the yearly forecast?

4. What could be the alternate method of forecasting demand?

5. Is there any bullwhip effect in the supply chain?

6. What action is taken to reduce the bullwhip effect?

7. Which strategy you follow for your product?

   - Push strategy (for stable demand)
   - Pull strategy (demand uncertainty)
   - Push-pull strategy

8. Is there a clear information sharing amongst your trading partner?

9. Is there any frequency in scheme?

   Yes   No

10. How do you take care of situation of shortage of product?

11. Are there any return policies for the retailers?

   Yes   No

12. What are your various storage locations?

13. What is the average stock carried in each location?

14. What are problems faced in warehousing of FG and how do you eliminate it?

15. Will the logistical structure in general increase in complexity in the future?

   Yes   No

16. Will your company adopt a more centralized physical structure of the logistical activities?

Yes   No

17. Will your company adapt more centralized logistics regarding management and decision making?

Yes   No

18. Will your company outsource more outbound logistical activities in future?

Yes   No

Distribution

19. What are the problems faced on routing and scheduling?

20. Is there a problem on on-time –delivery of FG? And how will you eliminate it?

21. What is the major cost includes in distribution of FG?

22. Is there any pilferage of product in transit? And what are the measures to improve pilferage problems?