

REDUCTION OF TURNAROUND TIME FOR OUTBOUND LOGISTICS IN COCA COLA BEVERAGES

Submitted in partial fulfillment of the requirements for the award of

Master of Business Administration

by

NEELAKANDAN K

Register No: 39410136



SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE
Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600 119**

April - 2021



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SCHOOL OF BUSINESS ADMINISTRATION

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **NEELAKANDAN K 39410136** who carried out the project entitled “**Reduction of Turnaround time for outbound logistics in Coca Cola beverages**” under my supervision from January 2021 to March 2021.

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Dean – School of Business Administration

Submitted for Viva voce Examination held on _____.

Internal Examiner

External Examiner

HR/HCCB/2021

29th Mar 2021

To whom so ever it may Concern

This is to certify that Mr. K Neelakandan from Sathyabama Institute of Science and Technology, had undergone his Project starting from 16/12/2020 to 15/03/2021.

During the above period he was sincere, methodical and focused on his work under guidance and supervision of Mr. Padmanabhan K – Team Leader - Shipping.

His performance conduct and his contribution to the company during the period were commendable.

Regards, .

For Hindustan Coca-Cola Beverages Private Limited,



Ragavendran P B

Factory HR Manager

DECLARATION

I **NEELAKANDAN K 39410136** hereby declare that the Project Report entitled **“REDUCTION OF TURNAROUND TIME FOR OUTBOUND LOGISTICS IN COCA COLA BEVERAGES”** done by me under the guidance of **DR. DHIVYA SATHISH** and **PADMANABHAN K** at COCA COLA BEVERAGES PRIVATE LIMITED CHENNAI is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE:

PLACE:

NEELAKANDAN K

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I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

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NEELAKANDAN K

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ABSTRACT

Outbound logistics is the process of storing, transporting and distributing goods to customers. The outbound logistics process starts with a customer sales order, moves on to warehouse packing and ends with product delivery. To make outbound logistics run smoothly, businesses must pick the right distribution channels, maintain a sensible inventory stocking system and optimize delivery options. A business goes through several stages in the outbound logistics process. The sales department first receives a purchase order from the client. The sales department checks inventory availability to ensure they can fulfil the order.

The sales department then sends the customer order to the warehouse for picking and packing. The order is shipped and a warehouse clerk updates inventory levels. The business bills the client and eventually collects cash for the order.

TAT is the time taken by the transport vehicles to complete the whole process of loading finished goods, starting from the point of entry to its exit from the factory.

The main objective of the study is to reduce the TAT timing in outbound logistics and increase the overall efficiency for COCA COLA plant located in Nemam, Chennai. This will achieve by analysing various trucks timing from Gate reporting to Gate exit. By examine various sub process involved in TAT we can able to find the idle time for each process and eliminating the redundant time. Finally providing valid suggestion for increasing the efficient TAT process.

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ABBREVIATIONS

- ❖ TAT – Turnaround time
- ❖ TMS – Transportation management system
- ❖ CPM – Critical Path Method
- ❖ PDSA – Plan Do Study Act
- ❖ GI – Gate In
- ❖ GO – Gate Out
- ❖ DMC – Driver Management Centre

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION ABOUT THE STUDY

Logistics is widely known as the process of coordinating and moving resources such as equipment, food, liquids, inventory, materials and people from one location to the storage of the desired destination. It was originally a military-based term that was used to describe how the military force obtained, stored and moved equipment and supplies. In the supply chain and business sense, logistics is the management of the flow of things between the point of origin and consumption, so to fulfil the requirements of consumers or corporations. The logistics of the aforementioned resources involve the integration of production, packaging, warehousing, transportation, security, materials handling and information flow.

As a business owner, you want to produce quality goods in optimal conditions, while reducing waste, errors, inventory and labor. That's why it's important to have an in depth understanding of logistics activities and what they entail. This will ensure a reliable, controlled flow of materials, which, in turn, will increase your company's performance and will eliminate unnecessary expenses.

1.1.1 IMPORTANCE OF LOGISTICS

Effective supply chain and logistical procedures are important as they reduce costs and maintain & increase productivity. Substandard logistics on the other hand lead to late deliveries, failure to meet consumer requirements and in the end, ultimately causing the business to crumble. Consumers consistently demand better service, and this has prompted supply chain role players to aim to provide fast, accurate and quality service. Logistics management is responsible for making certain that this aim materializes, and that customer satisfaction is established.

Logistics management is also crucial for creating visibility into any company's supply chain. As historical data is analyzed and the movement of goods is tracked in Real-time by advanced transportation management systems (TMS), logistics uses this information for process optimization and the avoidance of potential disruptions.

Additionally, supply chain visibility creates ground for major cost savings in operations. Proper logistics management procedures increase revenue and give businesses control over inbound freight; allow for the organization of the reverse flow of goods; keep inventory at optimal levels; and utilize freight moves on the proper transportation modes. These factors all contribute to cutting costs.

Supply

Supply management deals with the planning and coordination of materials needed in a specific location at a specific time in order to provide support to production or activity. Supply logistics must have transportation of the materials and storage along with plans in place for evaluating the level of supply during different stages of the process; making sure that the flow of materials aligns with the need.

Distribution

Distribution is about managing how a supplied and stored material is then sent out to the locations where it is needed. The process includes issuing of material movement (loading, unloading and transportation), tracking of stock, and accountability of use (noting down how the supply is used and by whom).

Production

This type of logistics management oversees the stages of combining distributed supplies into a product. This can entail coordination of a manufacturing or assembling process and in the case of applications such as military production, the logistics of coordinating space and areas for production to take place. In construction, production logistics will include the staging of material to coordinate with the phase of building taking place.

Reverse

Reverse logistics management handles the recalling of material and supplies from a production or assembly process. In the logistics management of a construction project for example, reverse logistics plans for the removal of excess material and re-absorption of the material into a stock supply.

1.1.2 TYPES OF LOGISTICS

- Inbound logistics
- Outbound logistics
- Reverse logistics

Inbound logistics

The inbound logistics process refers to the influx of raw materials from suppliers to manufacturing facilities. It involves various activities, such as the storage and distribution of raw materials and parts that are going to be used in production. It also includes sourcing the materials, tracking inventory and optimizing the movement of goods from suppliers to the store, warehouse or manufacturing plant. This is the first stage in the value chain.

In summary, the process of bringing in purchased goods into the company is known as inbound logistics. However, if the movement of goods is from the manufacturing company to its customers or other companies, this process is called “outbound logistics“. Inbound logistics, therefore, focuses on the incoming goods i.e. the inflow of goods from suppliers into the warehouse.

The types of goods or items that are transported through this logistics flow are raw materials. Some could be tools for manufacturing or consumable products needed for fuel or various spare parts and components for production inputs. Better Inbound Logistics management makes the cycle more efficient and integrative.

An excellent way to manage inbound logistics is to use automatic ordering or order-fulfillment systems. With this, you can be sure that it will directly impact the organization's success.

The Importance of Inbound Logistics

An effective inbound logistics program can result in higher quality products, more cost savings and increased sales. It will also improve customer satisfaction, while also reducing total overhead and wasted materials.

If you're in control of the inbound logistics process, you'll be able to secure reduced carrier rates, which will ensure greater accuracy over inventory management. Every dollar allocated to product storage, transportation and management will be invested wisely, which will help increase your ROI in the long run.

For example, a company that sells dietary supplements wants to make sure its goods are properly stored after production and delivered to its warehouse in optimal conditions. Otherwise, their chemical structure might change, which could affect customers' health, which may lead to expensive litigation, which could affect the company's reputation.

Outbound Logistics

Outbound logistics, on the other hand, involves the flow of finished products from a company to its customers or end users. These activities are mostly related to distribution channels and customer service.

Let's say your sales department receives an order from a customer. Next, it will check the company's inventory to make sure the product is in stock and then send the order to the warehouse for packaging and delivery to the client.

As a business owner, you can employ an in-house team to handle these activities or outsource them to a service logistics company. For example, if you own a small firm, you may not afford to lease or purchase your own warehouse and hire an entire team. In this case, it makes sense to outsource outbound logistics.

Outbound Process

A business goes through several stages in the outbound logistics process. The sales department first receives a purchase order from the client. The sales department checks inventory availability to ensure they can fulfill the order.

The sales department then sends the customer order to the warehouse for picking and packing. The order is shipped and a warehouse clerk updates inventory levels. The business bills the client and eventually collects cash for the order.

Channels of Distribution

In lieu of working directly with the consumer, many businesses use channels of distribution. The channels of distribution are the companies and individuals that deliver a product or service to the final user. For example, a company that manufactures prepackaged meals may have a variety of supermarkets and grocery stores in its channels of distribution.

The channel of distribution stores the product, promotes the product and arranges for its sale. Part of outbound logistics is choosing channels that will maximize revenue. This means choosing distributors that promote the product in line with branding, have good logistics systems themselves and cater to the right type of customer.

Inventory Systems

In order to make the outbound process run smoothly, businesses have to have a functioning inventory system. If a business overstocks inventory, products may become antiquated or obsolete. If a business doesn't stock enough inventory, it runs the risk of losing customers.

Companies can use past data to project future demand and stay in touch with distributors about future needs. Businesses can use a "just in time" inventory system in which they manufacture and order materials and products just in time for delivery to customers.

Delivery Optimization

An important component of outbound logistics is optimizing shipping and delivery. A system of barcode scanning and inventory tracking allows the business to continually update the customer on the status of the order. The business usually has a variety of shipping options to choose from, including how to deliver the product itself. Businesses must choose the shipping option that is cost efficient, ensures the goods aren't damaged in transit and can deliver within the allotted time frame.

Reverse logistics

As you may have already guessed, reverse logistics refers to the movement of items or goods from the end-users back through the supply chain to the appropriate party concerned. This occurs in the event of returns or with products that may need servicing or repairs, refurbishing, resale, recycling, recovering, or for proper disposal (in the fact a product cannot be recycled due to certain elements and must be broken down safely and appropriately).

This flow encompasses all of the activities carried out after the point of sale or the end product life cycle. This process is most common in the automobile and electronics industry.

Again, using the same car parts example that we have been rolling with, a specific part may be faulty when fitted into a consumer's vehicle. This part will need to be sent back to the manufacturer for replacement or repair—this will move through the reverse logistics flow.

1.1.3 INTRODUCTION ABOUT TAT

Turnaround time is defined as the time taken by the transport vehicles to complete the whole process of loading finished goods starting from the point of entry to exit from the factory premises.

Turnaround time (TAT) is a measuring metrics concept to evaluate a production's operation throughput. This concept defines the amount of time taken to fulfill a request. The goal is to deliver the final product to the customer in the shortest TAT while ensuring the proper allocation of resources and saving cost/ times and making higher profits. There are several reasons that the TAT can increase in warehouse operation for e.g.: workers are not working properly and following the process, and if the maximum efficiency could not be reached, the process would be delayed. Secondly, improper infrastructure could be an obstacle for the TAT reduction.

TAT is further classified as internal and external TAT. Internal TAT is responsible for all the activities carried out inside the plant and external TAT is responsible for all the activities carried out outside the plant, this project is for detailing the internal TAT.

Turnaround time is probably the most important key performance indicator in any logistics operation. TAT is the time taken by the transport vehicles to complete the whole process of loading finished goods, starting from the point of entry to its exit from the factory premises.

1.1.4 IMPORTANCE OF TAT

Turnaround time is important of both manufacturer as well as distributor. It can save time for distributing the products to end of the customer.

There are more financial profit while minimizing the TAT time.

It can be helpful for,

- Continuous flow of distribution in most effective manner
- Help to increase the production
- Increase distributor order
- Customer satisfaction
- Helpful for driver to make the process comfortable
- Achieve large target,
- Standardized timing,
- Easy problem identification

In this study, it is necessary to ensure that products are delivered to clients at the right time while preserving high-quality standards from the beginning to the end of the supply chain.

Transportation choice has a large impact on supply chain efficiency and responsiveness as it is responsible to physically move the inventories from one location to another. Information is potential driver of supply chain as it analysis data from provided facilities, inventory and transportation. The information provides management to make decision beneficial for company. Sourcing provides choice for various interdependent activities. Pricing determine the charges of goods and services as it affects the behavior of buyer.

Short turnaround time is economically advantageous, making the most efficient use of time and materials. Thus CPM method is used to find the delays in activities which lead to high vehicle TAT. An activity is said to be critical if a delay in its start will cause a further delay in the completion of the entire project.

1.1.5 CPM

Critical Path Method (CPM) is one of the basic deterministic methods of the network analysis. Its aim is to determine the duration of the project based on the critical path length, which is a sequence of interdependent activities with the least float. CPM allows to facilitate effective time coordination of individual, mutually consecutive activities within the project.

Critical Path

The critical path is defined as the (time) longest possible path from start point to end point of the chart. Each project has at least one critical path. Each critical path consists of the list of activities to which the project manager should focus the most, if he wants to ensure timely completion of the project. Date of the completion of the last task on the critical path is also the date of the completion of the project.

Logistics being a part of SCM is essential and applicable to all types of industries and services viz. manufacturing, retail, health care, service sector, transportation etc. Turnaround time is probably the most important key performance indicator in any logistics operation. TAT is the time taken by the transport vehicles to complete the whole process of loading finished goods, starting from the point of entry to its exit from the factory premises.

1.1.6 TYPES OF LOGISTICS ORGANISATION

Essentially, if goods are being transported or stored, that's a logistics process. There are many types of logistics businesses, including

In-house logistics

Some wholesalers, retailers and other large organizations may have their own in-house logistics function

Logistics Service Providers (LSPs)

Companies that provide management over the flow of goods and materials between points of origin to end-use destination. The provider will often handle shipping, inventory, warehousing, packaging and security functions for shipments.

Third-party logistics (3PL)

These are specialist logistics providers who offer a suite of services to a range of clients, for example freight by air, rail or road, or specialized transport and storage facilities, like cold storage

Benefits of using 3PL provider

- Cost reduction
- Scale up or down as needed
- Provide a better customer experience
- Test new markets

Reverse logistics

Reverse logistics is the set of activities that is conducted after the sale of a product to recapture value and end the product's lifecycle. It typically involves returning a product to the manufacturer or distributor or forwarding it on for servicing, refurbishment or recycling. Reverse logistics is sometimes called aftermarket supply chain, aftermarket logistics or retrologistics. Some logistics businesses only store goods and don't get involved in transportation. Like other supply chain management (SCM) processes, reverse logistics can be made more efficient and profitable with better planning, management and execution, and is a key component of service lifecycle management.

Courier shipping

These logistics providers deliver products to end customers and specialize in last mile deliveries.

1.2 INDUSTRY PROFILE

1.2.1 ABOUT NON ALCHOLI BEVERAGES

Non-alcoholic beverages also known as virgin drinks are non-intoxicating drinks which doesn't contains alcohol as yeast is not introduced to convert sugar into alcohol during the process of fermentation. They are aseptically packed and marketed in bottled or canned forms, example aerated waters, mineral water, juices, squashes, syrups, etc. A non-alcoholic beverage is defined in the U.S. as a beverage that contains less than 0.5% alcohol by volume. Various types of non-alcoholic beverages are available as on today. Tea, coffee, fermented and non-fermented milk, fruit and vegetable beverages, herbal juices like parsley, holy basil, Aloe vera, mint, pursuance, rosemary, cilantro, tarragon, dill, etc., juices from oil seeds like coconut, sesame seed, badam, carbonated beverages, etc.

The non-alcoholic beverages manufacturing market consists of sales of beverages that do not contain any alcohol by entities, it is further segmented into carbonated drinks and non-carbonated drinks.

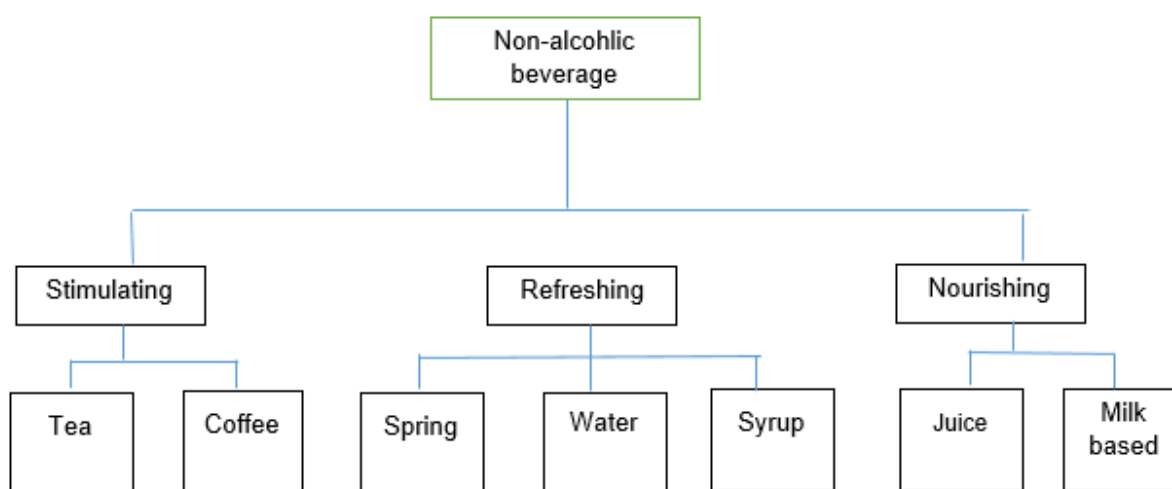
The term 'beverages' refer to all kinds of potable drinks which have thirst quenching refreshing stimulating, and nourishing properties. Beverages are consumed mainly to quench thirst, compensate loss of body fluid due to perspiration, feel fresh and active, as rituals, during social gatherings, and during and after eating. Food service operators deal with a wide range of beverages to satisfy the requirements of guests before, during and after meals and at any time of the day.

Some non-alcoholic beverages provide instant energy after exertion from sports/games or other activities. They prevent dehydration and help in maintaining blood volume in case of bleeding, heat stroke, vomiting, excess sweating or diarrhea.

In this unit we will concentrate on all the basic non-alcoholic drinks, which may be taken as a single drink or modified and mixed to make it tastier, refreshing and a new appearance. We will read about tea, coffee, juices, squashes, cordials, mixed drinks etc.

Where you will also know about the basics of these drinks and how these can be taken in different ways and enjoyed. Certain ingredients in milk like the bromine induce sleep. It decreased body temperature when taken chilled resulting in refreshed feeling.

The global Non-Alcoholic Beverages Market is projected to grow with a significant growth rate of 4.61% from 2019 to 2024 and reach a market value of USD 1073.9 billion by the end of 2024.



1.2.2 NON ALCHOLIC BEVERAGE TYPES

Stimulating drink/beverage- these are consumed to stimulate our mental and physical activities. Ex. Tea and coffee.

Refreshing drink/beverage- These are drinks which are taken to make up for the fluid loss (due to perspiration) of our body. Ex. Nimbupani, water, syrups, soft drinks, tonic water, aerated drinks, squashes, etc.

Aerated drinks- these are beverages that are infused with carbonic gases making the drink fizzy when opened. These beverages are available in different flavors such as lemon, orange, cola, etc. and are available in bottles and cans. Some examples for this category are-soda, Pepsi, Coca-Cola.

Squashes- squashes are concentrated pulp of fruits and are available in bottles. Orange squash, pineapple squash, lemon squash, and mango squash are some examples. These are diluted with the addition of chilled water, mineral water. They are used extensively in making cocktails and mock tails.

Nourishing drink/ beverage- Beverage consumed to provide nutrients to the body. Ex. Milk based products like milk shake, chocolate drinks, juices etc.

Nutrition, the consumption of sugar-sweetened beverages was highest in Mexico. Crop production, farming activities and trade volumes will have to increase in order to meet increased population. Therefore, companies in this market are expected to benefit from rising demand for food and beverage products due to rising population, during the forecast period.

The outbreak of the Coronavirus disease (COVID-19) has acted as a massive restraint on the nonalcoholic - beverages market in 2020 as supply chains were disrupted due to trade restrictions and consumption declined due to lockdowns imposed by governments globally. COVID 19 is an infectious disease with flu-like symptoms including fever, cough, and difficulty in breathing. The virus was first identified in 2019 in Wuhan, Hubei province of the People's Republic of China and spread globally including Western Europe, North America and Asia. Food and beverage manufacturers depend on supply of raw materials from domestic and international suppliers. As many governments restricted the movement of goods across countries and locally, manufacturers had to halt production due to lack of raw materials. Also, restrictions on trade of non-essential goods and fear of contamination through manufacturing facilities contributed to the decline. The outbreak is expected to continue to have a negative impact on businesses throughout 2020 and into 2021.

1.3 COMPANY PROFILE

THE COCA-COLA COMPANY



1.3.1 ABOUT COCA –COLA COMPANY

- **CEO - James Quince**
- **Founder - Asa Griggs Candler**
- **Headquarters - Atlanta, Georgia, US**

The Coca-Cola Company is a nonalcoholic beverage company in the world and one of the world's most recognizable brands. It is home to more than 500 beverage brands, some 20 of those billion-dollar-brands, including four of the top five soft drinks: Coca-Cola, Diet Coke, Fanta, and Sprite. In addition to soft drinks, it markets waters, enhanced water and sports drinks; juice drinks, dairy and plant-based beverages, ready-to-drink teas and coffees and energy drinks.

Other top brands include Minute Maid, PowerAde, Dasani, Honest Tea, and vitamin water. With the world's largest beverage distribution system, Coca-Cola reaches thirsty consumers in more than 200 countries. Nearly 70% of its sales comes from outside the US.

The Coca-Cola Company is an American multinational beverage corporation incorporated under Delaware's General Corporation Law[a] and headquartered in Atlanta, Georgia.

The Coca-Cola Company has interests in the manufacturing, retailing, and marketing of nonalcoholic beverage concentrates and syrups. The company produces Coca-Cola, invented in 1886 by pharmacist John Stith Pemberton. In 1889, the formula and brand were sold for \$2,300 to Asa Griggs Candler, who incorporated The Coca-Cola Company in Atlanta in 1892.

1.3.2 MAJOR COCA- COLA BRANDS

- ❖ Coca –cola
- ❖ Thumps Up
- ❖ Sprite
- ❖ Fanta
- ❖ Maaza
- ❖ Limca
- ❖ PowerAde
- ❖ Smart water
- ❖ Gluco charge
- ❖ Kinley
- ❖ Schweppes
- ❖ Georgia
- ❖ Rim Zim
- ❖ Rani float
- ❖ Minute maid

1.3.3 ANNUAL REVENUE

- ❖ 2020 Revenue: \$33,014
- ❖ Cost Of Revenue: \$13,433
- ❖ Gross Profit: \$19,581
- ❖ Operating Income: \$9,824
- ❖ Income Before Tax: \$9,749
- ❖ Net Income: \$7,747
- ❖ Diluted EPS: \$1.79

1.3.4 OPERATIONS

Coca-Cola manages six operating segments (most of them geographically-based), including Europe, the Middle East, and Africa (EMEA); Latin America; North America; Asia Pacific; Bottling Investments; and Global Ventures.

Its geographic operating segments primarily manufacture and sell beverage concentrates and syrups. North America is the largest geographic segment, accounting for over 30% of revenue; the EMEA and Asia-Pacific regions generate some 15% each, followed by Latin America, which brings in just more than 10% of total revenue.

The shrinking Bottling Investments segment generates 20% of revenue and includes company-owned and consolidated bottling operations, regardless of the geographic location of the bottler. Their company's Bottling Investments operating segment also includes equity income from the majority of their equity method investments. Company-owned or consolidated bottling operations derive the majority of their revenues from the sale of finished beverages.

The Global Ventures operating segment account for over 5% of total revenue and includes the results of the company's Costa, innocent and deaden businesses as well

as fees earned pursuant to distribution coordination agreements between the Company and Monster.

Soft drinks account for about 70% of Coca-Cola's worldwide unit case volume.

Geographic Reach

Coca-Cola Beverage Company sells products in some 200 countries and generates more than 30% of its sales in the US. Outside the US, unit case volume is highest in Mexico, China, Brazil, and India.

Headquartered in Atlanta, Coca-Cola has about 413 offices, plants, warehouses, and other facilities across the globe.

1.3.5 SALES AND MARKETING

Coca-Cola reaches customers through the largest beverage distribution system in the world, made up of company-owned or controlled bottling and distribution operations, as well as independently owned bottling partners, distributors, wholesalers, and retailers.

The Company expenses production costs of print, radio, television and other advertisements as of the first date the advertisements take place. All other marketing expenditures are expensed in the annual period in which the expenditure is incurred. Advertising costs included in the line item selling, general and administrative expenses in their consolidated statements of income were \$4 billion in 2019, 2018 and 2017. As of fiscal 2019 and 2018, advertising and production costs of \$55 million and \$54 million, respectively.

1.3.6 FINANCIAL PERFORMANCE

Net operating revenues were \$37.3 billion in 2019, compared to \$34.3 billion in 2018, an increase of \$3.0 billion, or 9%. The increase was due to worldwide concentrate sales volume and unit case sales volume both grew 2 percent compared to 2018.

Company's net income increased by \$2.5 billion to \$8.9 billion in 2019 compared to \$6.4 billion in the prior year. The rise was primarily due to the increase on their revenue.

Cash held by the company in 2019 decreased by \$2.6 billion to \$6.5 billion, compared to \$9.3 billion in the prior year. Cash provided by operations was \$10.5 billion while cash used for investing and financing activities were \$4.0 billion and \$9.0 billion, respectively.

1.3.7 STRATEGY

The company's objective is to execute their growth strategy centered around disciplined portfolio growth; an aligned and engaged bottling system; and winning with Coca-Cola's stakeholders — all supported by revenue growth management and brand-building initiatives — to become more competitive and to accelerate growth in a manner that creates value for their shareowners.

In addition to the beverage brands the company own, they also provide marketing support and otherwise participate in the sales of other nonalcoholic beverage brands through licenses, joint ventures and strategic partnerships, including, but not limited to, the following:

Certain Coca-Cola system bottlers distribute certain brands of Monster Beverage Corporation ("Monster"), primarily Monster Energy, in designated territories in the United States, Canada and other international territories pursuant to distribution coordination agreements between the Company and Monster and related distribution agreements between Monster and Coca-Cola system bottlers.

Coca-Cola have a strategic partnership with Aujan Industries Company J.S.C. ("Aujan"), one of the largest independent beverage companies in the Middle East.

The company own 50% of the entity that holds the rights in certain territories to brands produced and distributed by Aujan, including Rani, a juice brand, and Barbican, a flavored malt beverage brand.

1.3.8 MERGERS AND ACQUISITIONS

During 2019, the Company's acquisitions of businesses, equity method investments and nonmarketable securities totaled \$5,542 million, which primarily related to the acquisitions of Costa, the remaining equity ownership interest in C.H.I. Limited ("CHI").

Coca-Cola for decades has faced intense competition from PepsiCo Inc. (PEP) and its own cola beverage. But while PepsiCo has expanded into the snack food market, Coca-Cola has stuck to beverages. That hasn't stopped Coca-Cola from diversifying away from its traditional drink. The company has made a number of acquisitions to expand into all corners of the beverage market, especially as soda consumption has declined in recent decades 4 bottled water and energy drinks have been key drivers of new growth, along with products for the expanding ranks of health-conscious consumers. Some top acquisitions are,

Minute Maid

- Type of Business: Fruit Beverages
- Acquisition Price: stock swap worth \$59 million
- Acquisition Date: December 30, 1960

Minute Maid orange juice was first produced by Vacuum Foods Corp. in 1946. It was the first-ever frozen concentrated orange juice product in the U.S. In 1949, Vacuum Foods renamed itself Minute Maid Corp. Just over a decade later, Coca-Cola acquired the company in 1960 in a stock deal worth \$59 million.

Prior to the deal, Coca-Cola had begun to manufacture a soft drink syrup and concentrate under the trademark "Fanta," to be used for making fruit flavored sodas. The acquisition thus eliminated any potential rivalry with Minute Maid. The deal helped

Coca-Cola branch out beyond its traditional cola, and Minute Maid now boasts a suite of more than 100 flavors and varieties of juices, lemonades, and punches.

Costa Coffee

- Type of Business: U.K.-based Coffeehouse Chain
- Acquisition Price: \$5.1 billion
- Acquisition Date: August 31, 2018

The origins of Costa Coffee can be traced back to 1971, when the very first cup of Costa coffee was poured in London. Seven years later, brothers Sergio and Bruno Costa opened their first coffee shop on London's Vauxhall Bridge Road. After expanding outside the U.K. into major cities like Dubai in 1999 and Moscow in 2008, the coffeehouse chain was acquired by Coca-Cola in 2018.

At the time of the acquisition, Costa had nearly 4,000 retail outlets with highly-trained baristas, a coffee vending operation, for-home coffee formats, and a state-of-the-art roastery. The acquisition added a leading brand to Coca-Cola's portfolio with two key attributes: Costa specialized in hot beverages and already had an established global presence.

Energy Brands Inc. (Glacéau)

- Type of Business: Bottled and Enhanced Water
- Acquisition Price: \$4.1 billion
- Acquisition Date: May 25, 2007

Energy Brands, also known as Glacéau, was founded in 1996 by J. Darius Bikoff, who had the bright idea that mixing vitamins and water could make not just a healthy beverage, but a profitable one.

That idea spawned the company, which focused on producing nutrient-based drinks without the excess sugar and artificial ingredients typical of the water-alternative market.

Coca-Cola acquired Energy Brands in May 2007 for \$4.1 billion. The company boasts of popular brands including vitamin water, fruit water. The acquisition strengthened Coca-Cola's expansion into lifestyle beverages, including brands catering to a more health-conscious consumers.

Monster Beverage Corp. (MNST) (minority interest)

- Type of Business: Energy Drinks
- Acquisition Price: Coca-Cola acquires 16.7% stake by making net cash payment of \$2.15 billion, among other steps
- Acquisition: June 12, 2015.

Monster Beverage Corp. traces its origins to a juice company started by Hubert Hansen and his sons in the 1930s. The company started out as Hansen's Juices Inc., selling fresh non-pasteurized juices in Los Angeles. Fast-forward to 2012 when what had become Hansen Natural Corp. was renamed the Monster Beverage Corp.

In 2015, Monster signed a long-term strategic partnership deal with Coca-Cola, which gave Coca-Cola a 16.7% minority stake in the company. As part of the deal, Coca-Cola transferred ownership of its worldwide energy drinks business to Monster and Monster transferred its non-energy drinks business to Coca-Cola.

Honest Tea

- Type of Business: Bottled Organic Tea
- Acquisition Price: \$43 million for initial 40% stake.
- Acquisition Date: February 5, 2008 (initial 40% stake).

Honest Tea was founded in 1998 by Seth Goldman and his then-Yale School of Management professor Barry Nalebuff.

Part of the mission, as laid out in the original business plan, was to offer customers a bottled tea that tastes just like tea. The company grew to \$38 million in sales by 2008.

In the year in which Coca-Cola acquired a 40% stake in the organic bottled tea company for \$43 million.

1.3.9 AWARDS & RECOGNITION

- ❖ Coca-Cola HBC receives Association for Talent Development “Excellence in Practice” Award.
- ❖ Coca-Cola HBC receives 2020 Excellence in Risk Management Award from FERMA.
- ❖ Coca-Cola HBC recognized by Executive Platforms for “Sustainable Supply Chain” -2020.
- ❖ Coca-Cola HBC Wins CIR Risk Management Award – 2019.
- ❖ Coca-Cola HBC recognized as Most Responsible Company in Romania for second year in a row – 2017.
- ❖ Winner at the Finance for the Future awards 2016.
- ❖ Gold for our corporate website at the Digital Impact Awards – 2016.
- ❖ Serious about carbon emissions-2015.
- ❖ Green Manufacturer of the Year – 2015.

1.3.10 THE COCA –COLA SYSTEM IN INDIA



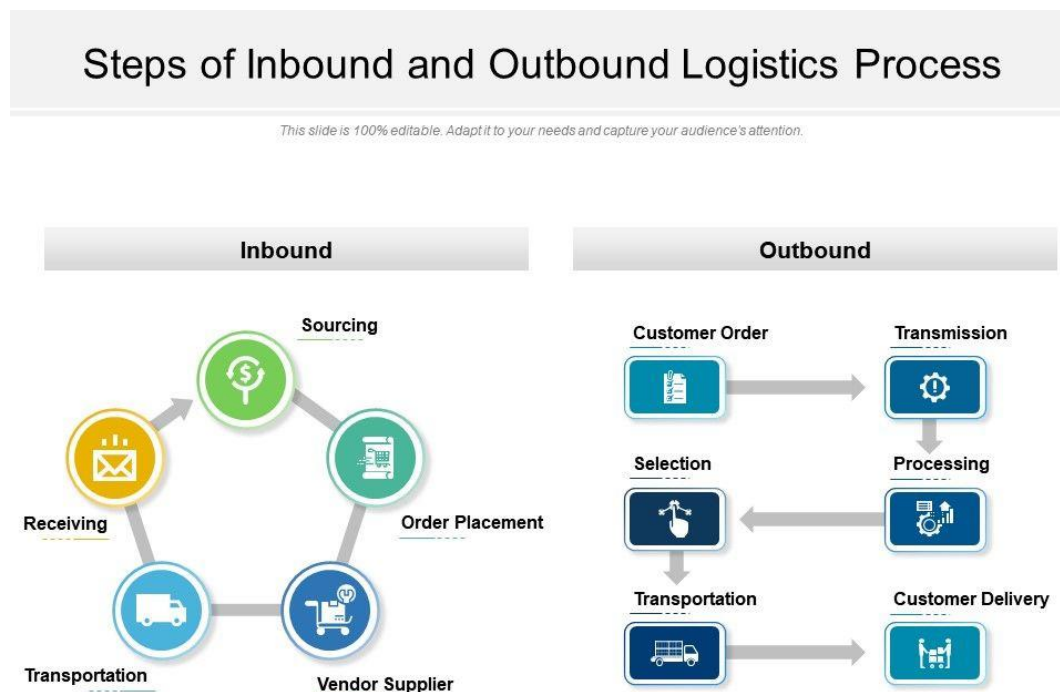
Coca-Cola India Pvt Ltd is a wholly-owned subsidiary of The Coca-Cola which manufactures and sells concentrate and beverage bases and powdered beverage mixes. A Company-owned bottling entity, namely, Hindustan Coca-Cola Beverages Pvt Ltd, thirteen licensed bottling partners of The Coca-Cola Company, who are authorized to prepare, package, sell and distribute beverages under certain specified trademarks of The Coca-Cola Company; and an extensive distribution system comprising of our customers, distributors and retailers are the other pillars of this system.

1.4 NEED FOR STUDY

One of the most important part in supply chain activity is outbound logistics. Outbound logistics refer to the tasks and activities involved with moving the product to the end user. Such logistic duties usually apply to players that operate relatively downstream, which are usually the last party in the supply chain. The duties include the storage of manufactured inventory, the transportation of manufactured goods to the point of sale, and sometimes, the shipping and handling involved to get certain products to the end user.

Turnaround time is probably the most important key performance indicator in any logistics operation. TAT is the time taken by the transport vehicles to complete the whole process of loading finished goods, starting from the point of entry to its exit from the factory premises.

1.4.1 PROCESS FLOW



1.4.2 OUTBOUND LOGISTICS PROCESS FLOW

1. Order Entry, Adds, Changes, and Deletions

When the inbound process is handled correctly, it allows for an easier outbound process.

Order entry is similar to the pre-receipt process in the inbound process. The first steps of an outbound system is to validate orders, check for errors or duplications, and handle exceptions immediately.

Up to the point that line items are loaded onto an outbound trailer, customers should have the ability to add, change, or delete specific items or entire orders.

Making these logistics services available to customers is the number one reason why real-time reporting is crucial to the outbound process.

2. Replenishment and Product Picking

Replenishment is essentially planning for future deliveries by establishing pick pre-requisite requirements and scheduling logistics services and activities to be completed before the corresponding pick tasks.

This step allows for your supply chain to continuously operate with minimal manual planning and strategy between steps.

The picking process can be simple or very complex. Your picking process should be unique due to the nature of different businesses, industries, and clients.

Choose logistics and trucking companies that allow for tailored picking capabilities and strategies.

Picking strategies may include

- Line picking
- Cluster picking
- Batch picking
- Zone picking
- Label-based picking
- Paper-based picking

3. Packing, Staging, Checking, and Loading

Packing is arguably the most important logistics services involved in the outbound process. It includes packing items, inspecting, labeling, routing and manifesting outbound orders per specific customer requirements.

If this step isn't managed flawlessly, completed shipments and arrival times can be compromised and the reputation of the business will be at stake.

Staging locations should already be decided if an automated system is involved. While going through the process of staging, checking and loading each step should be recorded in real-time thorough WMS for accuracy and timeliness.

Once all shipments are loaded and ready to go, a warehouse coordinator should be automatically updated, and a warehouse associate should be directed to load your order onto a trailer.

4. Shipping and Document Generation

The last step to a successful outbound process is shipping the product to its final arrival place and creating a log of the process for your records.

This is another important reason to use trucking companies who utilize a WMS. If every step has been recorded throughout the process, the final reporting is essentially already complete.

1.5 OBJECTIVES

1.5.1 PRIMARY OBJECTIVE

- To study the firm Turnaround time process and reduce the redundant time taken in that research.

1.5.2 SECONDARY OBJECTIVE

- To analyze the entire process of transport vehicles entry to exit, from the premises.
- To measure the time taken from each sub process.
- To Examine the idle time for each sub process.
- To improve the efficiency of overall TAT time.

CHAPTER 2
REVIEW OF LITERATURE

2.1 REVIEW OF LITERATURE

Matthew J. Liberatore¹ and Miller (2016) Manufacturing and service firms formed by different key performance metrics to monitor and manage the outbound logistics portion of the supply chain. Furthermore, it determines whether the use of specific key metrics by firms in these different classifications varies by industry, and what effect, if any, the varying emphases on different key performance metrics within classifications have on firm financial performance. The original data for this study were obtained from SAPs Benchmarking Program for Supply Chain Planning and utilizes performance metrics data from 247 manufacturing and service firms. Cluster analysis was used to develop a taxonomy based on the outbound logistics metrics. Four clusters were found to be distinct and well-formed and emphasize different sets of outbound logistics performance metrics. The clusters were named Inventory Investment Minimizers; Low Cost, Low Service Providers; Planners and Efficient Distribution Spenders; and Heavy Distribution Spenders.

R Jagadeesh ,Kushal Parwani (2012) Minimizing the outbound logistics time for improve the efficiency. First the entire outbound logistics pattern that involved the movement of the carriers which are nothing but two types of trucks was studied by mapping the process. Then all the steps involved in the logistics operation, namely documentation, record keeping, loading, weighing, and waiting times were systematically studied using a sample of 5 trucks on each day for a period of ten days. This data of 50 trucks helped in noting down the various issues that were responsible for the total time of operations along with the bottlenecks in the process. By using Pareto chart the two major contributors responsible for the delay were observed and then appropriate modifications were carried out. After implementing the pilot plan the activities were again measured for their time of operation and a substantial reduction in time was noticed. It was indeed obvious that with the improvement in time of operations of the two major activities which constituted for almost 75% of

the total time, the total time was substantially brought down. Thus the project was able to achieve objectives of improving the performance of the outbound logistics operation.

H. Adarsh (2011) Fast Moving Consumer Goods (FMCG) by the name has high demand in the market as well as heavy competition. Maximizing efficiency and effectiveness of the process in the industry by shrinking supply chain and making dynamic production to meet unpredictable demand is a challenging task faced by the industry. Logistics which is a major portion of supply chain, adds cost to product without adding value is a major area to focus, as customer is not willing to pay for it. In this case study we have considered a process industry which consumes COPRA and extracts Edible oil from it. A portion of supply chain which deals with IN-BOUND LOGISTICS is taken for improvement. The Aim of the study is to reduce the inbound Truck Turnaround Time (TTAT) by 70% with minimal cost. Presently the company has loss of Rs. 11.5Lakhs per month on average by paying the truck owners for delaying truck for more than a day.

H. Ronald Ballou (1997) Business logistics is defined and reasons are given as to why it is a vital area of management. Political and economic trends are highlighted to show that it is even increasing in importance. Current research in business logistics is discussed with a focus on the design of the logistics network as it is aided by computer modeling. Research opportunities are identified to both improve modeling for network design and better specify the information inputs to the design process.

Bolstorff, peter (2007) The Supply Chain Operation Reference framework is a proven solution to the ever-present business struggle of strengthening and improving company-wide processes. This leading cross-industry model for maximizing efficiency provides readers with a lasting competitive advantage, revealing the key to achieving flawless production in a compressed timeline.

By incorporating the proven Supply Chain Council DCOR and CCOR models to expand the process scope, Supply Chain Excellence offers a comprehensive look at the entire value chain process and provides readers with a step-by-step guide for implementing an improvement strategy that will help their organization succeed. With examples and insights from nearly one hundred supply chain improvement projects to draw from, readers will learn how to: identify the causes of misalignment in their company; utilize a scorecard to analyze and evaluate their current processes; strategize, prioritize, and implement a new method; incorporate management techniques such as Six Sigma and Lean; and quantify the financial value of supply chain improvement. The completely updated third edition of Supply Chain Excellence also adapts the use of the SCOR model for an SAP environment, global enterprises, and small businesses to help any organization keep its sales, manufacturing, distribution, and inventory moving in perfect synchronization.

Kristina, Darja (2018) There are many concepts in the transport and logistics business: transport, logistics, transportation, forwarding, etc. There are also a number of different study programs and disciplines such as: transport economics, transport logistics, logistics management, etc. All of these titles are often related to the content of the plan, planning, organization, management and control of the movement of human, material, informational and financial flows. However, in practice, they are often correlated and misused. Therefore, it is an important task to properly define these concepts. This article, based on various scientific literature, deals with the concept of transport logistics in various disciplines and fields of research. The results of this analysis made it possible to identify that there is no unified logistic term. Therefore, a qualitative study was also used. The purpose of this study is to identify the concept of transport/logistics companies in the Baltic States as the concept is treated in business. The results of the research have shown that the concept of transport logistics is also understood differently. Therefore, the purpose of this article is to

formulate the definition of transport logistics on the basis of the results of the scientific literature analysis and qualitative research.

Mohammad, Naveed Shamed (2017) Outbound logistics focuses on the distribution to the point of sales, such as - collection, storage, and distribution systems etc. Marketers must understand – what the customer wants in terms of logistics and how it can create value to the customers? Based on this scenario, this study focuses on the fact that lack of understanding about the elements of outbound logistics is leading to lack of identifying it as value creation tool to impact the purchase decision in home appliances industry. In total around 490 home appliance traders is selected based on convenience from Chittagong city and interviewed based on a questionnaire in May 2016. Factor Analysis is used to identify the most relevant factors from 14 variables and then a regression analysis is used to show how each of those factors related to outbound logistics in small home appliance sector is impacting the purchase decision. The outcome is the trader's purchase decision equation which a marketer can use to identify the elements of outbound logistics where he can focus more to strengthen his logistics channel.

T Asaka (1990) Covers a wide range of techniques, from task tailoring and proposal preparation, to detailed analysis and engineering techniques such as reliability prediction, testing and testability analysis. For each topic covered, detailed notes are provided, as well as a comprehensive list of the relevant standards and handbooks, with guidelines on their application.

Kamola A. Mukhamedjanova (2019) The evolution of the development of this concept was considered and three main stages the 80s, the formulation of the concept and the idea of coordinating the actions of companies within the chain; 90s, the idea of integrating key business functions, the idea of focusing on the needs of end customers and other kinds of competition - between chains, and not between individual firms, the final separation of the concept of logistics from

supply chain management concept transformation. An attempt was made to analyze the work of authors who considered the concept of supply chain management from philosophy, discipline, and process. In conclusion, it was concluded that the main views and opinions relate to the process approach.

Matthias klumpp (2019) Distribution and outbound processes are important for many companies because they directly connect them with the customers in a value chain. Market and customer demands relative to quality, speed as well as information and service orientation of logistics processes matter in terms of overall evaluation and satisfaction. At the same time, there are significant cost advantages or disadvantages. In the trade and retail sector, this operational field is especially of high strategic importance and closely connected to e-commerce or multi-channel strategies. It can be said that all the excellence as well as product and service quality built up throughout the value chain can be delivered or destroyed within these last miles of distribution, point of sale, and customer contact. This chapter outlines the core definitions and objectives for outbound logistics and distribution management (Sect. 14.1) before providing an extensive case study for this specific topic (Sect. 14.2). It then provides the operational concepts for distribution in Sect. 14.3 (basic level). In Sect. 14.4 (advanced level), it describes differentiations in terms of multi-echelon inventory models and multi-objective concepts (service levels, cost optimization, batch and emergency deliveries etc.).

Yves Wautelet (2012) Electronic collaboration in the field of Supply Chain Management notably allows enhanced visibility for each of the involved actors through information sharing and global optimization through coordination. The proper achievement of these advantages is nevertheless not trivial since it implies the development of rather complex IT systems. Each actor is indeed mostly dealing with his own data semantics and custom processes so that data centralization and sharing is seldom achieved. Moreover, even if there would be a willingness to share data, this inherent heterogeneity would constitute a

serious burden for software developments. The present chapter presents the results of a research aimed to partially solve these issues. It indeed presents the analysis and design of a platform for e-collaboration among the main Outbound Logistic (OL) actors based on a common conceptualization (including unified data semantics) and a set of services (supporting business processes realization). The chapter briefly presents the generic processes but mostly focuses on the representation of these services at a strategic level through an analysis of their added value and risk for OL actors potentially adopting the software solution.

Martin Pullinger (2014) Reducing per capita consumption, particularly amongst high income groups, is often deemed necessary to reduce the environmental impacts of the global economy. Far from implying a necessary reduction in wellbeing, some research suggests this could actually improve it: as reduced expenditure means a reduced need for income, and hence paid work, then there is the possibility for average working hours to fall, providing increased leisure time in which to pursue happiness through less consumption-intensive, but more time consuming, ways. To date, however, there has been little critical discussion of the details of what policy might need to cover to allow and encourage substantial working time reduction in a way that successfully reconciles these environmental and wellbeing goals. This article addresses this gap in the literature. It begins by reviewing the conditions under which working time reduction could bring environmental and wellbeing benefits. It then presents examples of innovative voluntary working time policies from the Netherlands and Belgium.

Quinton Fourie (2013) The South African automotive industry has been identified as an important influence on the economy of South Africa. In particular, it plays a role in job creation in a country with high unemployment rates. However, being linked to a global industry, its competitive position and future

relevance have come into question on numerous occasions. After a period of isolation and protection, the local industry had to enter global competition. The competitive playing field had suddenly widened from companies competing locally amongst each other for local market share, to competing globally for international sales. In addition it was found that competition was not only limited to opposing brands but also existed within the subsidiaries of the same brand.

Abdelrahman Audi and Yonis Raage (2020) In today's competitive and dynamic market, companies are trying to find new ways of changing their warehousing and logistics operations to increase the value for customers. Inbound and outbound logistics flows are key channels within warehouses as these encompass activities such as planning and scheduling which align with the flow of goods between enterprises and external associates, i.e. suppliers and customers.

Polycarp Olaku Alumbugu (2020) Outbound logistics channels are of crucial importance for an efficient construction materials logistics management and impacts on customer satisfaction. However, there is limited knowledge of the outbound logistics channels for construction material in Nigeria. This study aims to identify and examine the current outbound logistics channels used by the Nigerian construction material manufacturing industries. A quantitative research method using a case study approach was adopted in this research. The purposive sampling technique was chosen, where six construction material manufactured and distributed within five states capital and Abuja in the North-central region of Nigeria were selected for this study. A research instrument was developed and used in conjunction with an observation protocol in the form of a template. The data were collected through observations, direct measurement onsite and archival records of transactions.

Avinesh Abraham, R. Sasikumar (2013) Rubber wood has established itself as one of the major timbers mainly for the production of panel boards, furniture and other furniture components within a period of 20 years. By analyzing the supply chain of the industry, it is clear that the outbound logistics system has various barriers that hinder the growth of market share of the industry. Hence it is essential to identify the criticality of these barriers to improve the supply chain efficiency of the system. A detailed review related with outbound logistics barriers has been conducted. After identifying 44 barriers from the literature review, the next step was to determine the critical barriers, by means of brainstorming technique.

Sanchez-Rodrigues, V., Stanchel, D. Potter, A (2010) Much of the recent research on supply chain uncertainty has focused on relationships between manufacturers and suppliers and existing models have therefore been based on this dyadic structure. The aim is to establish a supply chain uncertainty model that explicitly incorporates transport operations and hence the logistics triad; supplier, customer and transport carrier. Design/methodology/approach – This is a literature-based activity that synthesizes and extends existing models of supply chain uncertainty. Findings the paper develops a new model to reflect the nature of transport operations.

Bask, A (2001) Outsourcing of logistics services has increased rapidly during the last few years. Accordingly, third-party logistics and supply chain management as a research phenomenon has gained increased attention from academia. However, a strategic view focusing on the relationship between supply chain management and third-party logistics service strategies has gained little attention. This paper focuses on alternative supply chain strategies and their relationship to different types of third-party logistics services. A normative framework for organizing these relationships is developed. The strategic view adopted in this paper fills a gap in the understanding of how third-party logistics

providers should offer their services more effectively and efficiently to different types of supply chains.

Gaurav Rishabhkumar Jejani¹, Afra Tarannum S2 (2019) Logistics are of two types: Inbound and Outbound. Both of these types of logistics play a significant effect on the supplier-customer relationship. This paper studies the factors that influence this relationship, benefits of managing it, challenges associated with it and also proposes solutions for those challenges. The research conducted in this paper is concept based and is conducted by extensive literature review and industry practices. Various tools have been proposed to measure the impact of the logistics on such relationships. Contemporary practices have been described and technological tools like Transport Management System (TMS) and ERP like SAP have been examined and studied.

Femonda souza, Silvio Roberto Ignacio pires (2010) Managing outbound logistics, based mainly on sales forecasts lead to difficulties in handling trade-offs between logistics (stock and transportation) costs and stock-out levels. Research limitations/implications – The reported research is of a theoretical nature. Practical implications – TOC offers a proposal that is complementary in many aspects and very distinguishable in others about the way some key processes and elements of supply chain management (SCM) are managed, especially outbound logistics.

M.Raja (2009) The logistics involved as a part of Supply Chain Management (SCM) demand the development of appropriate models to support decision making. In real life large business environment, the situation demands handling large-scale data and rapid development of models to process the same. These data may emerge from online transaction systems and the same need to be prepared or consolidated to input to the optimization models. The widespread implementation of Enterprise Resource Planning (ERP) systems provides ample opportunity to access transactional databases for the integration of supply chain

activities (Jeremy, 2008). In this paper, a prototype was developed to implement a decision support system for outbound logistics by a large cement manufacturing organization with multiple plants and distribution channels. While the dataflow from the transaction system to the optimization model was developed smoothly and transparently, the output of the model is integrated to the decision support system to manage outbound logistics. The approach adopted to integrate the transaction processing application with the decision support system is aimed at strengthening the existing scalable Supply Chain Infrastructure (SCI).

Ming zhou jin, Yi Luo (2008)

The decision-making procedures in practice consider major problems sequentially. We provide mixed integer programming models for production sequencing, logistics planning, and the integrated scheme. The integrated model is simplified based on an understanding of the properties of an optimal solution for the sequencing problem and based on the assumption that there is one closed bottleneck workstation. The numerical experiments demonstrate the benefit of the integration by comparing it with two sequential schemes, the Production-First-Scheme and the Logistics-First-Scheme.

K.L choy, G.T.s Ho (2014) Efficient outbound logistics operations are key goals of companies wishing to maintain customer satisfaction and achieve competitive advantage. However, in current warehouse operations, order picking and loading are performed separately and products are picked manually from warehouses according to customer orders and stored temporarily in staging areas in order to fully utilize the capacity of carriers. In practice, the separation of order picking and the loading process usually results in problems of excess storage buffers, long operation time, and quality deterioration of sensitive products left in the staging area.

Svensson Goran (2002), Time- and functional dependencies between firms' activities and resources in supply chains. These dependencies cause vulnerability. The principal objective of this research is to conceptualize the construct of vulnerability in firms' inbound and outbound logistics flows. The vulnerability construct of this research consists of two components: disturbance and the negative consequence of disturbance.

A.o somuyiwa(2010) The paper examines and modeled outbound logistics cost within the context of Total Logistics cost with a view to minimizing cost and enhance effective distribution activities in manufacturing companies. The outbound logistics cost include Transportation cost, warehousing and inventory cost, order processing cost and information cost. The paper adopted case study approach. Twenty (20) manufacturing companies formed the sample of the study, based on multi stage sampling techniques that incorporated cluster, stratified and purposive sampling methods. Apart from parametric test statistical techniques and translog cost function adopted, data analyses were done using a software application that incorporated Cobb-Douglas production function, which was packaged and tailor-made for the paper.

Halit Uster, Gopalakrishnan Easwaran (2009) To improve Frito-Lay's outbound supply chain activities by simultaneously optimizing its inventory and transportation decisions. Motivated by Frito-Lay's practice, we first develop a mixed-integer programming formulation from which we develop a large-scale, integrated multiproduct inventory lot-sizing and vehicle-routing model with explicit (1) inventory holding costs, truck loading and dispatch costs, and mileage costs; (2) production, storage, and truck capacity limitations; and (3) direct (plant-to-store) and interplant (plant-to-plant) delivery considerations. Second, we present an iterative solution approach in which we decompose the problem into inventory and routing components. The results demonstrate the impact of direct deliveries on distribution costs and show that direct deliveries and efficient inventory and routing decisions can provide significant savings

opportunities over two benchmark models, one of which represents the existing Frito-Lay system.

G.H.J. Lanel , Nuwan Dhammika Jayarathna (2019) In recent years, problems related to warehouse management has become an important consent in the field of logistics management research and has been widely used in analyzing through transportation and logistics distribution systems. This paper aims to conduct a comprehensive literature review on recent model developments and improvements involving Vehicle Routing Problem (VRP), Facility Location Problems and Location Routing Problems along with its variants. VRP is a widely studied combinatorial optimization problem in operational research and computer science.

Mahamaya Mohanty, Rashmi Singh (2018) To investigate ways to improve operational efficiency of outbound retail logistics considering retailers and consumers by using clustering approach. The retailers are allocated to serve a cluster of consumers. This study demonstrates economic and environment benefits that are achieved in terms of reduced delivery time, transportation cost and carbon emissions. Design/methodology/approach this study is based on modeling the outbound logistics of a retail chain by using Kohen self-organizing map (KSOM). KSOM is an unsupervised learning and data analysis method for vector quantization, which is based on Euclidean distance method to form clusters.

Martin Christopher (2011) SCM plays major role in creating competitive advantage. Whereas previously the focus was primarily tactical with a concern for optimizing costs, now there is much more of a strategic focus with the emphasis on value creation and delivery. The second major change is the recognition that supply chain management is not just an extension of logistics management, but rather that it is about managing relationships across the complex networks that today's supply chains have become. A third significant

change over that period is that the business environment has become a lot more volatile and hence less predictable. This transition from a relatively stable world to one that is much more turbulent requires supply chains to be capable of changing rapidly to meet changed circumstances.

Wilna L. Bean(2019) The fast-moving consumer goods industry is a complex trading environment, with many companies experimenting with various ways to increase profit. Outbound logistics, as an integrated concept within supply chain management, remains a key focus area for companies due to the high costs involved. The reality, however, is that often companies do not understand the outbound logistics cost drivers, and hence the profitability of current (let alone new) channels, regions, products, and customers. This is simply due to insufficient information being available from traditional accounting statements. The study evaluates the outbound logistics cost drivers of the South African fast-moving consumer goods industry, and describes an outbound logistics cost allocation framework.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

Research Design used in this study is Descriptive. This research is a study to designed the depict of the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

3.1.1 QUANTITATIVE RESEARCH

One of the characteristics of Descriptive research is a quantitative research method. This, method that attempts to collect quantifiable information for statistical analysis of the population sample. It is a popular market research tool that allows us to collect and describe the demographic segment's nature.

Observational method

The observational method is the most effective method to conduct this research, and researchers make use of both quantitative and qualitative observations.

A quantitative observation is the objective collection of data, which is primarily focused on numbers and values. It suggests “associated with, of or depicted in terms of a quantity.” Results of quantitative observation are derived using statistical and numerical analysis methods. It implies observation of any entity associated with a numeric value such as age, shape, weight, volume, scale, etc. For example, the researcher can track if current customers will refer the brand using a simple Net Promoter Score question.

Qualitative observation doesn't involve measurements or numbers but instead just monitoring characteristics. In this case, the researcher observes the respondents from a distance. Since the respondents are in a comfortable environment, the characteristics observed are natural and effective. In a descriptive research design, the researcher can choose to be either a complete observer, an observer as a participant, a participant as an observer, or a full participant. For example, in a supermarket, a researcher can from afar monitor and track the customers' selection and purchasing trends. This offers a more in-depth insight into the purchasing experience of the customer.

3.2 PDSA CYCLE

PDSA, or Plan-Do-Study-Act, is an iterative, four-stage problem-solving model used for improving a process or carrying out change.



3.2.1 About PDSA

Dr. Deming emphasized the PDSA Cycle, not the PDCA Cycle, with a third step emphasis on Study (S), not Check (C). Dr. Deming found that the focus on Check is more about the implementation of a change, with success or failure. His focus was on predicting the results of an improvement effort, studying the actual results, and comparing them to possibly revise the theory. He stressed that the need to develop new knowledge, from learning, is always guided by a theory. By comparison, the Check phase of the PDCA cycle focuses on the success or failure of a Plan, followed by needed corrections to the Plan in the event of failure.

The cycle begins with the Plan step. This involves identifying a goal or purpose, formulating a theory, defining success metrics and putting a plan into action. These activities are followed by the Do step, in which the components of the plan are implemented, such as making a product. Next comes the Study step, where outcomes are monitored to test the validity of the plan for signs of progress and success, or

problems and areas for improvement. The Act step closes the cycle, integrating the learning generated by the entire process, which can be used to adjust the goal, change methods, reformulate a theory altogether, or broaden the learning – improvement cycle from a small-scale experiment to a larger implementation Plan. These four steps can be repeated over and over as part of a never-ending cycle of continual learning and improvement.

When using the PDSA cycle, it's important to include internal and external customers; they can provide feedback about what works and what doesn't. The customer defines quality, so it would make sense to also involve them in the process when appropriate or feasible, to increase acceptance of the end result. (If you're unsure about, who your customers are, you may want to create a customer chain to assist in identification.)

Three important questions in applying PDSA are,

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in an improvement?

3.2.2 PDSA STAGES

Stage 1: Plan

Aim of the study is to reduce to TAT time within 2 hours

In planning stage the objective of the plan is to

- Understand every process involved in TAT
- Complete observation of the truck from Gate Entry to Exit.
- Measure the time unit from each process.
- Observe the redundant time taken in that research
- Provide valid suggestion to improve the efficiency.

Stage 2: Do

Start to implement your action plan. Be sure to collect data as you go, to help you evaluate your plan in Stage 3: Study.

Actual implementation started here for the project, each and every planned action executed in step by step.

Stage 3: Study

One of the important stage in PDSA cycle, after collecting all the data study the complete analysis for the research which will help to find the suitable solution to the problem.

In this study, secondary data are collected using the time interval of every sub process.

- Analysis started from finding mean average of every process involved in TAT
- Examine the idle time for each Sub process based on the available data
- Finding the efficient time for each process to improve the TAT time.

Stage 4: Act

- Reflect on Plan and Outcomes
- This is the final stage of the PDSA cycle,
- Based on the analyzing the data, several suggestions were given on reducing the turnaround time mainly by targeting the bottlenecks, i.e. documentation and processing time & idle time before loading.

3.3 SOURCE OF DATA

Secondary data

A quantitative observation is the objective collection of data, which is primarily focused on numbers and values, the data are collected from the time interval of each process is taken as secondary data.

3.4 SAMPLE SIZE

There are total of 50 Trucks were taken as a sample size, These samples are open truck and container.

3.5 PERIOD OF STUDY

The study is taken from the period of 15th Dec 2020 to 15th March 2020 total of 3 Months.

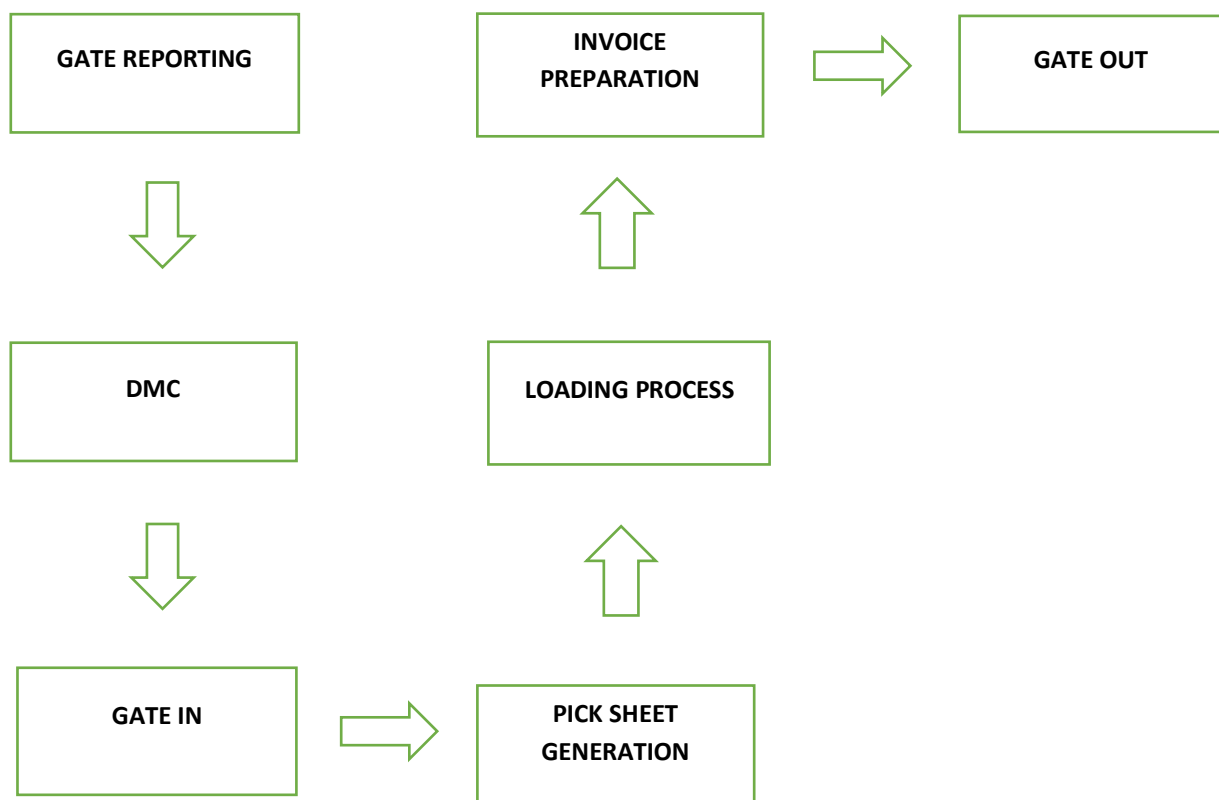
CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 DATA COLLECTION

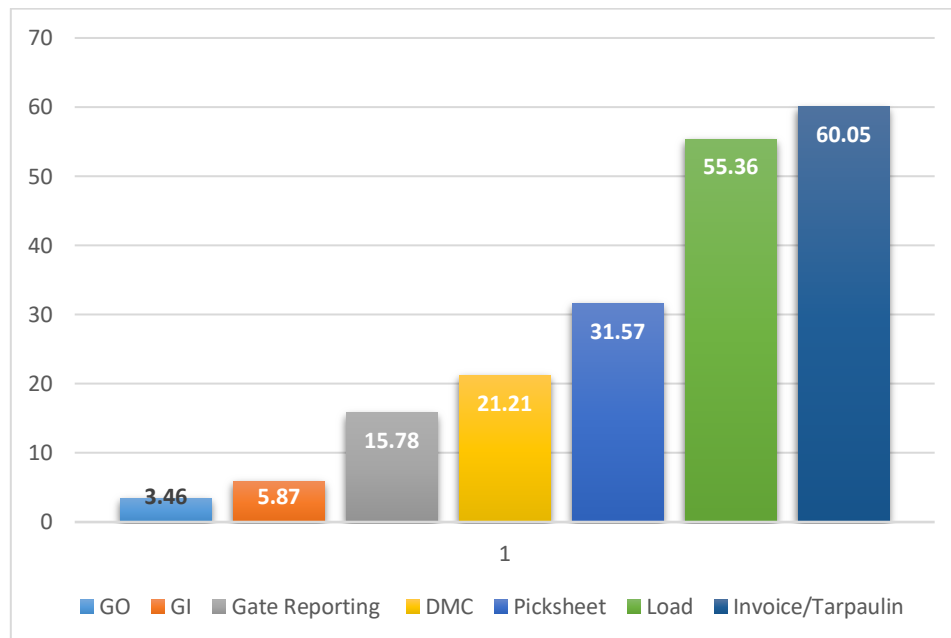
- Data are collected using the quantitative information.
- Measuring the Time unit of each sub process
- Total of 50 trucks was taken for a period of 10 days.

4.1.1 Diagram showing internal outbound logistics process

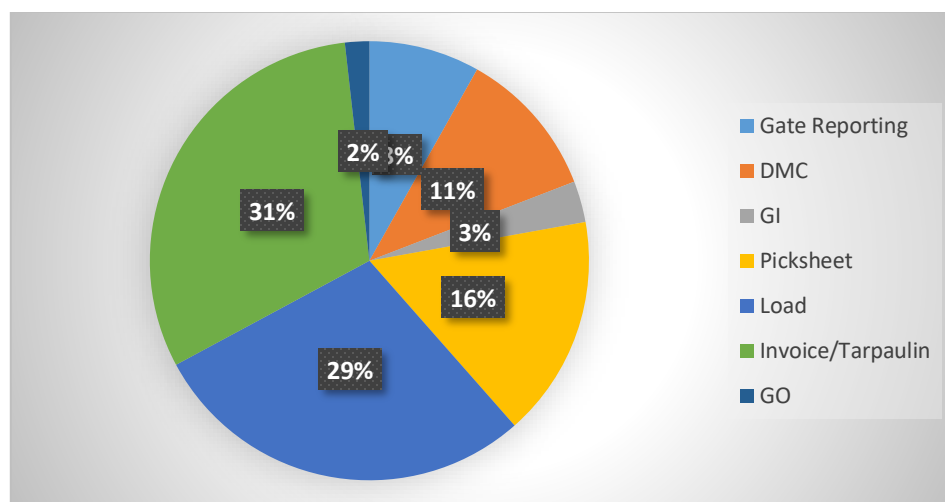


4.1.2 PROCESS TIMING

Process timing referred as each process can complete the work from starting to an end. There are total 6 sub process are consider for the whole TAT process.



4.1.2 Chart showing Average time interval of sub process



4.1.2 Chart showing Timing percentage of the process

INTERPRETATION

Time measurement were taken from the gate reporting to gate out. Major timings are occupied in loading and invoice process. 31% of whole process timing is taken for invoice preparation.

4.2 SUB PROCESS FUNCTION

1. Gate Reporting
2. DMC Process
3. Gate In
4. Pick sheet generation
5. Loading process
6. Invoice preparation and Tarpaulin work
7. Gate Out

1. Gate Reporting

Gate Reporting is the initial stage of vehicle entry into the factory where security clearance and gate reporting pass will be provided. Driver asked for the purpose of coming and other important details.

There is no fixed time of vehicle arriving so vehicles can come at any time in the factory which means we can expect multiple vehicles at same time. Average working time is 15 minutes for gate reporting time to get the gate pass. Driver has to submit the load id to security to get the gate pass. Sometimes security is busy with some other works and also their behavior is important while communicate with driver.

2. DMC

DMC is responsible for all the mandatory checking for both driver and vehicles. This team used to check all the required documents of driver as well as vehicle and also checking all the necessary equipment available within the vehicle itself, if DMC rejected means vehicle cannot go the next process, so DMC approval is important for every vehicle. Average working time is 21 minutes for DMC process. DMC officer will verify the vehicle and driver documents and he used to check the driver health condition whether he can able to drive long distance.

KIOSK process is mandatory for all drivers it took 10 – 15 minutes depends upon module levels. A kiosk is a small, free-standing physical structure that displays information or provides a service. Kiosks can be manned or unmanned, and unmanned kiosks can be digital or non-digital.

3. Gate IN

Gate IN process is the approval of the vehicle is available for pick sheet generation, Logistics related work actually started from here itself. There is no findings and suggestion is there for Gate IN. Average working time is 5 minutes.

4. Pick sheet generation

Pick sheet generation is used to checking the available finished goods for loading, Timings are little bit vary from direct distributor and warehouses.

For direct distributor allocation process is already fixed and for warehouse trucks need to be allocate the finished goods. After gate IN, driver submitting the gate pass to shipping department for pick sheet generation. Average working time is 31 minutes. Currently there are 2 people working on the pick sheet and invoice process.

5. Loading process

Loading area is one of the most important process in TAT, after collecting pick sheet generation form, driver has to move the vehicle to loading area.

Step1: Driver moving the vehicle to loading parking area

Step2: Handover the pick sheet to checker in shipping department

Step3: Checker instruct picker (Fork lift operator) to pick the stock

Step4: Fork lift operator work to move the stock to staging area

Step5: Once the loading area is free checker call the driver to come to loading area

Step6: Loading process is started

6. Invoice preparation and Tarpaulin work

This area include two functions both are working simultaneously.

- Invoice preparation
- Tarpaulin work

After completing the loading, driver moving the vehicle to Tarpaulin area, then handover the load sheet to shipping department for invoice preparation.

Driver working on the tarpaulin knot simultaneously invoice is prepared by shipping department.

This process nearly taken average of 60 minutes

7. Gate out

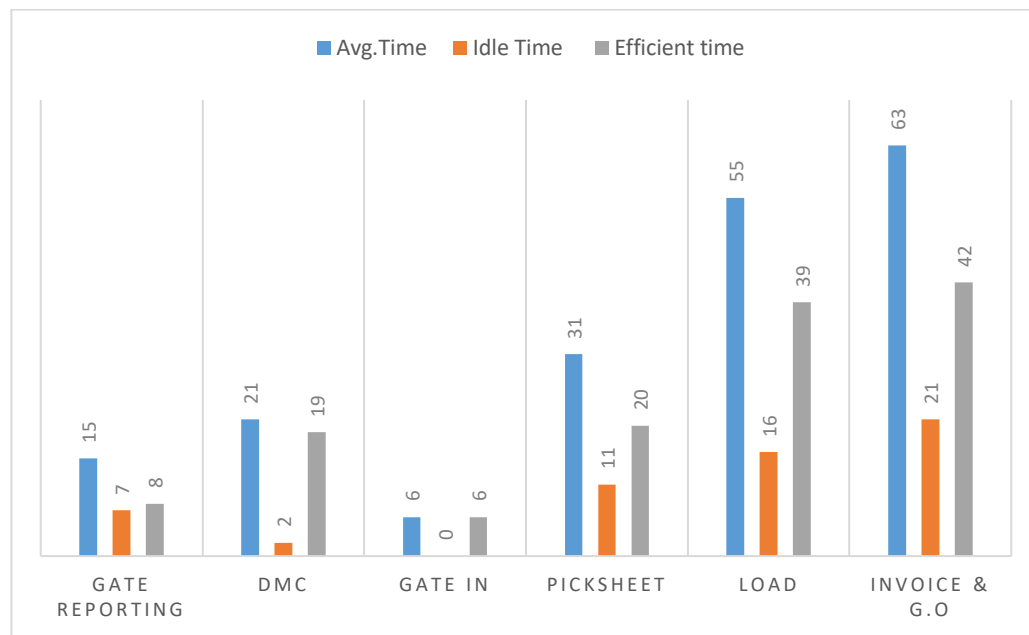
Gate out is the final step of TAT process, after collecting the invoice bill driver exit the factory within 5 minutes.

Average time of Gate out is 3 minutes.

4.2.1 Table showing the comparison of Average, Idle and Efficient time

Sub Process	Average Time	Idle Time	Efficient Time
Gate reporting	15	7	8
DMC	21	2	19
Gate In	6	0	6
Pick sheet	31	11	20
Load	55	16	39
Invoice & G.O	63	21	42

SOURCE: Secondary data, Timing consider as Minutes.



4.2.1 Chart showing comparison Average, Idle & Efficient time for process

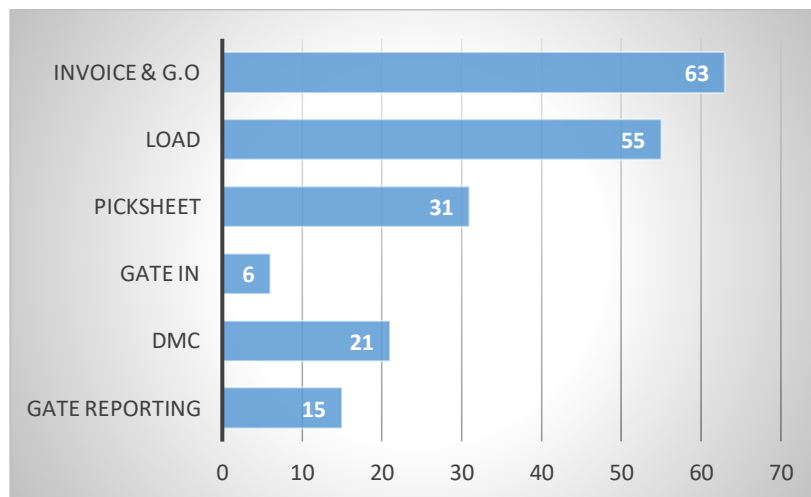
INTERPRETATION

The above chart showing the multiple comparison of Average time, Idle time & efficient time. Particularly we can see clearly Invoice process and loading having much more idle time compared to other process which is need to be reduce significantly.

4.2.2 Table showing Average time for each process

Process	Average Time
Gate reporting	15
DMC	21
Gate In	6
Pick sheet	31
Load	55
Invoice & Gate out	63

SOURCE: Secondary data, Timing consider as Minutes.



4.2.2 Chart showing the Average time for every process

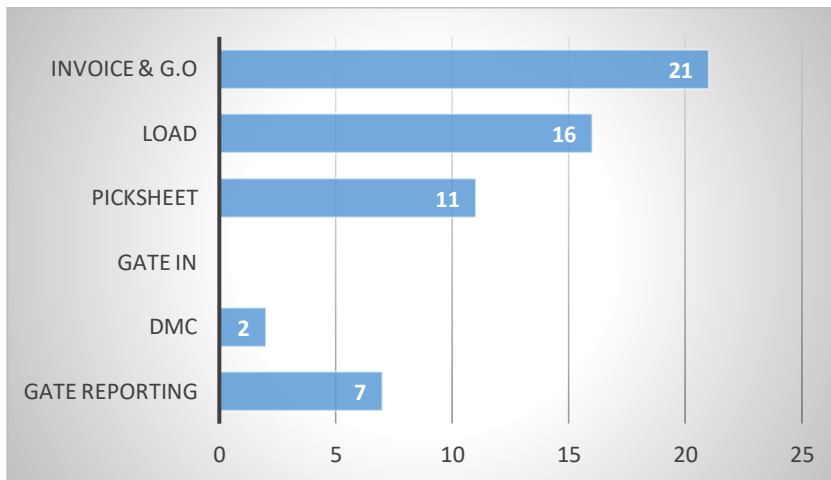
INTERPRETATION

The above table and chart showing the Average time differences in each process, we can clearly notice that loading and invoice process taking more time. Average time was taken measuring the time unit of 50 trucks.

4.2.3 Table showing idle time for each process

Process	Idle Time
Gate reporting	7
DMC	2
Gate In	0
Pick sheet	11
Load	16
Invoice & Gate out	21

SOURCE: Secondary data, Timing consider as Minutes



4.2.3 Chart showing the idle time for each process

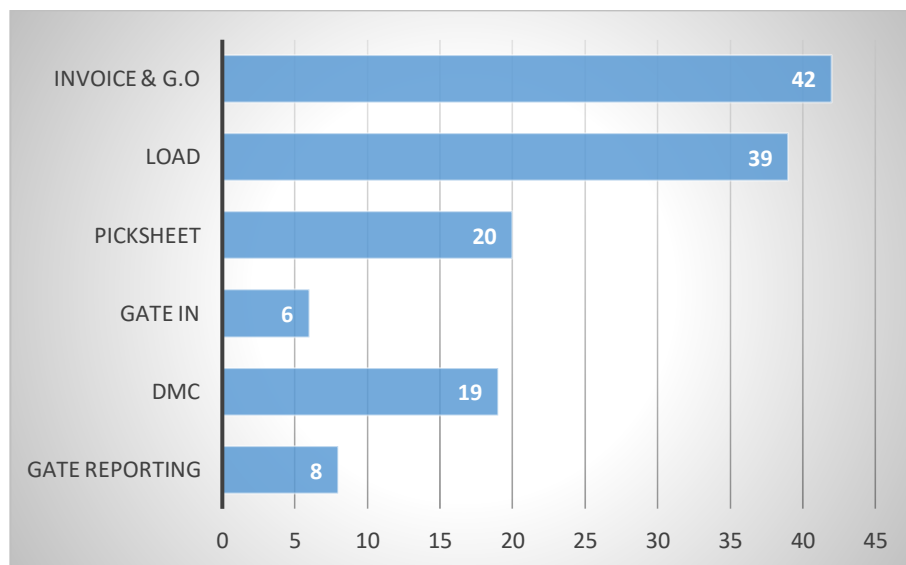
INTERPRETATION

Idle time is referred as employee or production machine not produced anything. For this study idle time is calculated based on the observing the time unit of each process non-working time. The above table and chart showing the timing differences of each process.

4.2.4 Table showing efficient time for each process

Process	Efficient Time
Gate reporting	8
DMC	19
Gate In	6
Pick sheet	20
Load	39
Invoice & Gate out	42

SOURCE: Secondary data, Timing consider as Minutes



4.2.4 Chart showing the efficient time for each process

INTERPRETATION

Efficient time is calculated by subtracting the idle time from the average time. By calculating the efficient time we can able to reduce the maximum process time for each function. The above table and chart showing the timing differences.

4.3 EFFICIENT TIME CALCULATION FOR EACH PROCESS

➤ **Gate reporting**

Efficient time = Average time – idle time

Average time=15

Idle time=7 (Based on observing real time scenario)

Efficient time=15-7 -> 8

➤ **DMC process**

Average time=21

Idle time=2

Efficient time=21-2-> 19

➤ **Gate IN**

Average time=6

Idle time=0

Efficient time=6-0->6

➤ **Pick sheet generation**

Average time=31

Idle time=11

Efficient time=31-11->20

➤ **Load**

Average time=55

Idle time=16

Efficient time=55-16->39

➤ **Invoice**

Average time=63

Idle time=21

Efficient time=63-21->42

(Include both invoice and Gate out timing)

Total calculation of idle time is ->7+2+11+16+21=57

Totally we can reduce 57 minutes in overall TAT time.

Efficient TAT time=Average TAT time-overall Idle time

Efficient TAT time= 3 hours 2 minutes – 57 minutes -> 2 hours 5 minutes.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS OF THE STUDY

- ✓ Getting Load ID problem with the third party logistics.
- ✓ Sometimes security is busy with some other works.
- ✓ Security behavior with driver sometime extending the timing.
- ✓ KIOSK process is the key thing for the safety purpose but it is valid only if driver listening that, drivers are mostly not listen or using mobiles.
- ✓ Drivers are sometime abscond from the place.
- ✓ Software related issues.
- ✓ It is very difficult when multiple vehicles are coming to loading area.
- ✓ Only 2 fork lift is actively working at any time and one JCB also working but it is not available anytime.
- ✓ Maximum at a time we can able to load two vehicle, it is difficult when more than two vehicles are coming at a same time.
- ✓ Loading and unloading happening in the same place, it increasing the truck waiting time more than 30 minutes.
- ✓ Large place is occupied with finished goods in the loading bay, it affect major space for the vehicle movement.
- ✓ This process taking much time compared to other process.
- ✓ After completing the tarpaulin work also driver have to wait 5 to 10 minutes.
- ✓ For closed vehicle no need to tarpaulin knot, so he have to wait nearly 1 hour.

5.2 SUGGESTIONS

- ✓ Solving Load id problem will help to decrease the process timing.
- ✓ It is suggested that specific security officer for gate pass providing.
- ✓ Smooth conversation with driver can increase the efficient of the process
- ✓ If the company can provide separate room for this kiosks with headset, will be good for driver listening.
- ✓ Suggesting the company by providing tracking system for the drivers will helpful to know the next process and also current process completion time, so that they can't go somewhere in the middle of the process
- ✓ Two employees are working in the pick sheet generation, if they increase additional employee it would be great for handling multiple orders and also process time also decreasing.
- ✓ Empty loading bay will helpful to improve the process.
- ✓ Increasing the fork lift up to 3 will help in difficulty times.
- ✓ It is suggested that separate JCB (Excavator vehicle) always available for loading.
- ✓ If the company implementing the invoice process from the initial stage itself after completing pick sheet, will be useful for reduce the timing. If any mismatch happen for the goods availability or some other problem raised immediately we can change those requirement with the help of software's and other communicating tools. It is much more important for closed vehicles.

- ✓ Suggesting the company that using mic system for distributing the pick sheet form and invoice sheet, it makes the task easier for both driver and shipping department.

5.3 CONCLUSION

The Coca-Cola Company, one of the world's largest soft drink companies, offering more than 500 brands in world wide. Distribution has played a vital role of the company in customer satisfaction area. The whole study of the project is to reduce the Turnaround time for finished goods. It help to improve the efficiency of process to reach their destination so that more number of trucks could be pushed to various DCs and distributors. Major idle time was taken in Loading and Invoice process. Simple elimination of steps with the help of logistics representatives and transportation agent will improve the process significantly.

If the suggestions are implemented and strictly enforced a full time basis, the company can able to achieve the target within 2 hours of Turnaround time.

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APPENDIX

TIME INTERVAL DETAILS OF 50 TRUCKS FOR THE TAT PROCESS

S.No	Vehicle no	GR	GR-DMC/mins	DMC	DMC-GI/mins	GI	GI-Pick/mins	Pick	pick-Load/mins	Load	Load-Invoice/mins	Invoice	Invoice-GO/mins	GO	GR-GO/hrs
1	AP16X1099	10:48	26	11:14	10	11:24	4	11:28	30	11:58	55	12:53	45	13:38	2.50
2	AP28TE2261	14:03	9	14:39	15	14:54	3	14:57	22	15:19	36	15:55	52	16:47	2.17
3	TS08UF3523	14:36	5	14:39	17	14:56	4	15:00	25	15:25	30	15:55	47	16:42	2.06
4	AP03TE2690	9:05	6	rejected	-	-	-	-	-	-	-	-	-	-	-
5	TN04AS7682	12:00	13	12:13	11	12:24	3	12:27	22	12:49	25	13:14	46	14:00	2.00
6	TN69M7404	11:15	9	11:24	25	11:49	4	11:53	17	12:10	73	13:23	50	14:13	2.58
7	TS15UC8917	11:48	21	12:09	25	12:34	5	12:39	26	13:05	52	13:57	55	14:52	2.04
8	TN12V9662	15:39	12	15:51	20	16:11	2	16:13	32	16:45	35	17:20	65	18:25	2.46
9	AP29TC0581	11:25	4	11:29	22	11:51	6	11:57	17	12:14	32	12:46	55	13:41	2.16
10	AP16TW9598	14:53	26	15:19	11	15:30	5	15:35	24	15:59	46	16:45	72	17:57	3.04
11	TS15UC1207	10:10	6	10:16	25	10:41	2	10:43	35	11:11	51	12:02	70	13:12	3.02
12	KA508033	11:02	10	11:02	15	11:27	3	11:30	45	12:15	70	13:15	75	14:30	3.28
13	KA506425	11:03	8	11:11	10	11:18	2	11:20	40	12:00	47	12:47	50	13:37	2.34
14	TS15UC7779	9:50	10	10:00	25	10:25	5	10:30	42	11:12	60	12:12	63	13:12	3.28
15	TS15UC6039	13:07	12	13:19	20	13:39	18	13:57	52	14:49	63	15:52	53	16:45	3.38
16	AP24W4201	15:05	6	15:11	12	15:23	3	15:26	50	16:16	100	17:56	52	18:48	3.43
17	AP04V9768	17:11	8	17:19	23	17:42	2	17:44	25	18:09	38	18:47	56	19:44	2.33
18	TN18AC3733	10:15	9	10:24	8	10:32	7	10:39	23	11:02	43	11:57	55	12:52	2.37
19	KA51AC5479	10:18	8	10:26	12	10:38	3	10:41	17	10:58	52	12:03	65	13:18	3.00
20	TS15UC6039	14:03	20	14:23	23	14:38	5	14:43	23	15:06	93	16:36	63	17:39	3.36
21	AP24W4201	9:05	56	10:01	24	10:24	7	10:31	31	11:02	38	11:40	70	12:50	3.45
22	AP04V9768	9:18	13	9:31	8	9:39	12	9:51	38	10:29	72	11:41	72	12:53	3.35
23	TN18AC5479	10:55	66	12:01	13	12:14	3	12:17	29	12:46	110	14:36	58	15:34	4.29
24	AP04TU0747	10:56	67	12:02	13	12:15	5	12:20	30	12:50	80	14:10	56	15:06	4.1
25	AP27W8356	14:02	36	14:38	25	15:03	13	15:16	35	15:51	65	16:56	58	17:54	3.52

26	AP05TD5169	14:10	72	15:12	32	15:44	4	15:48	50	16:38	68	17:46	55	18:41	4.31
27	AP07TT9288	16:07	18	16:25	26	16:51	6	16:57	48	17:45	55	18:40	63	19:43	3.36
28	AP16TX6219	10:02	35	12:17	6	12:23	5	12:28	36	13:04	90	14:34	66	15:40	5.38
29	AP16V7217	11:06	6	11:12	16	11:28	7	11:35	31	12:06	33	12:39	80	13:59	2.53
30	AP12V1662	12:18	25	12:43	72	13:55	16	14:11	29	14:40	44	15:24	77	16:41	4.23
31	KA38A0071	10:55	5	11:00	16	11:16	5	11:21	34	11:55	71	13:06	52	13:58	3.03
32	TS08UF2670	9:08	8	9:16	8	9:24	6	9:30	33	10:03	78	11:21	125	13:26	4.18
33	RJ27GA7971	16:13	11	16:24	175	18:19	3	18:21	28	18:49	43	19:22	52	20:14	4.01
34	TS29T1269	11:04	13	11:17	12	11:29	9	11:38	30	12:08	38	12:46	80	14:06	3.02
35	AP28TE2261	11:06	12	11:18	15	11:33	12	11:45	33	12:18	66	13:24	90	14:54	3.48
36	TS08UF3523	11:07	12	11:19	18	11:37	12	11:49	34	12:23	61	13:24	85	14:49	3.42
37	AP03TE2690	12:45	8	12:53	13	13:06	11	13:17	110	15:07	62	16:09	55	17:04	4.19
38	TN04AS7682	11:53	13	12:06	24	12:30	6	12:36	25	13:01	56	13:57	63	15:00	3.07
39	TN69M7404	16:09	8	16:17	21	16:38	6	16:44	22	17:06	57	18:03	54	18:57	2.48
40	TS15UC8917	9:10	9	9:19	rejected	-	-	-	-	-	-	-	-	-	-
41	MH26BE0686	11:35	6	11:41	6	11:47	2	11:46	25	12:11	33	12:44	110	14:34	2.59
42	AP16X0227	14:36	5	14:41	16	14:57	4	15:01	16	15:17	52	16:09	53	17:02	2.26
43	HR55N5626	14:17	4	14:21	23	14:44	5	14:49	17	15:06	62	16:08	48	16:56	2.39
44	KA51AA1184	14:41	5	14:46	13	14:59	3	15:02	21	15:23	63	16:26	85	17:51	3.1
45	AP28TE3458	14:39	8	14:47	6	14:53	3	14:56	25	15:21	28	15:49	52	16:41	2.02
46	KA51A2336	10:06	8	10:14	22	10:36	6	10:42	28	11:00	44	11:44	57	12:41	2.35
47	AP16TU9469	15:03	4	15:07	-	-	-	-	-	-	-	-	-	-	-
48	TN28AR1789	14:02	13	14:15	11	14:26	5	14:31	28	14:59	49	15:48	62	16:50	2.48
49	TN52H8002	9:08	9	9:17	23	9:40	8	9:48	26	10:14	42	10:56	53	11:49	2.41
50	TN34X8552	9:13	6	9:19	11	9:30	6	9:36	25	10:01	41	10:42	65	11:47	2.34
Average			15.78		21.2128		5.872340426		31.5745		55.3617		63.5106		3.02

ARTICLE

REDUCTION OF TURNAROUND TIME FOR OUTBOUND LOGISTICS IN COCA COLA BEVERAGES

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ABSTRACT

Outbound logistics supply is that the method of storing, transporting and distributing product to customers. The outward-logistics bound supply method starts with a client sales order, moves on to warehouse packing and ends with product delivery. TAT is that the time taken by the transport vehicles to finish the complete method of loading finished product, ranging from the purpose of entry to its exit from the mill. The main objective of the study is to cut back the TAT temporal order in outward-bound supply and increase the potency for dope plant settled in Nemam, Chennai. This may deliver the goods by analyzing varied trucks temporal order from Gate reportage to Gate exit.

INTRODUCTION

Logistics is wide referred to as the method of coordinative and moving resources like instrumentation, food, liquids, inventory, materials and other people from one location to the storage of the required destination, it had been originally a military based term that was accustomed describe however the force obtained, keep and rapt instrumentation and provides. Turnaround is outlined because the time taken by the transport vehicles to complete the full method of loading finished product ranging from the purpose of entry to exit from the manufacturing plant premises. Internal TAT is responsible for all the activities carried out inside the plant.

REVIEW OF LITERATURE

R Jagadeesh ,Kushal Parwani (2012) Minimizing the outward-bound supply time for improve the potency. The complete outward-bound supply pattern that concerned the movement of the carriers that area unit nothing however 2 sorts of trucks was studied by mapping the method. Then all the steps concerned in the supply operation, specifically documentation, record keeping, loading, weighing, and waiting times were consistently studied employing a sample of five trucks on daily for a amount of 10 days. This knowledge of fifty trucks helped in noting down the varied problems that were accountable for the entire time of operations together with the bottlenecks.

H. Adarsh (2011) Fast Moving commodity (FMCG) by the name has high demand within the market also as significant competition. increasing potency and effectiveness of the method within the trade by shrinking offer chain and creating dynamic production to fulfill unpredictable demand could be a difficult task Janus-faced by the trade. supplying that could be a major portion of offer chain, adds value to product while not adding worth could be a major space to focus, as client isn't willing to buy it. during this case study we've thought of a method trade that consumes coconut and extracts Edible oil from it.

H. Ronald Ballou (1997) Business supplying is outlined and reasons square measure given on why it's an important space of management. Political and economic trends square measure highlighted to point out that it's even increasing in importance. Current analysis in business supplying is mentioned with a spotlight on the look of the supplying network because it is motor-assisted by pc modeling. analysis opportunities square measure known to each improve modeling for network style and higher specify the data inputs to the look method.

Matthew J. Liberatore¹ and Miller (2016) Manufacturing and repair companies shaped by completely different key performance metrics to observe and manage the departing supplying portion of the provision chain. Moreover, it determines whether or not the utilization of specific key metrics by companies in these completely different classifications varies by trade.

OBJECTIVES

PRIMARY OBJECTIVE

To study the firm Turnaround time process and reduce the redundant time taken in that research.

SECONDARY OBJECTIVE

- To analyze the entire process of transport vehicles entry to exit, from the premises
- To improve the efficiency of overall TAT time.

The study of the project using Secondary data as a source and the data are collected from the period of 15th Dec 2020 to 15th March 2021- 3 months. Data samples are taken from Open truck and Container.

RESEARCH METHODOLOGY

PDSA, or Plan-Do-Study-Act, is an iterative, four-stage problem-solving model used for improving a process or carrying out change.

RESEARCH DESIGN

Research Design used in this study is Descriptive. One of the characteristics of Descriptive research is a quantitative research method. The observational method is the most effective method to conduct this research, and researchers make use of both quantitative and qualitative observations.

DATA ANALYSIS AND INTERPRETATION

DATA COLLECTION

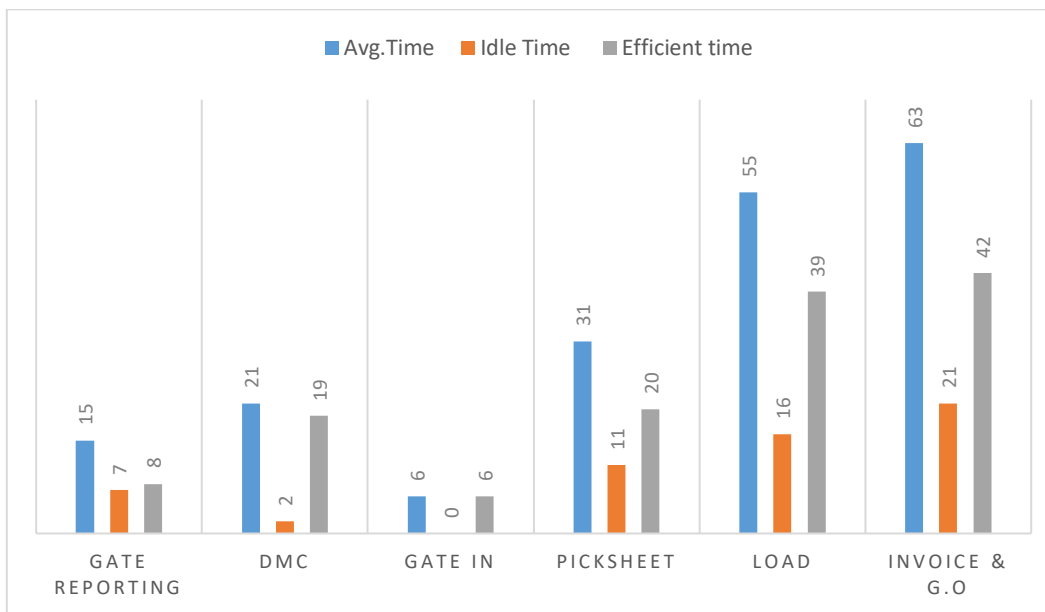
Data are collected using the quantitative information. Time unit of each process is measuring from starting to an end, total of 50 trucks was taken for a period of 10 days.

Table showing Comparison of Average, Idle and Efficient time

Sub Process	Average Time	Idle Time	Efficient Time
Gate reporting	15	7	8
DMC	21	2	19
Gate In	6	0	6
Pick sheet	31	11	20
Load	55	16	39
Invoice & G.O	63	21	42

SOURCE: Secondary data

Chart showing Comparison of Average, Idle and Efficient time



INTERPRETATION

The above table and chart showing the Average, Idle and efficient time of the each sub process completing the task in the given time unit (Minutes). We can see clearly Invoice process and loading having much more idle time compared to other process which is need to be reduce significantly.

FINDINGS

- Getting Load ID problem with the third party logistics.
- Sometimes security is busy with some other works.
- KIOSK process is the key thing for the safety purpose but it is valid only if driver listening that, drivers are mostly not listen or using mobiles.
- Software related issues in pick sheet generation.
- It is very difficult when multiple vehicles are coming to loading area.
- Loading and unloading happening in the same place, it increasing the truck waiting time more than 30 minutes
- Large place is occupied with finished goods in the loading bay, it affect major space for the vehicle movement.

SUGGESTIONS

- Solving Load id problem will help to decrease the process timing.
- Two employees are working in the pick sheet generation, if they increase additional employee it would be great for handling multiple orders and also process time also decreasing.
- Empty loading bay will helpful to improve the process.
- Increasing the fork lift up to 3 will help in difficulty times.
- If the company implementing the invoice process after completing pick sheet, will be useful for reduce the timing. If any mismatch happen for the goods availability or some other problem raised, immediately we can change those requirement with the help of software's and other communicating tools.

CONCLUSION

The whole study of the project is to reduce the Turnaround time for finished goods. It help to improve the efficiency of process to reach their destination so that more number of trucks could be pushed to various DCs and distributors. Major idle time was taken in Loading and Invoice process. Simple elimination of steps with the help of logistics representatives and transportation agent will improve the process significantly.

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