

FINAL PROJECT SUBMISSION

Reverse Logistics Losses

Project report submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted By:

Sanchit Garg

161051

Submitted To:

Mr. Rajiv Kumar

Associate Professor, JUIT

Industrial Mentor:

Mr. Akshay Anand

Territory Manager, Gurgaon



**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY,
WAKNAGHAT**

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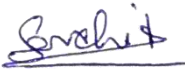
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Candidate's Declaration

I hereby declare that the work presented in this report entitled “**Reverse Logistics Losses**” in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Electronics and Communication Engineering** submitted in the department of **Electronics and Communication Engineering**, Jaypee University of Information Technology, Waknaghat is an authentic record of my own work carried out over a period from February 2020 to May 2020 under the supervision of **Mr. Akshay Anand (Territory Manager, Gurgaon)** .



Sanchit Garg (161051)

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



Dr. Rajiv Kumar (Project Supervisor)

Date: 23/05/2020

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It is my privilege to express my sincerest regards to my Manager **Mr. Akshay Anand (Territory Manager, Gurgaon)** for his valuable inputs, able guidance, encouragement, whole-hearted cooperation and direction throughout the duration of the project.

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At the end I would like to thank the **Amazon Student Program Team** and my guide **Dr. Rajiv Kumar (Associate Professor, Jaypee University of Information Technology)** who kept a constant record of any challenges faced during the internship program.

Sanchit Garg (161051)
Operations Manager Intern,
ATSPL

LIST OF ACRONYMS AND ABBREVIATIONS

- 1) LM : Last Mile
- 2) ATSPS : Amazon Transport Services Private Limited
- 3) FC: Fulfillment Center
- 4) SC: Sort Center
- 5) RL: Reverse Logistics
- 6) MFN: Merchant Fulfilled Network
- 7) AFN: Amazon Fulfilled Network
- 8) AMZL: Amazon Logistics
- 9) PDD: Promised Delivery Date
- 10) C-Return: Customer Return
- 11) IHS: I Have Space
- 12) RTS: Return to Station
- 13) DA : Delivery Associate
- 14) SLP: Security and loss prevention
- 15) NOC: Network Operation Center

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ABSTRACT

I am an Operations Manager Intern at Amazon Transportation Services Private Limited working on the project of Reverse Logistics Losses which aims at reducing the losses incurred in the Amazon network.

As an intern, I was required to understand the Last Mile operations and the different station processes and tools involved. I was also required to understand the different buckets of losses under which any loss is categorized into, work with the different RL POC across different zones to find the problems leading to these losses and the possible ways they can be reduced. The project deliverables also includes identifying the potential areas for quick fixes to reduce losses and define a long term programmatic approach to stabilize the same and also to design a mechanism which will control losses irrespective of the volumes or ship out.

CHAPTER 1

INTRODUCTION

With the vision to become the world’s most customer centric company, Amazon is the leading player in the E-commerce market. It is an American multinational conglomerate technology organization which started operation by selling books to the locality by the domain “Amazon.com”. It was established by Jeff Bezos in July 1994 who is the current Chairman, President and CEO of the company. Amazon’s headquarters are situated in Seattle, Washington, but Amazon now operates in multiple countries and has offices and delivery facilities all over the world. Amazon’s best seller is the Kindle device. There are few distinct online websites specific to the country they operate in.

Amazon in India has a specific domain name of Amazon.in for India business. The Amazon India team works on the complex business challenges that’s comes its way every day to innovate, improvise and hence create efficient and optimum solutions. Amazonians are offered an environment in which they can think, try, invent and optimize to make Amazon the Earth’s most customer centric company. At Amazon, there is never a dearth of opportunities to dive in, work with smart people having experience on challenging and difficult problems and create something impactful that contributes to the life of millions.

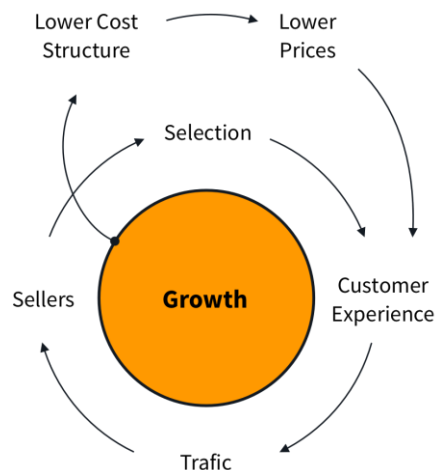


Figure 1.1: Business Model of Amazon

1.1 Different Areas of Business

- 1) **Technology** – Amazon Web Services, Amazon Enterprises Solution and E-commerce Platform.
- 2) **Operations** – World class fulfillment and customer service centers, Order Processing and fulfillment services.
- 3) **Consumer** – Media Soft line / hardline consumables.
- 4) **Corporate Functions** – Business development, Finance, Human Resources and Legal.

1.2 Leadership Principles

At Amazon, we consider ourselves and each other responsible for exhibiting the Leadership Principles through our activities consistently. Generally significant, our Leadership Principles depict how Amazon works together, how pioneers lead, and how we keep the client at the focal point of our choices. Our one of a kind Amazon culture, portrayed by our Leadership Principles, causes us tenaciously seek after our main goal of being Earth's most client driven organization. While our Principles have developed after some time, they stay consistent with the qualities we've held since Day 1, as should be obvious in this Brief History of our Leadership Principles.

Regardless of whether you are an individual giver or a supervisor of a huge group, you are an Amazon leader. These are our administration standards. If it's not too much trouble be a pioneer. It is so much instilled into the culture of Amazon that every Amazonian does not just follow them to perform their everyday task but they live by them. These are considered while taking every decision at Amazon, small or big.

The 14 Leadership Principles are:

- 1) **Customer Obsession:** Leaders at Amazon begin by thinking of the customer and then work in the reverse direction. They work enthusiastically to procure and maintain the customer's trust. Leaders do pay attention to competitors as well but the main focus is on the customers always.

- 2) **Ownership:** Leaders are owners. They think long haul and don't forfeit long haul an incentive for momentary outcomes. They follow up for the benefit of the whole organization, past simply their own group. They never state "that is not my job." And leave things for others.
- 3) **Invent and Simplify:** Leaders expect and require development and innovation from their groups and consistently discover approaches to disentangle. They are remotely mindful, search for new thoughts from all over the place, and are not constrained by "not invented here." As we do new things, we acknowledge that we might be misconstrued for significant stretches of time.
- 4) **Are Right, A Lot:** Leaders are right a great deal. They have solid judgment and great senses. They look for different points of view and work to disconfirm their convictions.
- 5) **Learn and Be Curious:** Leaders are never done learning and consistently look to develop themselves. They are interested about additional opportunities and act to investigate them.
- 6) **Hire and Develop the Best:** Leaders raise the presentation bar with each recruit and advancement. They perceive extraordinary ability, and eagerly move them all through the association. Leaders create Leaders and pay attention to their job in training others. We chip away at sake of our kin to create instruments for improvement like Career Choice.
- 7) **Insist on the Highest Standards:** Leaders have constantly elevated expectations — numerous individuals may think these principles are absurdly high. Leaders are consistently increasing present expectations and drive their groups to convey great items, administrations, and procedures. Leaders guarantee that imperfections don't get sent down the line and that issues are fixed so they remain fixed.
- 8) **Think Big:** Thinking little is an unavoidable outcome. Leaders make and convey a striking heading that moves results. They think contrastingly and check out corners for approaches to serve clients.
- 9) **Bias for Action:** Speed matters in business. Numerous choices and activities are reversible and don't require broad examination. We value determined risk taking which will lie in the interest of the organization.
- 10) **Frugality:** The main concept of Frugality is to "Achieve more with less". Need gives way to cleverness, development and independence.

- 11) **Earn Trust:** Leaders listen with utmost care, speak genuinely, and treat others carefully. They are vocally self-basic, in any event, while doing so is unbalanced or humiliating. Pioneers don't accept their or their group's personal stench scents of aroma. They benchmark themselves and their groups against the best.
- 12) **Dive Deep:** Leaders are expected to work at different levels of the organization, keep their eye on the ground, keep taking feedbacks to get to the core problems, and are distrustful when measurements vary from the expectations.
- 13) **Have Backbone; Disagree and Commit:** Leaders are determined to differentially challenge choices when they deviate, in any event, while doing so is awkward or depleting. Pioneers have conviction and are constant. They don't bargain for social union. When a choice is resolved, they submit completely.
- 14) **Deliver Results:** Leaders focus their contributions to achieve results and bring significant changes maintaining the quality of work but in a timely manner. Despite the misfortunes, that come across their way they never settle.

CHAPTER 2

AMAZON LOGISTICS

In this chapter, we discuss about the journey of the shipment and the processes involved on how a packet is packed and delivered to customer doorstep.

Amazon.in is a commercial website wherein dealers of all scopes utilize the foundation to benefits the customers found across the country. Though a portion of the dealers decide to stock their products at Amazon's distribution center called Fulfillment Center (FC) and utilize its top of the world fulfillment assets, also known as Fulfillment by Amazon (FBA), different merchants decide to stock their products within their own stockroom but utilize Amazon's Shipping arrangement to fulfil orders. At the point, a client submits a request contingent upon whether the client picked thing is satisfied through FBA or satisfied through shipper (unadulterated merchant), the request subtleties streams to either the vendor keeping the stock or an Amazon centre.

Sellers in India can choose from a variety of different categories to process orders with Amazon. These can be:

- 1) **Fulfilment by Amazon** – FBA gives the sellers the opportunity to avail Amazon's top of the world resources. It makes them eligible for fast delivery alternatives, and reliable customer support to the sellers. Vendors can deliver the items to Amazon FC, and Amazon will store the stock, process them if an order is placed, and pack and send them across give client assistance.
- 2) **Easy Ship** – It is for merchants who are willing to stock items within their distribution centers yet need assistance in transportation and conveyance. Under Easy Ship, dealers store their own items, pack them when they get a request and afterward hand it over to the Pick-up partner, who at that point sends the item and guarantees convenient and timely delivery.

- 3) **Seller Flex** – It imparts to the dealers Amazon's accepted procedures in warehousing, stock administration. Thusly, certain chosen venders will be permitted to change over their distribution center into a FBA stockroom. This implies, in spite of the fact that the merchandise will be put away in vender's distribution center they will in any case be labeled as FBA items. Merchants can package and deliver their items from the area subsequently limiting the expense to moving the merchandise to the distribution center and reclaiming stationary items from stockroom.
- 4) **Pure MFN** – This program alludes to venders delivering the items straightforwardly from their own distribution center in the wake of accepting requests through Amazon. This implies putting away, picking, pressing the requests, organizing the transportation, and giving all client care is the immediate duty of the merchant. These shipments don't enter AMZL Network.

To achieve its goal of becoming the most customer centric company, amazon promises to its customer for delivering the order within a certain time frame from the day of placing the order to a specific address. As soon as the delivery station inducts the packet it attempts to send it to the customer doorstep maintaining an excellent and smooth customer experience in whichever way possible.

Amazon Logistics (AMZL) provides six different options to ship the products to the customer doorstep.

- 1) **Standard** – This is the most basic delivery model and depends on the customer's location, it may take anything ranging from 2 to 10 days after placing the order.
- 2) **Express** – Also known as “Guaranteed Two-Day Delivery”.
- 3) **Next** – Also known as “Guaranteed One-Day Delivery”.
- 4) **Same** – Also known as “Guaranteed Same-Day Delivery”
- 5) **Morning Delivery** – Also known as “Guaranteed Morning Delivery”. Under this program the customer will surely receive the packet by 11 Am of the next day.
- 6) **Scheduled Delivery** – The customer can select a specific date and time to get the order delivered while placing an order.

Last-mile operations play a vital role to make sure that the customer gets their order by the promised delivery date (PDD).

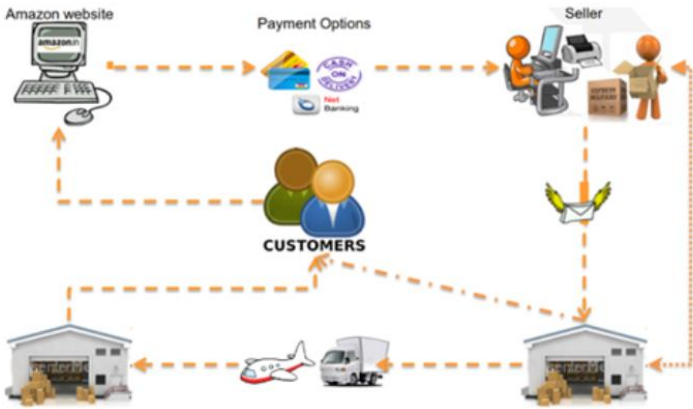


Figure 2.1: MFN Process Flow

2.1 JOURNEY OF A SHIPMET

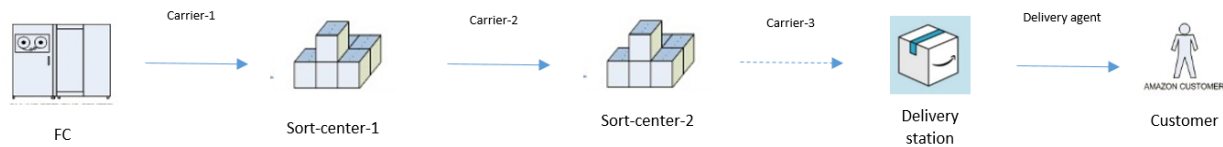


Figure 2.2: Journey of a shipment

2.1.1 Fulfillment Center (FC)

On the off chance that the thing is satisfied by amazon, at that point the request data streams to Amazon's Fulfillment Center (FC). There the item is processed, packed properly based on a recommended packing, and transformed to a packet. The packet is slammed with a transportation label.

The transportation name bears the transporter code and the administration type (speed of administration/method of travel). Toward the finish of the outbound procedure, the FC arranges the packets into varied bearers utilizing the transporter label and the administration type. The packets are then handed over to the partners to get them delivered to the customer.

2.1.2 Sort Center (SC)

The activities performed at a local SC are the same to those performed at the outbound of the FC, yet handling almost double the number of shipments taken care of by the FC outbound. The distinction between the Sort Center and Fulfillment Center outbound is in the number of packages. While the outbound of the FC receives packets only from that particular FC, the Sort center receives packets from all across India which it is then supposed to sort and connect to the last mile stations for delivery. The territorial SC do not need to impart the working area to FC and different transporters

2.1.3 Delivery Station

The Last Mile Delivery Station is the last hub in the system which will convey the packet to the client. It will get just positive bags that contains packets bound for that particular stations only. After getting the load, station is supposed to induct the boxes and afterward filter the packets in the station. The station tries to deliver the packet to the cx utilizing conveyance partners who commute using two wheelers or vans depending on the shipment size. As needs be the station will sort the packets according to the zones among different van/bike conveyance partners.

The shipments distinguished for bike and van mode of vehicle are arranged into separate conveyance courses. The partner who makes deliveries using a bike is furnished with a conveyance bag. The associate is expected to take away forty to fifty packets out on road with him/her for delivery. In the wake of arranging the bundles according to the conveyance courses, the bundles are then appointed to the particular partners who will convey in that course.

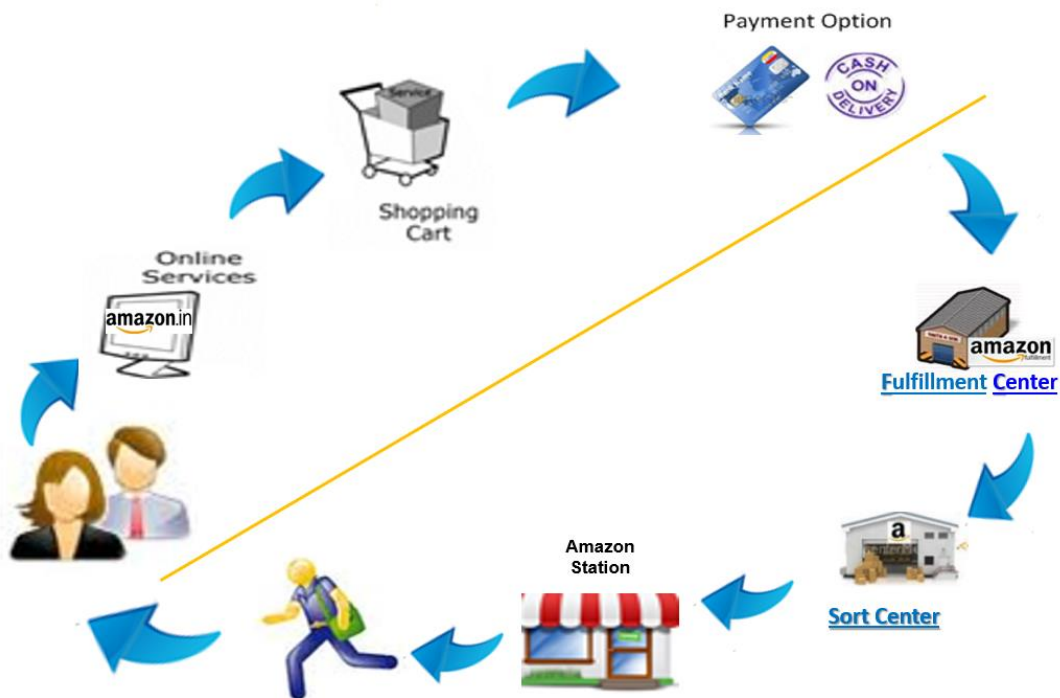


Figure 2.3: Order making process

CHAPTER 3

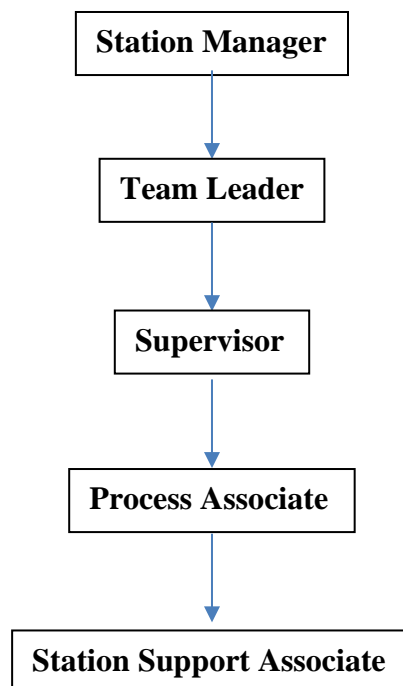
UNDERSTANDING LAST MILE OPERATIONS

Last-mile or conveyance stations are liable for the shipments that are conveyed and are to be delivered inside the station's pin code territory. The station utilizes various channels to ship the packets to the customers. Each Station has the infrastructural arrangements for sorting the packets into different service areas (routes) and storing the undelivered or attempted packets which could not be delivered.

An AMZL Station team usually has the following hierarchy:

Lead by the Station Manager, each station has Team Leads, under whom comes Supervisor, followed by Process Associates and then finally the team of Associates who maintain the floor and perform actual operations.

Delivery Station Hierarchy:



The various channels which the station uses to deliver the products are:

- **Delivery Service Partner (DSP)** - DSP DA are logistics organizations who sign up to AMZL to deliver packets to its customers following the benchmarks set by Amazon.

I Have Space (IHS) Stores – They are nearby shops situated in vicinity to the cx (almost 2 kms from the client) and have the bandwidth to attempt deliveries for Amazon and fulfilling its guidelines.

- **AmFlex** - People those who are happy and wanting to perform deliveries can take up this unique program and perform deliveries in the accessible working slot allotments which is helpful. AmFlex associates are given a compensation on hourly basis which is 120 rupees per hour.

3.1 Delivery Time Window

The station will deliver the shipments from 7 in the morning until 9'o clock in the night throughout the year except some national or regional holidays. Stations at all cities will follow the delivery window times and this will be standardized delivery time window. But under certain situations the station might need to operate beyond this time window as well in order to handle contingencies like customer requests. If there is a customer instruction to deliver beyond these scheduled times, the respective Manager/ Team Lead/Supervisor will review & organize the same accordingly.

3.2 Commercial Deliveries

When customer updates existing address or adds a new address in his/her account page, the customer can tag that address as either Commercial or Residential. This address type information flows is converted into Weekend Delivery Preference and made available on shipping label. LM Station operations today identify whether the address is commercial or residential and accordingly plan the delivery sequence to get the shipment delivered to customer successfully at the first time.

3.3 Exchange Delivery

When a customer orders an item that does not actually meet the customer's expectation due to wrong fit, color, etc., customer can exchange this item against new item. Today this alternative is accessible for attire, sports, shoes, child items, adornments, baggage and watch things that have a size or shading variety.

An exchange service entails delivery of the delivery shipment and pick up of a return/pickup shipment at the same time from the customer location. Both pickup and delivery either happen at once or not happen at all. The returned shipment may then be sent to the FC or to a Buyback partner address (as per the address on the label).

Exchange shipments which the station would be handling are of 2 types. However, the process of handling these shipments would be the same:

1. Buyback shipments: Customer can exchange any of their old item (may not be purchased from Amazon) against a new item that they purchase from Amazon for a price discount.
2. Hand-to-hand replacement shipments: Customer can get the new item delivered by exchanging the old item to Amazon. Associate will pick up old item & deliver the new item simultaneously.

3.4 Customer Returns

Similar to delivering packets, the Last Mile Stations likewise do pickup of packets. These can be from a customer who wish to return anything that he/she had purchased using the website called C>Returns and likewise can be a MFN vendor pickup. Amazon has a CReturn policy on different item classes which implies to things bought online. Clients who demand to send back the things, are expected to demand for a request utilizing the "Support Center". When the client has requested for a take back on the "Support Center", the C-Return demand streams to Amazon's framework. The last Mile shall complete the customer pick up from clients who requested for Return pickup.

3.5 Digital Payments at Doorstep

While putting request, the cx can decide to settle the payment on the web or at the time of conveyance by picking COD while reques. Despite the fact that client picked COD, Amazon provides the client to settle the payment carefully at during delivery.

- 1) **MPOS** - Mobile Point Of Sale device which can be used to collect the required money from the customer using a credit card or a debit card.
- 2) **Pay Link** – It is a website link imparted to client on his SMS after which he/she can pay for the shipment.
- 3) **Cash To Digital (C2D)** – The left over cash that Deliver Associate has to return to the client can be stacked to client's Amazon Pay wallet for any purchase in the future.
- 4) **Post-dispatch Pay** – As and when the packet is being transferred from origin to client's location, client can settle the payment the COD estimation of the packet.
- 5) **Scan & Pay** – During delivery, the client can scan the Smilie scanner tag and settle the payment for the packet utilizing Amazon Pay.

3.6 Station Processes

Any packet before reaching the customer goes through multiple processes after being received at the delivery station.

3.6.1 Load Receive

On arrival of the vehicle from the SC/FC at the Station, the Station Team Lead/Supervisor must tally the number of bags and bag id against transfer challan and acknowledge receipt of bags that arrived at the Station.

Transfer challan will be used for all movement of shipments between any two nodes (buildings). The transfer challan will have a list of all materials that is moving in a truck from origin node to destination node in the network. A copy of the transfer challan prepared by the origin will travel along with the load to the destination (carried by the truck driver). The destination will cross check

the details on the transfer challan against the actual receipt of truck/load before accepting the material after which the truck can be unloaded at the station.

3.6.2 Package Receive & Sort

After receiving the mother bags at the station, they are moved to the Receive work station in the station. Each packet inside the bags is then received using the bar code scanner.

Receive Process Flowchart

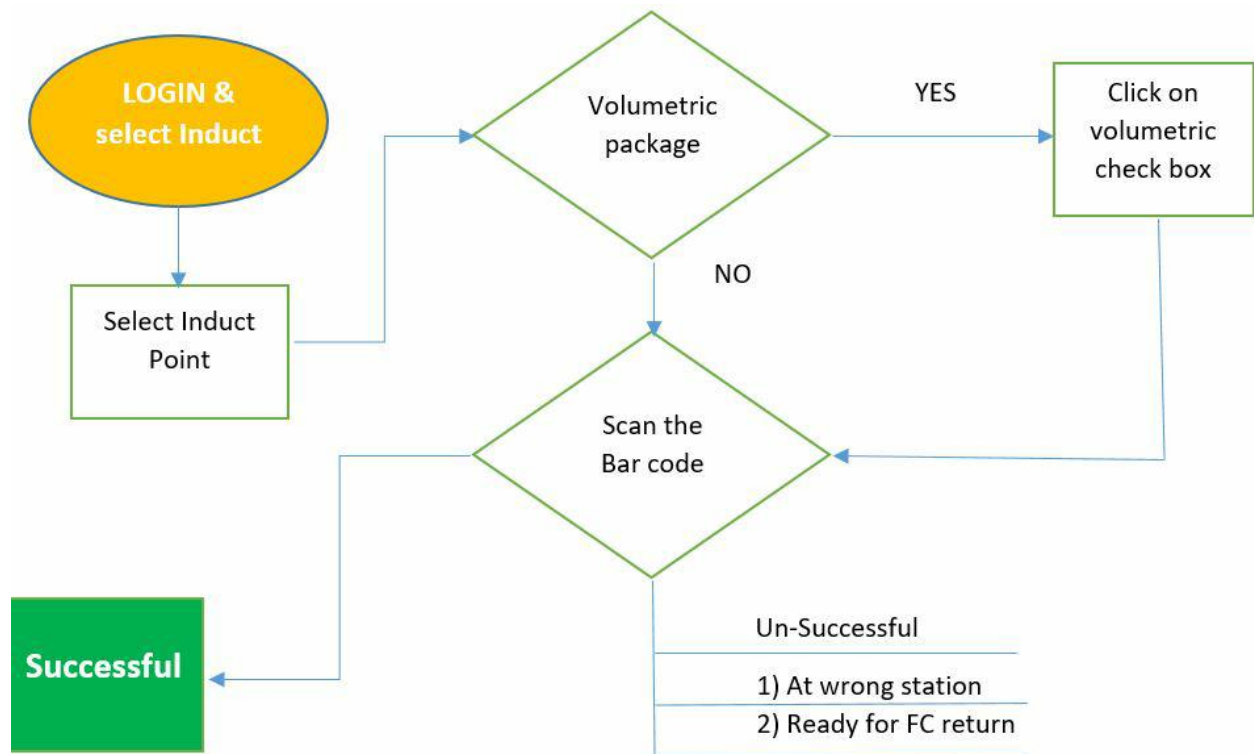


Figure 3.1: Receive Flowchart

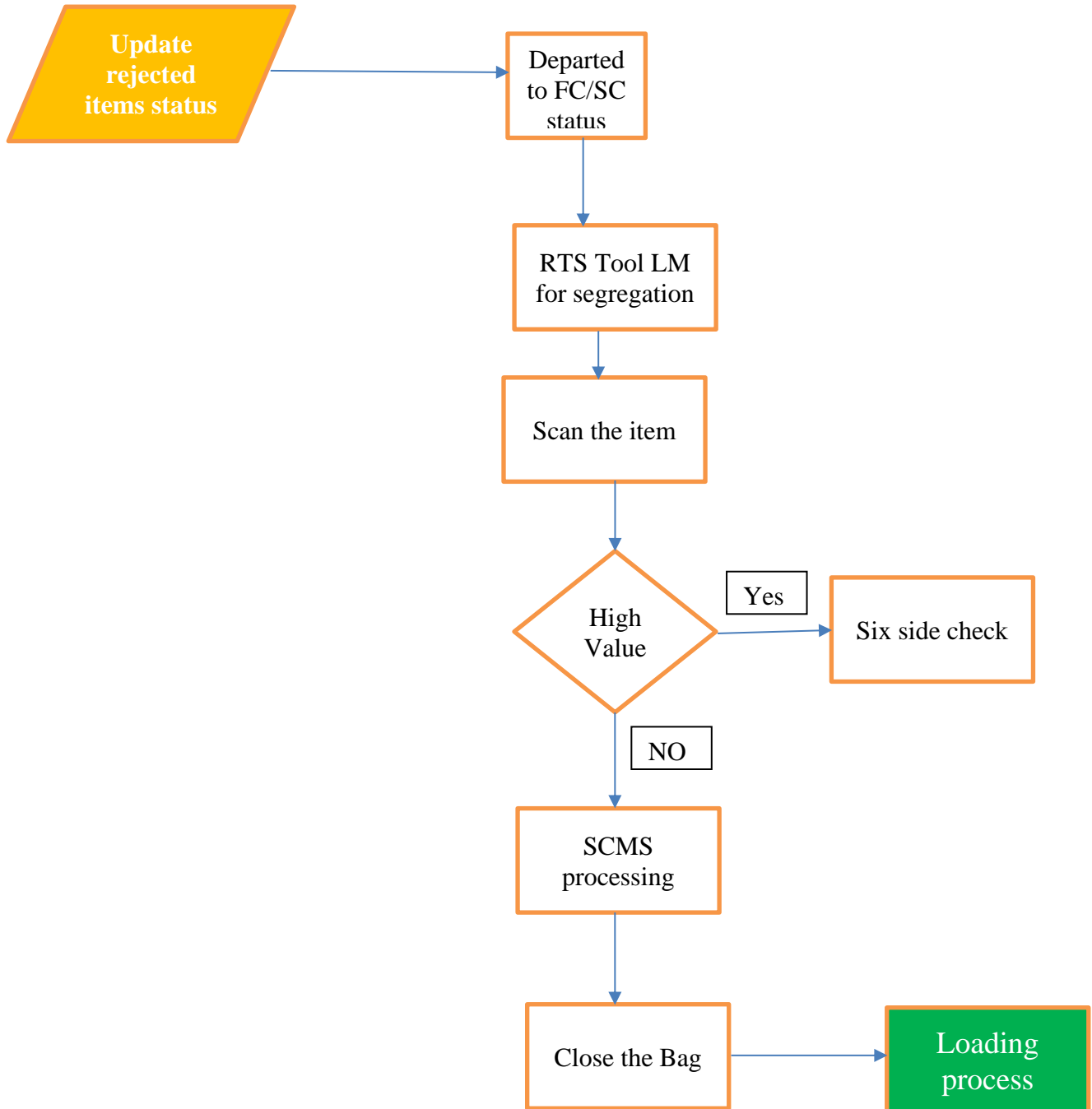
3.6.3 Assign & Depart

One of the main processes in last-mile operations is to assign the packages to delivery associates in such a way that their route is as optimized as possible. This process is known as routing. In India, as our customer geo-code accuracy is very low. Hence, the sequencing of packages plays a very important role, as correct sequencing improves the productivity of the Associate and reduces on-road time. The sequencing of shipments means that the shipments sorted into the delivery route are arranged in the order of delivery. Sequencing also ensures that the associate attempts to deliver all the shipments in an area before traveling to the next area in the delivery route. After making the routes the packets are assigned on the name of the DA and then departed from the station.

3.6.4 Return to Station (RTS)

After the DA has completed its route and finally returns back, the SSA will refer to the portal for the status of the DA. If there are any packets which have not been closed and are still showing out for Delivery in the name of the DA, he will be either required to sync his app for the updates or provide a reason why the packet is in that state. Even after syncing the app manually, if there are packets left OOR, the station associate will use the portal to change the scan manually.

RTS Process Flowchart



A high-level process of delivery at the station will look like this:



Figure 3.2: Last Mile Processes

3.6.5 Handling Damaged Packages

A packet might be viewed as damaged when it is received (or going to be received) by the customer in a condition more awful than it was dispatched by merchant. A damaged packet is unfit to be conveyed to the customer in its present state.

There are various sorts of damages which can happen to a packet:

- 1) **Physical Damage:** When packet/its substance is damaged truly. Model - Dent/Bend/Fold/Crease/Cut/Torn/Pierced.
- 2) **Wet Damage:** When packet or its substance is damaged because of any sort of liquid eg. Water or different fluids while transit or while at the station.
- 3) **Contamination Damage:** When the bundle/its substance has been sullied because of contamination, poisoning and so on, making it unusable for human utilization or even dangerous to deliver.

- 4) **Invasion Damage:** When a bundle/its substance has been tainted by insects or creatures (rodents)

In LM Node, a packet might be distinguished as damaged at any of these three phases

- 1) Damaged distinguished at receive.
- 2) Harm distinguished when arranged inside station
- 3) Harm distinguished when on street (in travel to/from client)

At whatever point a bundle is distinguished as Damaged, is critical to rapidly survey the harm and imprint the correct output occasion on the packet to avoid any injuries in the facility.

3.6.6 Incident reporting

Amazon endeavors to forestall wellbeing occurrences through mistake sealing our procedures, introducing safe gear plans, keeping up great housekeeping, creating basic working strategies, preparing our Associates, and reviewing our security frameworks.

On the off chance that there is a failure in the framework, a safety occurrence could happen at work.

In the event that a safety violation happens at work, it is critical to advise the station manager quickly so we can examine the occurrence and fix the issues that caused the occurrence.

Security incidents announcing and examination offers us the chance to actualize suitable activities to keep comparable events from occurring later on.

In the event that you are associated with a safety breach and there is a harmed included to a representative or merchant worker, you should:

- 1) Promptly report the episode to your administrator;
- 2) In the event that you can't discover your chief or it is dangerous to sit tight for your supervisor, request help from another Associate in the zone;
- 3) On the off chance that you are bleeding, attempt to remain in one area.

- 4) We need to ensure you are quickly given the proper clinical consideration. Contingent upon the seriousness of your physical issue, you will either be treated at the site emergency treatment center found (distinguish the area of your site's medical aid facility) or you will be treated by an outside clinical facility or medical clinic;

After your physical issue is fittingly treated, you will be asked by your supervisor to take part in an incident examination.

CHAPTER 4

PROBLEM STATEMENT

The AMZL Last Mile team is the final phase in the forward Supply Chain Network. All customer ordered packages via amazon.in are received from FC/SC at the AMZL delivery stations based on serviceability and delivered within promised delivery date. This involves multiple processes to be executed where optimum utilization of manpower, time, available workspace and tools is most essential. During its journey a packet travels from one facility to another which can be a few kilometers to 1000's of kilometers from a completely different part of the country. This increases the possibility of the packet getting misplaced or lost while in transit. While performing the multiple processes a package goes through multiples hands and more the touch points more is it vulnerable to theft, damages, misplacement. Both these lead to losses for the organization both in terms of money as well as customer experience which is the building block of Amazon.

In order to ensure the defaulters can be weeded out from the Amazon network LM team works closely with Security and Loss Prevention (SLP) team which is involved in investigations of any loss marked in any part of the supply chain. The current project is a fusion of Last-mile and SLP team where the RL POC work to bring in continuous improvement concepts and mechanism in the LM delivery stations which can reduce losses.

4.1 Key Project Deliverables

- 1) Understanding of AMZL transportation network and Last Mile Operations.
- 2) Reduce In-facility losses to 10 % (Currently trending ~15%).
- 3) Reduce ADHOC update losses to 5% (Currently trending ~10%)
- 4) Built mechanisms which will control losses irrespective of volume or ship out.
- 5) Getting the non-essential sidelining process implemented.

4.2 Executive Summary

As a first step, before actually working on the project, I learned about the various tools used in the Last mile delivery stations and the various processes through the Learn by Doing (LBD) program. The project aims to reduce the losses in the AMZL network, by building mechanisms and terminating loopholes in the current processes. Since some of the loss buckets result in actual monetary loss to Amazon it becomes critical and essential to minimize them in the interest of the organization. I used the different reports and tools available for LM stations to determine the problem areas, analyzing the data to find the critical problem and then contacted the different stakeholders based on the requirement of the project and understanding the feasibility of the solutions proposed.

The second part of the charter dealt with the segregation of essential packets from the non-essential packets which could not be delivered to the customers based on the government guidelines during the COVID-19 contingency and securing them in the station so that they do not lead to losses in the later stage. I along with the help of the zonal RL POC's was successful in getting the process implemented in the Phase-1 and Phase-2 stations across India as and when they became operational.

4.3 Loss Buckets

After completing the LBD and learning the various station processes and tools involved in a last mile delivery station I started working on the project charter by monitoring the ageing report to understand the different loss buckets and filter out the areas which need to be worked upon and also the stations or the territories leading in ageing, damage and losses. I began by understanding how different processes lead to losses and how they are categorized. There are various categories of losses:

- 1) **Ageing:** The number of shipments that are still (virtually or physically) not delivered or have a valid hold-state for a duration of 6 or more days. If any packet is kept inside the facility for more than 24 hours after a terminal scan or for more than 5 days after it was inducted at the station, it comes under ageing and should be cleared on priority basis. Similarly, a packet kept in the facility for more than 3 days after it was inducted at the

station, it starts reflecting under potential ageing and should be cleared to avoid it from falling into the ageing bucket.

- 2) **In-Facility losses:** Whenever a packet is lost inside any Amazon facility, it is considered as an in-facility loss. It is the second highest contributor to the actual loss bucket.
- 3) **Out on road losses:** Whenever a DA or VA losses a packet when trying to deliver it to the customer or losses a packet picked up from the customer or MFN seller, it is considered as an OOR loss. It constitutes of about 65% of the total ops controllable losses incurred by Amazon Last Mile network.
- 4) **In-Transit losses:** An In-transit loss is marked when a packet is lost while transporting the package between the FC->SC, SC->DS or vice-versa.
- 5) **Adhoc Update losses:** Any change in the scan sequence of a shipment which can lead to the customer receiving both the packet and the refund for the packet is categorized as an Adhoc Update Loss.
- 6) **MDR:** It is when the FC receives a different customer return item from what was actually expected.
- 7) **Concessions:** This refers to the concession issued to the customers whenever they escalate of not having received a deliver marked package, switcheroo or mismatch.

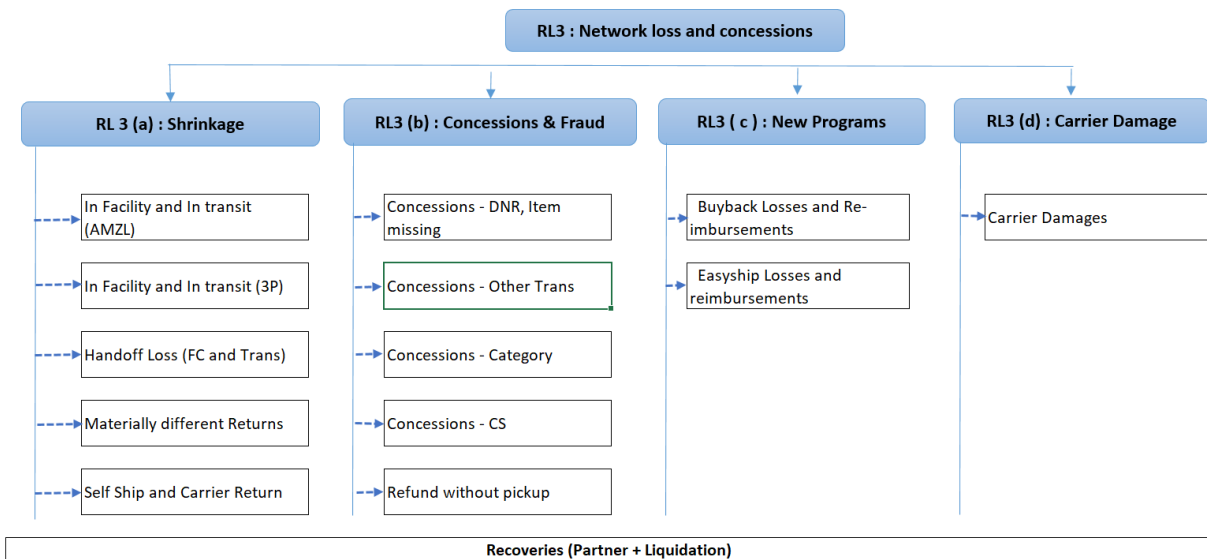


Figure 4.1: Loss Buckets from LM perspective

4.4 Approach Note:

To monitor the performance of each delivery station and provide a benchmarking we have a number of tools in Amazon one of which is the daily DWP reports which are delivered to the station managers and the leadership for clear visibility of the adherence of different processes and the misses by different stations at the same time.

Basis on the charter and the key areas to focus I started with the root cause analysis to understand the In-facility and Adhoc losses in depth and understand why they were happening by taking a follow up with the leading stations in both the cases. I used the Ageing report for the in-facility loss data and Adhoc_Update report to fetch the Adhoc update loss data.

Before actually proposing any solution or trying to build a mechanism, it is important to put a Deep Dive on the data to identify the critical problem by determining the Severity and occurrence of all the problems and then finding the root cause of the critical problem. Once we have gathered all these data points, is when we can actually start working to build a solution.

4.4.1 Ad hoc Update Losses:

Focusing on the Adhoc Update losses first, I followed up with the leading stations talking to the stations managers and the team leads to know the problems faced by them or the process lapses happening at the station. I took help of the SLP team to get the data of the packets where the customer and the MFN seller received the package physically whereas the concession was also issued due to the Adhoc update. Then to better understand the reason of the concessions, I contacted the CS team, whether these were issued after the customer received the packet and there was an issue in the product or was it processed before that. The major callout from the stations regarding the rollbacks in the delivery were technical issue, for which I reached out to the NOC team to check if they were aware of the situation and anything is being done to resolve them. I also contacted the DSL team to know what instructions they had regarding the web reject packets and their escalations. This really helped me in filtering out the Ops non controllable areas and raise the concern to the correct stakeholders so that the issue can be resolved and does not impact the operations team. Now I could focus more on building mechanisms for what actually needs to be worked upon. I reached out to the technical team to understand if a few additions can be made to the app used by the delivery associates.

4.4.2 In-Facility Losses:

I used a similar approach to figure out the lapses leading to in-facility losses. I used the Ageing report to get the data of in-facility losses. Then focusing on the leading and the best performers, I followed up with the station managers there to understand the challenges faced by them in curbing the losses. This helped me get a clear view of where I should focus upon and which areas need improvement. I even contacted a few stakeholders outside India to understand what processes they follow to address the same issue.

Table 4.1: Marking an in-facility loss

In Facility loss		
Last scan	Timeline for marking lost	Scan to be marked
From At station to Ready for FC/SC	3 days from last scan	Lost - Lost by carrier
Hold for customer request, Dropped at store	7 days from last scan	Lost - Lost by carrier
Needs attention	3 days from last scan	If the package has been received at station, then mark Lost - Lost by carrier. If packages have not been received, then mark Missing - Potential lost and then Lost - Lost by carrier

4.4.3 Non Essential Sidelining

Meanwhile, due to the sudden lockdown of the whole Amazon network during the COVID contingency, over 7 lakh shipments were stuck at stations or were in transit to the stations. These could neither be connected back to the FC nor could be delivered to the customer. Therefore, on resuming operations, it became essential to deal with these packages as it could lead to huge losses to Amazon if not dealt properly. Therefore, all the non-essential i.e. those not permissible for delivery were sidelined from the essential prepaid shipments and the sidelined packages were kept

securely at their respective stations. I along with the help of the zonal RLPOC's was successful in getting the process implemented in the Phase-1 and Phase-2 stations across India by taking a follow up from the respective stakeholders and maintaining an excel to keep a record of all the data collected, i.e. the number of shipments sidelined and the number of bags and trolleys used. These were later either connected to the FC/SC if rejected by the customer or delivered to the customers whenever the permissions were granted.

4.5 Progress till date

Based on the Root Cause Analysis, I came to the following proposed solutions:

4.5.1 Adhoc Update Losses:

- 1) In most of the cases delivery leg was done due to a technical problem where the stations were not able to depart the packets virtually from the portal, or were not able to print a reject shipment label. So, as a troubleshoot mechanism the stations rolled it back to hold for redelivery to do the RTS again and process the packet accordingly.

Solution: Report the problem with the tech team and work with them in case of any challenges faced by them. This contributes to 35% of the total Adhoc update loss and is ops non controllable. Getting this resolved would provide a better clarity to the stakeholders.

- 2) Another major reason for rollback is DA miss during exchange pickup. Whenever a DA accidentally fails an in app verification for an Exchange pickup, the delivery leg gets automatically rejected. This has to be rolled back to complete the delivery. This is majorly a training issue where the DA are not coached to deal with corner cases like these.

Solution: The obvious solution to the problem is to provide improved training to the DA/VA but as an alternative, we can have pop up to confirm whenever an in app verification fails or include an instruction on the swipe to finish page to press back to do the in app verification again. This will provide them with a backdoor to improve their mistake.

- 3) The DA marks the pickup done before actually receiving the pickup in hand, bypassing the In-app verification or approves it by mistake.

Solution: We can have an update in the rabbit app to click a photograph of the packet received. We might save the photo on Amazon servers till the RTS is done. This will make the DA more vigilant and reduce the chances of pickup being done by mistake or falsely.

4.5.2 In-Facility losses:

- 1) This happens mostly when the packet could not be assigned to a DA virtually but went out on road with him physically. This may be due to network issue or if the packet gets cancelled after it has been received at the station but was not assigned to the DA. The scanner does not check the current status of the packet and allows the stations to include the it in the route.

Solution: The stations can single each packet before departing and the guards should count the packets directly under the camera before departing.

- 2) The major category of packets lost are very small sized packet which are prone to theft are hard to track even in the camera.

Solution: We can put the extra small packets (almost the size of a palm) in a different bin which will make it easier to identify them and keep a check on them.

- 3) In the large stations, the packets get misplaced in the facility when left unattended.

Solution: We can keep bins at 2 or 3 different location in the station where the team can put any unattended packet which can later be processed according to the status.

- 4) The packets coming under ageing have high chances of getting lost. Currently the stations rely on the ageing report to clear ageing and getting it cleared is a very manual process where some of the RLPOC publishes the Ageing report.

Solution: We can include a column of Ageing in the Reconciliation tab which will prompt the station if any packet falling under ageing is scanned. This way the stations will be more vigilant to clear ageing as it is a mandatory process to be done by the stations.

Currently I am responsible for flashing a daily report of Ad hoc Updates to all the delivery stations in the north region. This will make the stations more vigilant in making Adhoc updates and will also lead to a better LM SOP adoption.

I am also working to automate the process of report generation using Excel Macros and VBA.

VBA represents Visual Basic for Applications, it is an event-driven programming language designed by Microsoft. It is now mostly utilized by MS-office such as Excel, Word, and Access. Writing Macros makes it easier to perform everyday repetitive tasks. This makes the work quicker and much more efficient. It also reduces the chances of errors in obtaining the final result. This can be put to use for multiple cases where reports are published to drive metrics and reduce losses. The code can be seen in the appendix below.

CHAPTER 5

FUTURE WORK

To complete the project deliverables and reduce the in facility and Ad hoc losses by 5%, I would try and run a pilot for all the feasible solutions approved by the Leadership as soon as we are allowed to join the sites back once the lockdown is lifted. I would then monitor the metric and compare it to the previous months' data to find out if the solution actually delivered some results. I would try to work with the tech team to get the technical issues resolved and mitigate the problem resulting in high volumes of Adhoc Update Losses. I would act as the RL POC for Gurgaon region for In facility and Ad hoc Update loss to implement the mechanism and make changes according to the challenges faced.

CONCLUSION

Working at Amazon as an operation manager was a great learning experience which helped me know the various aspects of supply chain and logistics business. I learnt the complete life cycle of any order placed at Amazon.in starting from the time it is processed in the FC to the time it reaches the customer doorstep. I have been able to gain the ground level knowledge of how a delivery station works and the different processes involved in the Last Mile delivery stations. After understanding the various loss buckets I gathered the necessary information to propose some solutions and build mechanisms which could reduce losses. Unfortunately, due to the ongoing lockdown and the virtualization of the internship program, I was not able to run pilot on the proposed solutions and check the outcomes accordingly.

I also gained an Intermediate level expertise in MS-Excel, learning to use macros, write codes in VBA and run Power Queries apart from the Pivot Tables and Charts. All this was helpful in publishing the daily reports to all the stakeholders for visibility and adoption.

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APPENDIX

VBA Code 1:

```
Sub checkTracking()  
,  
  
' Macro1 Macro  
,  
  
Dim x As Long  
  
Dim lr, lr1, lr2, lr3, lookRng, lookRng1, lookRng2, lookRng3 As Range  
  
Dim tidLr, statusLr As R  
  
Dim0 findStr As S  
  
Dim0 foundCell, action As Variant  
  
Dim0 today As S  
  
  
Dim0 outlook As Object  
  
Dim0 newEmail As Object  
  
  
today = Format(Now, "dd-mmm-yy")  
  
  
ThisWorkbookPath = ThisWorkbook.Path  
  
If Dir(ThisWorkbookPath & "\Sidelines-" & today & ".xlsx") = "" Then  
  
    MsgBox "File Not Exits"  
  
    Set WB = Workbooks.Add
```



```
WB.SaveAs ThisWorkbookPath & "\Sidelines-" & today & ".xlsx"
```

```
End If
```

```
Set sidelines = Workbooks.Open(ThisWorkbookPath & "\Sidelines-" & today & ".xlsx")
```

```
Set sidelinesSheet = sidelines.Sheets("Sheet1")
```

```
sidelinesSheet.Range("A1") = "Tracking ID"
```

```
sidelinesSheet.Range("B1") = "Action"
```

```
sidelines.Save
```

```
ThisWorkbook.Activate
```

```
lr = Sheets("rawdata").Cell(Row, "A").End(xlU).
```

```
lr1 = Sheets("rawdata").Cell(Row, "B").End(xlU)
```

```
lr2 = Sheets("rawdata").Cell(Row, "C").End(xlUp)
```

```
lr3 = Sheets("rawdata").Cell(Row, "D").End(xlU)
```

```
Set lookRng0 = Sheet("rawdata").R("A1:A" & lr)
```

```
Set lookRng1 = Sheets("rawdata").Range("B1:B" & lr1)
```

```
Set lookRng2 = Sheets("rawdata").Range("C1:C" & lr2)
```

```
Set lookRng3 = Sheets("rawdata").Range("D1:D" & lr3)
```

```
Application.EnableSound = False
```

```
tidLr = sidelinesSheet.Cells(Rows.Count, "A").End(xlUp).Row
```

start:

sidelines.Save

Application.EnableSound = False

tidLr = sidelinesSheet.Cells(Rows.Count, "A").End(xlUp).Row

findStr = InputBox("Enter Tracking ID")

Length = Len(findStr)

If Length = 12 Then

 curRow = tidLr + 1

 sidelinesSheet.Range("A" & curRow) = findStr

 foundCell = ""

 action = ""

 For x = 1 To lr

 If Sheets("rawdata").Range("A" & x).Value = findStr Then

 Set foundCell = Sheets("rawdata").Range("A" & x)

 action = "SIDELINE - NON-ESSENTIAL"

 Exit For

 End If

 Next x

 If foundCell = "" Then

 For a = 1 To lr1

 If Sheets("rawdata").Range("B" & a).Value = findStr Then

```

        Set foundCell = Sheets("rawdata").Range("B" & a)

        action = "SIDELINE - NON-ESSENTIAL "

        Exit For

    End If

Next a

End If

If foundCell = "" Then

For b = 1 To lr2

    If Sheets("rawdata").Range("C" & b).Value = findStr Then

        Set foundCell = Sheets("rawdata").Range("C" & b)

        action = "SIDELINE - NON-ESSENTIAL "

        Exit For

    End If

Next b

End If

If foundCell = "" Then

For c = 1 To lr3

    If Sheets("rawdata").Range("D" & c).Value = findStr Then

        Set foundCell = Sheets("rawdata").Range("D" & c)

        action = "SIDELINE - NON-ESSENTIAL "

        Exit For

    End If

Next c

```

End If

foundLength = Len(foundCell)

If foundLength > 0 Then

 sidelinesSheet.Range("B" & curRow) = action

 MsgBox action, 64, action

 GoTo start

Else

 Application.EnableSound = True

 Beep

 Application.EnableSound = False

 sidelinesSheet.Range("B" & curRow) = "Not Found"

 MsgBox "PROCEED FUTHER", 64, "RECORD NOT FOUND"

 TempMsg (foundCell&" is Essential", "ESSENTIAL")

 GoTo start

End If

Else

 'Application.EnableSound = True

 'Beep

 MsgBox "TrackingID must be 12 characters", 16, "Error"

 'Application.EnableSound = False

GoTo start

End If

End Sub

VBA Code 2:

Sub tm()

,

' tm Macro

,

,

Columns("N:N").Select

Application.CutCopyMode = False

Selection.Insert Shift:=xlToRight, CopyOrigin:=xlFormatFromLeftOrAbove

Range("N1").Select

ActiveCell.FormulaR1C1 = _

"=IFERROR(IF(RC[-3]="AMZL",VLOOKUP(RC[-6],Mapping!C[-9]:C[-6],4,0),VLOOKUP(RC[-6],Mapping!C[-9]:C[-6],3,0)),'Base Data'!RC[-1])"

R("N1")

Select.Fill Dest:=R ("N1:N415")

R("N1:N415")

C("N:N").Col.Fit

```

C("M:M").Col.Auto
Columns("N:N").Select
Selection.Copy
Range("M1").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Columns("N:N").Select
Application.CutCopyMode = False
Selection.Delete Shift:=xlToLeft
End Sub

Sub combin()
'
' combin Macro
' Keyboard Shortcut: Ctrl q
'
ActiveCell.FormulaR1C1 = "=RC[-14]&"" to ""&RC[-12]"
Range("P1").Select
Selection.AutoFill Destination:=Range("P1:P300")
Columns("P:P").EntireColumn.AutoFit
End Sub

Sub Final()
'
' Final Macro

```

' Keyboard Shortcut: Ctrl+Shift+Q

Columns("N:N")

Apply.CutCopyMode = False

Selection.Insert Shift:=xlToRight, CopyOrigin:=xlFormatFromLeftOrAbove

Range("N1").Select

ActiveCell.FormulaR1C1 = _

"=IFERROR(IF(RC[-3]="AMZL",VLOOKUP(RC[-6],Mapping!C[-9]:C[-6],4,0),VLOOKUP(RC[-6],Mapping!C[-9]:C[-6],3,0)),'Base Data'!RC[-2])"

Rang("N1").Selec

Selecti.Auto Destination=Rang("N1:N210")

R("N1:N203").Selec

Col("N:N").EntireCol.Auto

Columns("M:M").EntireColumn.AutoFit

Columns("N:N").Select

Select.Copy

R("M1")

Columns("N:N").Select

Apply.CopyMode = False

Select.Del Ctrlt:=xlToLeft

Active.FormuleR1C1 = "=RC[-14]&"" to ""&RC[-12]"

```
Range("P1").Select
```

```
Selection.AutoFill Destination:=Range("P1:P210")
```

```
Columns("P:P").EntireColumn.AutoFit
```

```
End Sub
```


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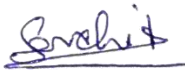
UNDERTAKING

I Mr. Sanchit Garg Roll No. 161051, Branch Electronics and Communication Engineering is doing my internship with Amazon from 3rd February, 2020 to 26th June, 2020.

As per procedure I have to submit my project report to the university related to my work that I have done during this internship.

I have compiled my project report. But due to COVID-19 situation my project mentor in the company is not able to sign my project report.

So I hereby declare that the project report is fully designed/developed by me and no part of the work is borrowed or purchased from any agency. And I'll produce a certificate/document of my internship completion with the company to TnP Cell whenever COVID-19 situation gets normal.



Name: Sanchit Garg

Date: 30/6/2020