

# **AMAZON OPERATIONS**

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

## **BACHELOR OF TECHNOLOGY**

**IN**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

By

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**UNDER THE GUIDANCE OF**

**Mr. Pradeep Garg**



**JAYPEE UNIVERSITY OF INFORMATION  
TECHNOLOGY, WAKNAGHAT, SOLAN (H.P)**

**MAY 2020**

## Project Report Undertaking

I Ms. \_\_\_\_\_ Nupur Chaturvedi \_\_\_\_\_ -Roll No. \_\_\_\_\_ 161088 \_\_\_\_\_  
Branch \_\_\_ECE\_\_\_\_\_ is doing my internship with \_\_\_\_\_ Amazon \_\_\_\_\_ from  
\_\_\_\_\_ 2<sup>ND</sup> Feb \_\_\_\_\_ to \_\_\_\_\_ 26<sup>TH</sup> June \_\_\_\_\_

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.

Signature



Name \_\_\_Nupur Chaturvedi\_\_\_

Date \_\_\_02/06/2020\_\_\_

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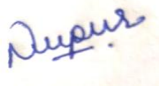
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## DECLARATION

I hereby declare that the work reported in the B. Tech Project Report entitled **AMAZON OPERATIONS** submitted at **Jaypee University of Information Technology, Waknaghat, India** is an authentic record of my internship in AMAZON Operation as Area Manager Intern, carried out under the supervision of my hiring manager/Mentor **Madhav Dhingra**. And I have not submitted this work elsewhere for any other degree or diploma.

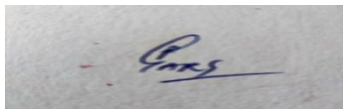
This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

**Owner-**



**Nupur Chaturvedi (161088)**

**DATE: 24<sup>th</sup> MAY, 2020**



**Project Mentor (University) -**

**Mr. Pardeep Garg**

**Deptt. – ECE (JUIT)**

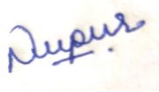
## ACKNOWLEDGEMENT

I would like to express my gratitude to my Hiring Manager/Mentor, **Madhav Dhingra, Area Manager, Amazon Operations** for his useful guidance, remarks and engagement in the learning process of this internship project. He consistently guides me in the right direction, so that I come up with better changes and results.

I am highly grateful to **all the L3+managers of DEL3** for their guidance right from the very beginning. This accomplishment would not have been possible without them.

Thank you.

**By:**



**Nupur Chaturvedi**

**161088**

## **LIST OF ACRONYMS AND ABBREVIATIONS**

FC	FULFILLMENT CENTRE
AM	AREA MANAGER
AA	ASSOCIATES
IB	INBOUND
OB	OUTBOUND
ICQA	INVENTORY CONTROL AND QUALITY ASSURANCE
SBC	SIMPLE BIN COUNT
CC	CYCLE COUNT
SRC	SIMPLE RECORD COUNT
NBD	NEED BY DATE
IOL	INVENTORY ODD LOCATION
ITP	INBOUND TRACKING PORTAL
FUD	FULFILLABLE UNFULFILLED DEMAND
VBA	VISUAL BASIC FOR APPLICATIONS
RA	RESEARCH ANALYST
ASIN	AMAZON STANDARD IDENTIFICATION NUMBER

## LIST OF TABLES

Table 2.1 The consolidated data of damage tracker

Row Labels	Baby Product	Beauty	Biss	Drugstore	Grocery	Home Improve	Grand Total
dmgEXP001		2			180		182
dmgFCVEN001							
dmgIBVEN001		14		32	270		316
tsCretdis001	2	10		38	272		322
tsCretPS001					6		6
tsCretPS006					2		2
tsCretPS009		4		18	96		118
tsCretPS010	2	20		38	232	2	294
tsHazmatdis002			2	10			12
<b>Grand Total</b>	<b>4</b>	<b>50</b>	<b>2</b>	<b>136</b>	<b>1058</b>	<b>2</b>	<b>1252</b>

Table 2.2 The output of the Dashboard (Category wise)

Damage Type	Quantity	Total Cost
Customer Return Dispose	xx	Xx
Warehouse Damage	xx	Xx
Vendor Damage	xx	Xx
Expired	xx	Xx



Table 2.3 The output of the Dashboard (Function wise)

Process	Count of damaged items	Sum of item cost
Pack	Xx	Xx
Pick	Xx	Xx
Rebin	Xx	Xx
Stow	Xx	Xx
<b>Grand Total</b>	<b>Xx</b>	<b>Xx</b>

Table 3.1 The summary table of one click depository

#	Function	SJI/SOP	<2017	2017	2018	2019	2020	NA*
1	Inbound	500	200	110	70	55	43	20
2	Outbound	Xx	xx	xx	xx	xx	Xx	xx
3	ICQA	Xx	xx	xx	xx	xx	Xx	xx
4	FC Dock	Xx	xx	xx	xx	xx	Xx	xx
5	Transshipment	Xx	xx	xx	xx	xx	Xx	xx
6	Others	Xx	xx	xx	xx	xx	Xx	xx
7	Total	Xx	xx	xx	xx	xx	Xx	xx

## **ABSTRACT**

The projects are focused on improving Process within the FC and the Customer Experience. DEL3 FC is known as Extra-Large Pantry Site in IN, where ~X Million units are getting received and shipped in a month cycle with ~75% of volume contribute to pantry products, there are some challenges faced by the damaged products, the aim is to design a damage tracker that can track the items getting damaged at different stages and in different process. Also, in lieu of the current COVID situation there are process improvement required in Fulfillment center with regard to Social Distancing guideline, so the goal is to design, plan and execute of plan which will ease Inbound and Outbound Process along with streamlining barriers faced by FC AA.

# CHAPTER 1

## INTRODUCTION

### 1.1 History and Background

Amazon is an American multinational company, founded by Jeffrey P. Bezos in 1994, a computer science and electrical engineering graduate from Princeton University. He incorporated the company as Cadabra in July 1994. He quickly dropped this name when a lawyer he contacted mistook it for cadaver, then the name Amazon was founded soon after, the Amazon River, which is the largest river in the world, and the letter “A” to “Z” signifies availability of every product, with an arrow pointing from a to z, which signifies customer satisfaction as it represents delivering smiles.



Fig 1.1

The company has improved a lot since last 20 years and is continuously growing.

The one thing that made them so famous was Books. The Seattle, WA based company has grown from a book seller to a virtual Wal-Mart of the Web selling products as diverse as Music CDs, Cookware, Toys and Games and Tools and what not. The company made its first profit of \$5.8 million in the year 2001.

Bezos was working as the senior Vice-President at D.E Shaw, a Wall Street investment bank, before he resigned and moved to Seattle. Earlier he did not know much about Internet but soon he came across a statistic of Internet growing at 2300%, which convinced him that it was a great opportunity to grow. Even though not knowing much and no prior knowledge of retailing, he entered into the world of E- Commerce. He opted to locate the company in Seattle since it had a large pool of technical talent and also because, it was close to one of the largest book wholesalers. The company finally went on-line in July 1995, and went public in May 1995.



Fig 1.2

For his contribution, Jeff Bezos at the age of 35 was picked as the 1999 Time person of the year, making him the fourth-youngest person of the year. Describing why it chose Bezos, Time magazine said, "Bezos' vision of the online retailing universe was so complete, his Online

Shopping for Electronics, Apparel, Computers, Books, DVDs & more site so elegant and appealing that it became from Day One the point of reference for anyone who had anything to sell online”.

## 1.2 Leadership Principles

Amazon is a customer centric company it has 14 leadership principles by which it works, which are mentioned below

<b>Customer Obsession</b>	<b>Ownership</b>
<b>Invent &amp; Simplify</b>	<b>Are Right, A Lot</b>
<b>Learn and be curious</b>	<b>Hire and Develop the Best</b>
<b>Bias for Action</b>	<b>Think Big</b>
<b>Insist on the High Standards</b>	<b>Frugality</b>
<b>Earn Trust</b>	<b>Deep Dive</b>
<b>Have Backbone, Disagree &amp; Commit</b>	<b>Deliver Results</b>

## AMAZON'S 14 LEADERSHIP PRINCIPLES

<p><b>Customer Obsession</b> Start with the customer and work backwards; work vigorously to earn and keep customer trust; pay attention to competitors, but keep obsessing over customers</p>	<p><b>Ownership</b> Think like an owner, long term and don't sacrifice long-term value for short-term results; act on behalf of the entire company, not just for your own team; never say "that's not my job"</p>	<p><b>Invent and Simplify</b> Expect and require innovation and invention from your team and always find ways to simplify; be externally aware, always look for new ideas from everywhere, and don't be limited by "not invented here"</p>	<p><b>Leaders are Right. A Lot</b> You have strong judgment and good instincts; you seek diverse perspectives and work to disconfirm your beliefs</p>
<p><b>Learn and Be Curious</b> You are never done learning and you always seek to improve; you are curious about new possibilities and act to explore them</p>	<p><b>Hire and Develop the Best</b> Raise the performance bar with every hire and promotion; recognize exceptional talent, and willingly move them throughout the organization; develop leaders and take seriously your role in coaching others</p>	<p><b>Insist on the Highest Standards</b> You have relentlessly high standards - many may think these standards are unreasonably high; you are continually raising the bar and driving your team to deliver high quality products, services and processes; defects do not get sent down the line and problems are fixed so they stay fixed</p>	
<p><b>Bias for Action</b> Speed matters in business. Many decisions and actions are reversible and do not need extensive study. We value calculated risk taking.</p>	<p><b>Frugality</b> Accomplish more with less. Constraints breed resourcefulness, self-sufficiency and invention. There are no extra points for growing headcount, budget size or fixed expense.</p>	<p><b>Dive Deep</b> Operate at all levels, stay connected to the details, audit frequently, and be skeptical when metrics and anecdote differ. No task is beneath you.</p>	<p><b>Earn Trust</b> Listen attentively, speak candidly, and treat others respectfully. Be vocally self-critical, even when doing so is awkward or embarrassing; leaders do not believe their or their team's body odor smells of perfume; benchmark yourself and your team against the best.</p>
<p><b>Have Backbone. Disagree and Commit</b> Respectfully challenge decisions when you disagree, even when doing so is uncomfortable or exhausting; have conviction and be tenacious; do not compromise for the sake of social cohesion; once a decision is determined, commit to it.</p>	<p><b>Deliver Results</b> Focus on the key inputs for your business and deliver with the right quality and in a timely fashion; despite setbacks, rise to the occasion and never settle.</p>	<p><b>Think Big</b> Thinking small is a self-fulfilling prophecy. Create and communicate a bold direction that inspires results. Think differently and look around corners for ways to serve customers.</p>	

Watch the full story about this framework on my YouTube channel © Dan Croitor 2017 • part of my video series about unique company principles and culture

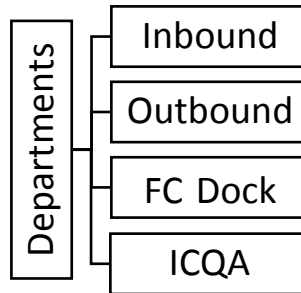
Fig 1.3

### 1.3 Fulfillment Centre

The great example of operating model in action of Amazon is the Amazon's Fulfillment Centre. The process for distribution of man power requires the use of many seasonal workers during the seasonal peaks to ensure customer promises are met and that packages are shipped as soon as possible during peak shipping times. When the orders are placed by a customer then the assigned picker receives the order on the scanner and is informed of the location for each item. The scanner is linked to a computer system that figures out the fastest route or gives the batches depending upon the most convenient and faster picks within the warehouse to pick up all the items. If the items are evenly distribute throughout the warehouse, it allows a worker to find them faster. Once the items are found, they are placed in yellow containers that travel on conveyor belts that will eventually lead to the packing area.

The packing area is aided by system that determine the optimal box, packing material, and length of tape to use. The packed items are then placed on conveyor belts where according to the shipment the batches are segregated and the sent for packing; after which the shipment label is

pasted and then are sent to delivery trucks. In the delivery trucks, the shipments are placed according to the area they are supposed to reach.. Items are then shipped out to sort centres and then to delivery stations from where they are delivered to the customer.



### **1.3.1 Inbound**

The three main process flow in inbound include-

- IB Dock
- Receive
- Stow

**ASIN** - Amazon Standard Identification Number.

Types of ASIN-

- XOO label - It starts with X00. Used in the transshipment products that are sent from one FC to another FC.
- BOO label - Each item has a registered BOO label with Amazon.
- ISBN - International Standard Book Number
- EAN - European Article Number
- UPC - Universal Product Code.
- LPN - This stands for License plate number. This is used for customer returns.

#### **a) IB Dock:**

The pre check-in of the vehicle is done through the YMS.

**YMS is a portal** used to check which dock is free and assigning dock according to the appointment scheduled and availability of dock.

**b) Receive:**

The unloaded items are received at different stations

Types:

- Each receive - No prep activity is performed on the ASIN. Items like shoes and HRV.
- Prep receive - PrepActivity is performed on the ASIN as per requirement and the demand.
- Pallet receive - Entire pallet is received. In this large amount of same item is received together after doing shrink wrap on it. Pallets should contain the same ASIN for pallet receive. For this a label known as PaX label is pasted after the pallet is received.
- Case receive - Case receive is the receiving of an entire carton at a time. It must also have a single ASIN. The CsX label is used for this receive.

**c) Stow:**

**ITP**- Inbound Tracking Portal. It is a portal shows all the totes,carts that have been received but yet not been stowed. In this portal those carts are shown whose dwell time is less than 6 hours. After receiving within 2-3 hours stowing must be done.

- Cart dwell time if < 8 hours-green
- Cart dwell if > 8hours-light pink



- Cart dwell time if > 24 hours- dark pink

**IOL**- Inventory Odd Location. Carts with dwell time more than 12 hours get transferred from ITP to IOL.

**FUD** – Fulfillable Unfilled Demand. The items not in prime but in reserved which need to be stowed. This shows prioritization of carts that need to be stowed. It has the highest importance among IOL & ITP.

There are 2 criteria for FUD-

- i. By NBD – Need Buy Date.
  - Red - Carts to be stowed in 30 minutes.
  - Pink - Carts to be stowed in 30 minutes – 4 hours.
  - Orange - Carts to be stowed in 4 – 24 hours.
  - Yellow - Carts to be stowed in 24 – 48 hours.
  - Green- Carts to be stowed in 48 – 72 hours
  - Blue - Carts to be stowed in more than 72 hours.

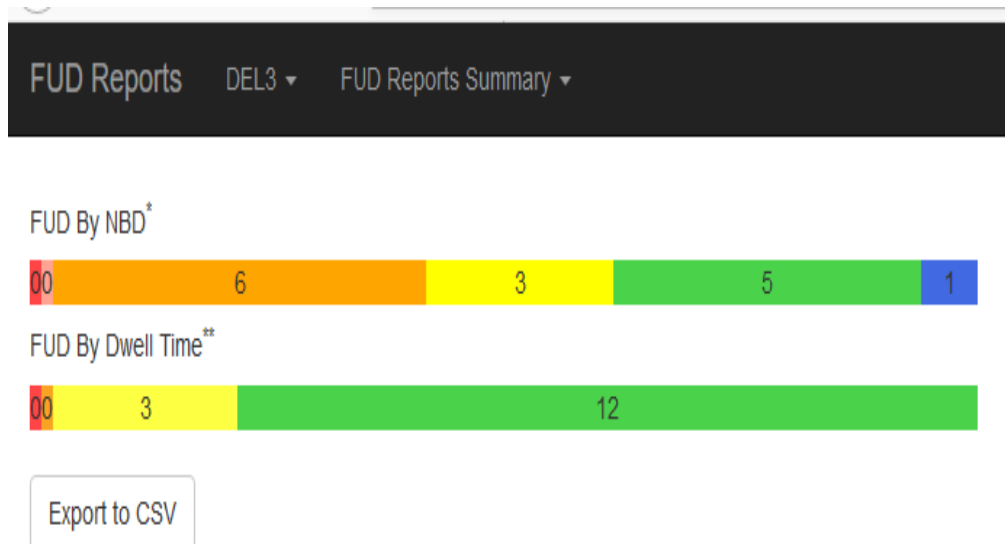


Fig 1.4

- ii. By Dwell time –
  - Red - Dwell time greater than 24 hours.
  - Orange – Dwell time between 6 - 24 hours.
  - Yellow - Dwell time between 1 - 6 hours.
  - Green - Dwell time is 1 hour.

### **1.3.2Outbound** –

In outbound, the items on which customer orders are placed are processed.

The various function in outbound are-

- Pick
- Wrangle
- Rebin
- Pack
- SLAM

### **1.3.3Orders vs Shipment**

When a customer orders one or more items directly from Amazon.com, an order is created in the system to track it. This order will be passed to the planning system, which calls multiple other services to determine the cheapest way Amazon can deliver the order within a given promised timeframe.

### **1.3.4Order assignment**

When a shipment is created, inventory items in the warehouse are reserved for the order. This process is called order assignment.

System reserves inventory by associating the virtual order items to physical inventory items in specific bins. A portal 'X' tries to optimize inventory selection and find shipment items in locations near to one another, but it hasn't created batches yet so it can't ensure that units in a batch will be located together.

#### **Assigning a Shipment ship date:**

Ship date determines due dates in the FC and represents the last chance to ship the order to meet customer. Ship Date is used to determine units should be picked, and when to start chasing units that are getting late

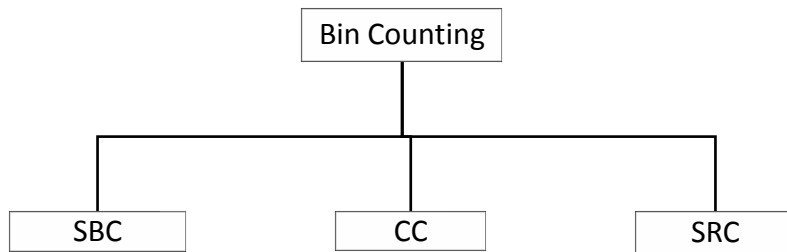
- An order can be group of items ordered by a customer, whereas shipment can be understood as the package sent to a customer. An order can have multiple shipment, but a shipment can't have multiple order.

#### **1.3.5 Process Paths:**

Process paths describe how orders are to be picked, sorted, packed, and shipped. The portal 'X' assigns different process paths for different types of orders, then tracks orders through the FC based on the process path.

**Singles** directly pack after picking, while **Multis** are sorted Customer wise before packing.

#### **1.3.6 ICQA -**



- **SBC:** In this type of bin counting each item in the bin is counted. And if there is any mismatch between the physical counting and virtual quantity, it is moved to CC, hence these two are related.

False Adhoc - When less/more items counted in SBC and in CC scanned more/less then false adhoc occurs.

- **CC:** In this ASIN wise counting is done and each item in the bin is scanned.
- **SRC:** In this the scanner asks to scan a particular ASIN in a bin.

#### **1.4Project(s) Executive Summary:**

The key deliverables of the projects are on improving the ease of access to the SJIs and SOPs, tracking the FC damages with the help of an Automated Damage Tracker and a strategic plan for deployment of stowers and pickers to follow Social Distancing along with the process flow.

Key themes of the project are as follows:

- a) One click depository where expectation is to design an excel sheet of all the standard SJIs and SOPs which would help ACES team to revise standard according to new update.
- b) An Automated Damage Tracker in which the expectation is to make a dashboard that would help Analyst Team to Study Damage Analysis for any consecutive day with 1 click button.
- c) To optimally deploy stowers and pickers in a way that would help DEL3 team with pick and stow mechanisms without causing a hindrance to the social distancing norms.

**a) One click depository**

The SJIs and SOPs on SharePoint lack a tracking mechanism because of unconsolidated data. This has led to absence of revision of some SOPs since 2015. The current depository would help in tracking the same and refreshing the content.

Project Status: Completed

**b) Automated Damage Tracker**

Initial Plan is to design a dashboard- An Automated damage tracker which would reduce the requirement of manual search and make it easier to do the damage data analysis of a particular day/month/year.

Project Status- Completed

**c) Optimum deployment of Stowers and Pickers to follow Social Distancing**

In this present situation of COVID-19, the main focus area is the social distancing so as to maintain a distance of 2m/6ft.

According to the present guidelines the maximum picker/stower that can be deployed in an aisle are 2, so the plan of this project is to analyze the inventory and optimally deploy outbound pickers/inbound stowers in an inventory floor without causing a hindrance to social distancing norm of 2m/6ft.

Project Status- WIP

ETA- Wk24

### **1.5Tools Used:**

- Macro
- VBA
- MS Excel
- SQL query to generate data
- Amazon Portals to fetch data and perform data analysis

## **CHAPTER - 2**

### **THE AUTOMATED DAMAGE TRACKER**

#### **2.1 Background**

The Automated damage tracker is a dashboard that would help the FC to track the category-wise daily damage generation with just a single refresh. It will always help to categorize the damages that happen during different process in different functions, in accordance to the quantity as well as cost, which would help to take necessary actions where in particular it is contributing to more loss so that it can be controlled. It will also give the data of the top items that are getting damaged and the high alert areas, so that the root cause can be determined by deep dive and a solution could be found to control it. It will help the FC to control damages and prevent losses.

#### **2.2 Approach Note**

Approach on key deliverable are with regard to Plan/Design and Execution details mentioned below:

Plan:

- Got acquainted with the present scenario of the FC by extracting data from different portals and web queries for analyzing the data for damages and seeing the trend that is going on, so that the root cause can be found out.
- Analyzed the key metrics related to the data, what process is being followed, various touchpoints that the item passes through and the damaged data from the portal 'X'.

Design: A dashboard for damage tracker using macros.

### **2.3 Macros Basics**

Excel Macros helps to save time on repetitive tasks which are involved in data manipulation and data reports that are required to be done frequently, which saves a lot of time and makes it user friendly. We can record a macro by doing the tasks that we want the macro to perform every time we give input to the macro and it performs repetitively the same task again and give us the desired output. In the background when we record a macro it stores it in the form a VBA code, but it is not preferable because the code is longer and takes unnecessary time, also the unnecessary codes are also recorded which make the macro heavy, so it is always preferable to use VBA and write the code manually to make the dashboard faster and more efficient. When the macro is recorded, the code can be viewed on the VBA editor.

### **2.4 VBA-**

VBA stand for Visual Basics for Application. VBA allows to automate various activities in Excel like, preparing charts & graphs, doing calculations, generating reports etc. This automation activity in excel is referred to as Macro. This way it helps the users to save their time spent behind performing the same/repetitive steps again and again. It is basically used in Microsoft Excel to create sophisticated and one time activity tools that can be used in various sectors like engineering, business and science. VBA allows users a different level of customization beyond what is typically available in Microsoft Office products, such as MS Excel, MS Word or Power



Point. A user types commands into an editing module to create a macro. Macros then allows the user to automatically generate customized reports, pivot, charts and perform other data processing functions depending upon what the user wants the VBA to perform. Withindifferent industries, VBA for Excel is commonly used to develop and maintain complex spreadsheet models. Using VBA, a rapid design and analysis tools for engineering can be easily constructed in office applications. So in short, VBA is a great all-in-one kit for customizing the Office experience and making it better.

In VBA, the data from we, query or link can be directly fetched and the various operations can be performed on them accordingly.

#### **2.4.1 Advantages of VBA -**

- The structure of the Basic programming language is very basic and simple, in particular with regards to the executable code.
- The VBA-IDE has been highly optimized to support rapid application development (“RAD”). It is particularly easy to develop graphical user interfaces (GUI) and to connect them to handle functions that are provided by the application.
- VBA is not only a language but also primarily an integrated, that is an interactive development environment (“IDE“).
- The graphical user interface of the VBA-IDE provides highly appealing views for the management of the program structure in the large and the various types of entities like the classes, modules, forms, etc.
- VBA provides an interactive, comprehensive and context-sensitive online help system.
- When editing program texts, the “IntelliSense” technology informs you in a little popup window about what are the types of constructs that may be entered at the current cursor location.
- VBA is a component integration language which is accustomed to Microsoft’s COM (Component Object Model).
- Component Object Model components can be written in different languages and also then can be integrated using VBA.

- Component Object Model components can be linked to or embedded in the application's user interface and also to/in stored documents.

### **2.4.2 How to Access VBA**

To get started with VBA, it first needs to be ensured that the various buttons and functions are active or visible that build the macro.

Those are all found within the Excel's "Developer" tab. However, by default, the Excel hides this tab, so it is not visible and it needs to be made visible. To have it as a part on the toolbar some steps need to be taken.

To enable the "Developer" tab-

In PC:

- Visit the "File" menu
- Select the "Option."
- Click "Customize Ribbon" within the menu
- Check the box for the "Developer" tab.
- Click "OK" and the "Developer" tab will appear in your ribbon.

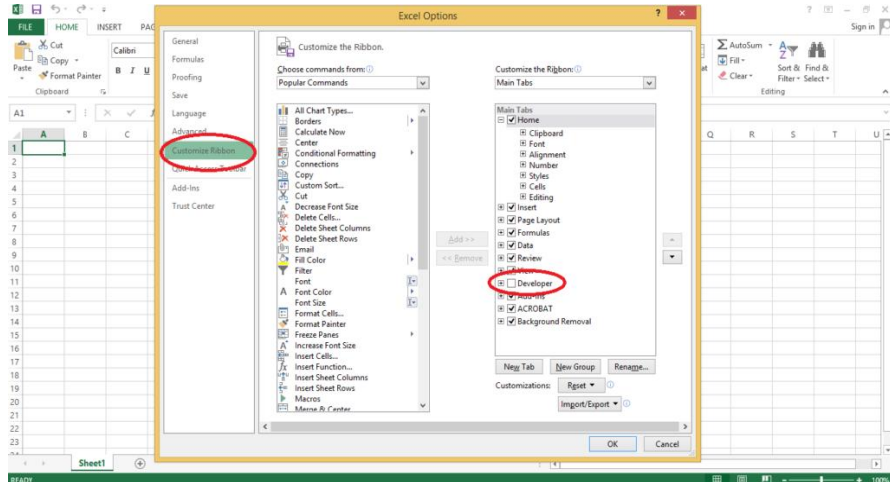


Fig 2.1

In MAC:

- Click “Excel” in the upper left corner of the screen (next to the Apple logo)
- And then “Preferences”
- Go to “View”
- Check the box for the “Developer” tab

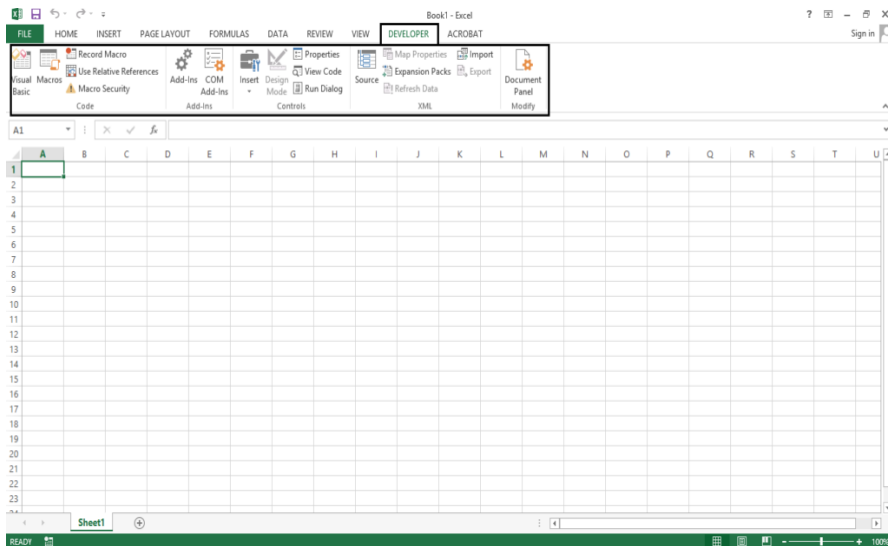


Fig 2.2

## **2.5 Data Analysis/ Research**

The data (Refer Table 2.1) is analyzed from a Portal, in which there are different application name. If the damaged data goes to the dmGExp001, it is then damage that occurred due to the expired items which goes to the virtual container dmGExp001. Similarly, if it falls in the dmGIBVEN001, it is the vendor damage, tsCret is the damage due to items that were customer return and tsHazmatdis002 is the virtual container for the damaged hazmat items. Like the expired items that were marked damaged and moved to virtual container dmGEXP001 were 2 beauty products and 180 grocery items as shown in the below data. This is how the macro will fetch data and segregate it on the basis of department, zone, function process, type of damage and the type of product etc.

## **2.6 Outcome**

For any FC, it is needed to keep a track and analyze the damaged data, so that changes can be made done accordingly to reduce it. For damage analysis, it is needed to go through various portals or generate a query to extract the data which is generally time-consuming. Thus a dashboard will help the FC team Research Analyst in the department of ICQA to study the damage analysis for any consecutive day with one-click button. Also the concerned departments themselves can check their data and see where there are going wrong so that the touchpoint can be detected and accordingly the necessary actions can be taken to prevent any kind of loss and also give a better customer experience.

### **2.6.1 Output of the Dashboard**

For the output as shown on the dashboard (Refer table 2.2 and 2.3)

For the VBA Code of the Macro (Refer APPENDIX A)

## **CHAPTER – 3**

### **ONE CLICK DEPOSITORY FOR SJIS/SOPS**

#### **3.1 Background**

Amazon has a standard of process for every department/process/function. It is followed in every process and if there are any changes with regard to it, they are made in the SJI/SOPs available on the SharePoint folder. The problem is that that the SharePoint has many folders and sub folders of the department and the process, which makes it time – consuming to go through each and every folder/ subfolder and search for the one that is required. There is a team of ACES that

keeps on updating it. There are many SJIs/SOPs that have not been updated since 2015 and needs to be updated, so the expectation of this project was to consolidate them into an excel file department wise and process wise and segregate it according to the year in which they were last updated, by which ACES and the version that it holds in a one – click depository so that it can be moved forward to the central ACES team and the changes can be done accordingly. It also makes it easier for anyone who want to go through the SJI/SOP without the need of searching it.

Function	Title	Link	Version	Change Date	Year	Change Description
Dock	Amazon Internal	<a href="https://tiny.amazon.com/qim9img">https://tiny.amazon.com/qim9img</a>	102	11/7/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/48o143u1/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/48o143u1/sharamazsiteinfstarSila_lay</a>	108	11/7/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/1er74ly2/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/1er74ly2/sharamazsiteinfstarSila_lay</a>	106	31/01/2019	2019	Updated based on [redacted] process
		<a href="https://tiny.amazon.com/bskksdc/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/bskksdc/sharamazsiteinfstarSila_lay</a>	102	13/07/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/gz7su5u/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/gz7su5u/sharamazsiteinfstarSila_lay</a>	103	11/7/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/gx1c5bc/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/gx1c5bc/sharamazsiteinfstarSila_lay</a>	105	11/7/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/5o6iwswj/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/5o6iwswj/sharamazsiteinfstarSila_lay</a>	2	11/7/2019	2019	Safety requirement Point No. A: Added, having valid TDR badge Point No. C: Added, Use both hand Point No. H: use mechanical lift for heavy cartons (> 45 Kgs) Point No. I: 48" changed to 6 feet.
		<a href="https://tiny.amazon.com/9wz210qy/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/9wz210qy/sharamazsiteinfstarSila_lay</a>	NA	13/07/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/38by7ho/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/38by7ho/sharamazsiteinfstarSila_lay</a>	102	13/07/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/9mm3fo/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/9mm3fo/sharamazsiteinfstarSila_lay</a>	111	13/07/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/uvbqpcn/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/uvbqpcn/sharamazsiteinfstarSila_lay</a>	105	13/07/2019	2019	All points were verified and updated in new format including exceptions along
		<a href="https://tiny.amazon.com/8xmvguq/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/8xmvguq/sharamazsiteinfstarSila_lay</a>	104	5/2/2017	2017	Wiki link for Freight refusal guidelines for Heavy Bulky added under Objective
		<a href="https://tiny.amazon.com/1c9u0kq/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/1c9u0kq/sharamazsiteinfstarSila_lay</a>	104	23/04/2019	NA	Addition of point for shipment level reconciliation
		<a href="https://tiny.amazon.com/11172jvj/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/11172jvj/sharamazsiteinfstarSila_lay</a>	NA	NA	NA	NA
		<a href="https://tiny.amazon.com/m7re47a/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/m7re47a/sharamazsiteinfstarSila_lay</a>	NA	NA	NA	NA
		<a href="https://tiny.amazon.com/0vhykq7/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/0vhykq7/sharamazsiteinfstarSila_lay</a>	NA	NA	NA	NA
		<a href="https://tiny.amazon.com/1ahw23cw/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/1ahw23cw/sharamazsiteinfstarSila_lay</a>	101	31/01/19	2019	Initial version
		<a href="https://tiny.amazon.com/hvfu6Be/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/hvfu6Be/sharamazsiteinfstarSila_lay</a>	101	25/03/2020	2020	New document
		<a href="https://tiny.amazon.com/770beq0t/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/770beq0t/sharamazsiteinfstarSila_lay</a>	102	6/2/2020	2020	General guidelines and defects to be checked during sample check are added
		<a href="https://tiny.amazon.com/rw40rwnu/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/rw40rwnu/sharamazsiteinfstarSila_lay</a>	108	13/07/2019	2019	All points were verified and updated in new format including exceptions along
<a href="https://tiny.amazon.com/10opsg6q/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/10opsg6q/sharamazsiteinfstarSila_lay</a>	111	28/08/2019	2019	[redacted] tool added to annuare		
<a href="https://tiny.amazon.com/17u2ym9f/sharamazsiteinfstarSila_lay">https://tiny.amazon.com/17u2ym9f/sharamazsiteinfstarSila_lay</a>	112	21/01/2020	2020	Added point for tightening the seal of product while performing prep in SOP F cap sealing and how to perform cap sealing.		

Fig 3.1

### 3.2 Approach Note

Approach on key deliverable are with regard to Plan/Design and Execution details mentioned below:

**Plan:**The tenet was fixed to ease the access of SJIs/SOPs change the old version documents. Went through each SJI and SOP to summarize all those require revision. Made and excel file of what all keys would be required and what all needs to be eliminated.

**Design:** One-click SJI/SOP portal with separate paths for each function and sub-function (Process Paths), which enlists Title, Version , Last SOP Revision, Owner of SOP, Change description.

**Execution:**

- An Email Communication was shared with the whole team.
- Central ACES will be working on changing old document versions with the help of site managers.

### **3.3 Data Analysis**

On doing data analysis the updated SOP/SJI versions on the basis of year could be deduced, like in Inbound suppose out of 500 SJIs/SOPs

- 200 were updated before the year 2017,
- 110 were updated in 2017
- 70 were updated in 2018
- 57 were updated in 2017
- 43 were updated in 2020
- 20 had no information

And so on for the other departments as well...

And the output will be displayed as (Refer Table 3.1)

### **3.4 Outcome**

Email communication rolled out on completion of one click depository for SOP/SJI for further actions to be taken.



Tue 4/28/2020 4:24 PM

Chaturvedi, Nupur

[COMMUNICATION] : SJI/SOP One Click Depository

To: Dhingra, Madhav; 'del3-site-mgrs@amazon.com'

Cc: Garg, Rajat; Kaura, Anuj; Thanvi, Narottam

Retention Policy: 30 Day Sent Items Delete (30 days)

Expires: 5/28/2020

**i** This item will expire in 24 days. To keep this item longer apply a different Retention Policy.



### SJI/SOP One Click Depository

#### What is this mail about?

This mail is to communicate the launch of one-click SJI/SOP depository (attached) with separate paths for each function and sub-function (Process Paths).

#### Why was the change required?

There is a difficulty in tracking the Versions/revision date of the SJI on the shared portal. This has led to absence of revision of some SOPs since 2015. The current depository would help in tracking the same and refreshing the content.

#### What is the Proposal?

The brief description of the Depository is as below:

- Standard SOP/SJI Portal to one click file for each process path has been created.
- It enlists Title, Version, Last SOP Revision, Owner of SOP, Change description.
- This would help ACES Team to revise standard in accordance with recent changes.

#### What is the summary of the current SJI revisions?

#	Function	SJI/SOP	<2017	2017	2018	2019	2020	NA*
1	Inbound	1	7	1	1	1	1	1
2	Outbound	1	6	1	1	1	1	1
3	ICGA	1	6	1	1	1	1	1
4	FC Dock	1	6	1	1	1	1	1
5	Transshipment	1	6	1	1	1	1	1
6	Others	1	6	1	1	1	1	1

\*. Standard Instructions with no Version Date Year.

Fig 3.1



# **CHAPTER-4**

## **OPTIMUM DEPLOYMENT OF STOWERS AND PICKERS TO MAINTAIN SOCIAL DISTANCING**

### **4.1 Background**

In the interest of the health and safety of all Amazon Associates, Leadership teams and Support teams, the need has become apparent for a Portable Social Distancing Barrier Assembly. This will enable Operations tier 3, Leadership, Learning and/ or HR to deliver feedback and other information directly to Amazon Associates when the need arises. In order to facilitate part of this effort, this project requires to construct a social distancing barrier. This barrier—referred to as Portable Social Distancing Barrier—will allow everyone in the premises to maintain social distancing of 6ft/2m, while offering an engineering control to achieve our social distancing goals. It requires to give a mathematical modal according to the infrastructure of the building that at a time how many stowers that are stowing in the inventory and how many pickers that are doing picking can be accommodated in an aisle at a time so that the asked distance is maintained and the norms are not breached.

During the ongoing operations within FC, wherein as of now 2 people, be it stowers or pickers are permitted within an aisle with a considerable distance of 6ft/2m. This has even led to decrease in rates and productivity. So it requires to analyze the inbound and outbound flow and bring the necessary changes in the deployment that would help to collectively tackle the problem and give an accurate data for the deployment to solve the current problem faced do to covid-19.

## **4.2 Research/Data Analysis**

Analyze the inventory placement layout and pick path. From the research, on the basis of calculations it was found that the maximum stowers and pickers that can be deployed in an aisle is 7, against the current given number of 2. And also considering that the stowers/pickers don't cross each other, the aisles have been made one way, such that the exit and entry is only from the alternate aisles and prevents crossing of people.

\*This is an ongoing project and the data is confidential which can't be revealed\*

## APPENDIX A

Sub DWP\_Pivot()

TA.Cells.Clear

DA.Range("A1").CurrentRegion.Copy TA.Range("A1")

Application.CutCopyMode = False

'Formulae

,

Dim LRow As Long 'Last Row

LRow = TA.Cells(Rows.count, 1).End(xlUp).Row

With TA

'Formula 1

.Range("L1").Value = "MOD"

.Range("L2").Formula = \_

"=IF(OR(\$F2=""dmg400"", \$F2=""dmg401""), \$F2, IF(OR(\$K2=""Pick"", \$K2=""Stow""),  
RIGHT(\$F2,4), ""Container""))"

.Range("L2").AutoFill Destination:=TA.Range("L2:L" & LRow)

'Formula 2

.Range("M1").Value = "MOD1"

.Range("M2").Formula = \_

"=IF(OR(\$F2=""dmg400"", \$F2=""dmg401""), ""PIT"", IF(MID(\$F2,4,3)=""P3F"", ""P3F"", \$L2))"

"

.Range("M2").AutoFill Destination:=TA.Range("M2:M" & LRow)

'Formula 3

.Range("N1").Value = "FLOOR"

.Range("N2").Formula = \_

"=IF(OR(\$K2=""Pick"", \$K2=""Stow""), MID(\$F2,7,2), ""Rebin+Pack"")"

.Range("N2").AutoFill Destination:=TA.Range("N2:N" & LRow)

End With

'Formula 4

```

Dim C1 As Range
Dim i As Integer
i = 1
For Each C1 In TA.Range("M1:M" & LRow)
    If C1.Value = "PIT" Or C1.Value = "P3F" Then
        TA.Cells(i, 14).Value = C1.Value
    ElseIf TA.Cells(i, 14).Value = "SP" Or TA.Cells(i, 14).Value = "AP" Then
        TA.Cells(i, 14).Value = "Others"
    End If
    i = i + 1
Next C1

TA.ListObjects.Add(xlSrcRange, TA.Range("$A$1").CurrentRegion, xlYes).Name = "catg"

```

#### Pivot Formation1

```

PA.Cells.Clear
ActiveWorkbook.PivotCaches.Create(SourceType:=xlDatabase, SourceData:= _
    "Table_DWP!catG", Version:=6).CreatePivotTable TableDestination:= _
    "Pivot_DWP!R4C1", TableName:="cat_damage", DefaultVersion:=6

With PA.PivotTables("cat_damage").PivotFields("bucket")
    .Orientation = xlRowField
    .Position = 1
End With

PA.PivotTables("cat_damage").AddDataField PA.PivotTables( _
    "cat_damage").PivotFields("MOD"), "Count of MOD", xlCount
PA.PivotTables("cat_damage").AddDataField PA.PivotTables( _
    "cat_damage").PivotFields("item_cost"), "Sum of item_cost", xlSum

```

```
PA.Range("C5:C9").NumberFormat = "0"
```

```
'Pivot Formation2
```

```
,
```

```
ActiveWorkbook.PivotCaches.Create(SourceType:=xlDatabase, SourceData:= _  
    "Table_DWP!catg", Version:=6).CreatePivotTable TableDestination:= _  
    "Pivot_DWP!R4C5", TableName:="floor_damage", DefaultVersion:=6
```

```
With PA.PivotTables("floor_damage").PivotFields("FLOOR")  
    .Orientation = xlRowField  
    .Position = 1
```

```
End With
```

```
With PA.PivotTables("floor_damage").PivotFields("MOD")  
    .Orientation = xlRowField  
    .Position = 2
```

```
End With
```

```
PA.PivotTables("floor_damage").AddDataField PA.PivotTables( _  
    "floor_damage").PivotFields("Quantity"), "Count of Quantity", xlCount
```

```
'Pivot Formation 3
```

```
,
```

```
ActiveWorkbook.PivotCaches.Create(SourceType:=xlDatabase, SourceData:= _  
    "Table_DWP!catg", Version:=6).CreatePivotTable TableDestination:= _  
    "Pivot_DWP!R4C8", TableName:="asin_damage", DefaultVersion:=6
```

```
With PA.PivotTables("asin_damage").PivotFields("item_name")  
    .Orientation = xlRowField  
    .Position = 1
```

```
End With
```

```

PA.PivotTables("asin_damage").AddDataField PA.PivotTables(
    "asin_damage").PivotFields("item_cost"), "Sum of item_cost", xlSum

PA.PivotTables("asin_damage").PivotFields("item_name").PivotFilters.
    Add2 Type:=xlTopCount, DataField:=PA.PivotTables("asin_damage").
    PivotFields("Sum of Quantity"), Value1:=10
PA.Range("J1:J20").NumberFormat = "0"

```

```
Dim PT As PivotTable
```

```

Set PT = PA.PivotTables("cat_damage")
PT.PivotCache.Refresh
Set PT = PA.PivotTables("floor_damage")
PT.PivotCache.Refresh
Set PT = PA.PivotTables("asin_damage")
PT.PivotCache.Refresh

```

```
'Visibility
```

```
,
```

```

TA.Visible = False
'PA.Visible = False
'Unblock the above comment after Dashboard finalization

```

```
End Sub
```

```
Sub Refresh_Cache()
```

```

Dim PT As PivotTable
    Set PT = PA.PivotTables("cat_damage")
    PT.PivotCache.Refresh
    Set PT = PA.PivotTables("floor_damage")
    PT.PivotCache.Refresh
    Set PT = PA.PivotTables("asin_damage")
    PT.PivotCache.Refresh
End Sub

```

## REFERENCES

[1] MANAGERS REFERNCE GUIDE (AMAZON)

[2] SJI/SOPS FROM SHAREPOINT (AMAZON)

[3] QUERY GENERATED DATA (AMAZON)

[4] PORTALS OF AMAZON

[5] APS GUIDE

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