

Data Analytics For DHL Logistics Facilities



TEAM ID : PNT2022TMID29636

Team Leader : Ram Kumar S

Team Member :Ranjithkumar S

Team Member :Mareeswara Sethupathy T

Team Member :Naveenkumar V

Industry Mentor : Rakesh Miskin

Faculty Mentor: Vanathi S

Data Analytics For DHL Logistics Facilities

1.INTRODUCTION

1.1 Project Overview

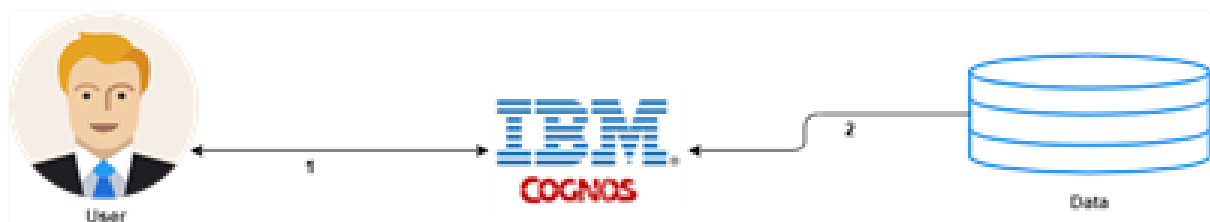
DHL is an international Umbrella brand and trademark for the courier, package delivery, and express mail service which is a division of the German logistics firm Deutsche Post. The company group delivers over 1.6 billion parcels per year.

The company DHL itself was founded in San Francisco, USA, in 1969 and expanded its service throughout the world by the late 1970s. In 1979, under the name of DHL Air Cargo, the company entered the Hawaiian Islands with an inter-island cargo service using two DC-3 and four DC-6 aircraft. Adrian Dalsey and Larry Hillblom personally oversaw the daily operations until its eventual bankruptcy closed the doors in 1983. At its peak, DHL Air Cargo employed just over 100 workers, management, and pilots.

Goal of the Project:

To provide Analytics to improve New Marks and grow the business .

Technical Architecture:



1.2 Purpose

The purpose of this study is identifying the services marketing mix (7 Ps: product/service, place, promotion, price, people, processes and physical evidence) decisions of a logistics company. The significance of services marketing mix on creating a logistics services brand has received little attention in the literature. In this paper, the case of a global brand, DHL Logistics is presented. Case study was conducted by using secondary data obtained from DHL Logistics' reports and by conducting semi constructed interviews with DHL Logistics' executives and employees. Due to the reputation and operations of the company, this framework will act as a guideline for the other companies. The marketing mix decisions made by DHL Logistics affect both B2B and B2C customers' brand perceptions and enhance the brand equity of DHL Logistics.

2. LITERATURE SURVEY

2.1 Existing Problem

DHL is a global expertise in express, air and ocean freight, overland transport and logistics solutions; DHL combines worldwide coverage with an in-depth understanding of local markets. DHL India has an outstanding reputation in the market for providing a reliable, fast and easy-to-use service. DHL offers Highly trained and 6 professional staff, committed to being responsive to all customers' needs Customer Service Agents, available round-the-clock, 365 days of the year, to serve customers whenever and wherever they need them. Electronic Pre-clearance of shipments through Customs Five international gateways providing direct-to-air networks and faster sorting of inbound and outbound shipments. DHL India is a proven facilitator of trade, across the globe. His strength lies in our global network and the know-how of our people. Backed by strategic alliances with world-class partners and the innovative use of technology, they strive to continuously improve the quality of our service. Our services range from fast, responsive and cost-effective express deliveries to e-commerce fulfilment and intelligent logistics solutions. DHL Core Services consist of door-to-door air express delivery of documents and parcels of all sizes (and weight), both into and out of the country. Other value-added services are a. Kitting/Pre-Assembling Kitting is the addition of items such as accessories and

batteries to the product pack.

2.2 References

Paper 1: DEVELOPMENT AND IMPLEMENTATION OF REVERSE LOGISTICS PROGRAMS

- Publication year: 1998
- Author: James R. Stock.
- Journal Name: The increasing importance of reverse logistics in technology
- Summary: A thorough literature study on the topic of this paper: Reverse Logistics was conducted for a short period. Several articles were found on the topic over the internet. After getting somewhat of a fair idea about reverse logistics, a preliminary set of questions were formulated for the survey. Most of the questions were either taken directly or inspired by the questionnaire developed by Rogers and Tibben-Lembke (1998), for their paper "Going Backwards: Reverse Logistics Trends and Practices". And one might even say that to a great extent this thesis has been inspired by the above mentioned paper.

Paper 2: GREEN LOGISTICS BUSINESS ORGANIZATION

- Publication year: 2006
- Author: Aronsson, H. and Brodin, M.
- Journal Name: The environmental impact of changing logistics structure.
- Summary: DHL and Blue Dart Steer India's Logistics a New Direction with the Launch of Smart Truck Bangalore, India. Adapts successful innovations from the corporate unit DHL Solutions & Innovations to improve service quality, cut costs, reduce time and CO2 emissions in emerging market conditions. DHL, the world's leading logistics company, and Blue Dart, part of the DHL Group, are piloting Smart Truck technology in Bangalore, India, the first deployment of this successful logistics innovation outside Germany. Created by DHL Solutions & Innovations (DSI), the DHL Smart Truck is an "intelligent" pick-up and delivery vehicle that combines a number of innovative technologies including a route planner. Launched in Germany in 2010, DHL Smart

Truck reduced number of miles traveled by 15 per cent and length of average route by 8 per cent during its pilot stage, reducing both fuel consumption and CO2 emissions.

Paper 3: INDIAN LOGISTICS INDUSTRY AND SUPPLY CHAIN MANAGEMENT

- Publication year: July 2012
- Author: Smit Thakkar
- Journal Name: RC Air & Rail services and Logistics
- Summary: RC a Logistics Company is renowned for its domain expertise and experienced manpower in the Logistics sector. RC can best understand your Logistics and distribution requirements and can offer the most suitable Logistics model and solution to you. RC has the strong network coverage across India traversing over 3,50,000 km. everyday covering over 150 locations through more than 50 routes operating 24 hours a day 365 days a year reaching these locations through its fleet of SLR (Short Luggage Room), VP (Various Parcel Room), Air Carriers and through truck vehicle operating on. Logistics services provider RC plans to invest Rs 3-4 crore (30–40 million) in five years to expand its operations on the back of the boom in Rail activities in the country.

Paper 4: ACHIEVING THE CUSTOMIZED “RIGHTS” OF LOGISTICS BY ADOPTING NOVEL TECHNOLOGIES

- Publication year: 2016
- Author: Bonkenburg, Tom.
- Journal Name: A DPDHL perspective on implications and use cases for the logistics industry
- Summary: In this section we present a literature review on facilitating role of emerging technologies on customization of logistics services. The literature on emerging technologies that we examine within the scope of this study is fairly new. While most studies focus on a specific technology, some studies examine the impact of all novel technologies effective on logistics (e.g., DHL Logistics Trend Radar Report, 2020).

The Internet of Things (IOT) refers to a network system where the everyday objects that feature an IP address for internet connectivity can exchange and share data, and so communication occurs between these objects and other network devices and systems. Cloud Computing (CC) is a virtualized IT resource that allows businesses to access software applications, other manipulative data services, and data storage and processing power over the Internet. Unmanned Aerial Vehicle (UAV), commonly known as Drone, could be simply defined as “an aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board”. Self-driving (Autonomous) Vehicle is defined as a vehicle that is capable of sensing its environment and navigating without direct action of human such as steering, accelerating, or braking. 3D Printing, also known as Additive Manufacturing, is a technology used for making three dimensional solid objects up in layers from a digital file without the need for a mold.

**Paper 5: DISCLOSURE IN THE GLOBAL LOGISTICS INDUSTRY:
THE CASE OF DHL**

- Publication year: 13 April 2017
- Author: David M. Herold, Ki-Hoon Lee and Marc A. Rosen.
- Journal Name: The institutionalization and commensuration of carbon disclosure
- Summary: The aim of this paper is to examine the similarities and differences in the measurement and reporting of carbon-related information in order to capture the underlying logic that drives carbon disclosure behaviour in the global logistics industry. We adopt an interpretative content analysis approach and examine the carbon-related information using the Carbon Disclosure Project (CDP) reports of DHL, FDX and UPS. The analysis reveals significant differences in the applied carbon-disclosure strategies, as well as in the degree of transparency between the three companies. The results also indicate that the carbon disclosure practices of FDX are dominated by a market logic that emphasizes the economic benefits of carbon reductions, while DHL and UPS have prioritized the sustainability logic to gain a competitive advantage.

**Paper 6: DHL e-COMMERCES IN VIETNAM'S
BUSTLING COMMERCE MARKET**

- Publication year: 26 July 2017
- Author: Calbeto, J., Abareshi, A., Sriratanaviriyakul, N., Nkhoma, M., Pittayachawan, S., Ulhaq, I., Wandt.
- Journal Name: Last Mile Delivery as a competitive logistics service
- Summary: Through the case of DHL's Ecommerce Vietnam, LMD has demonstrated a very important role in the supply chain network. Not only stopping at improving the overall efficiency and responsiveness, the activities are able to represent DHL's key competitive advantages. In general, Parcel Metro Service is the key competitive advantage of DHL Ecommerce while good compensation policies for insurance package can be considered as short-term competitive advantage. As such, insurance package may potentially become a critical aspect for the company to develop strategic plans in order to make it become a unique sustainable strength soon. Additionally, Tracking System, Next-day Cash Remittance and Service Point are features that define the foundation of any e-commerce service providers nowadays in Vietnam. In this case, DHL Ecommerce has well-established a foundation that is as good as their competitors. Open Box service does not generate good returns for the company, however, DHL's LMD practices will level down without this feature.

**Paper 7: SPECULATING ENVIRONMENTAL SUSTAINABILITY
STRATEGY FOR LOGISTICS SERVICE PROVIDERS BASED ON DHL
EXPERIENCES**

- Publication year: 2019
- Author: Tran, D. T., Wong, W. K., Moslehpour, M., & Xuan, Q. L. H.
- Journal Name: Management Information and Decision Sciences
- Summary: According to the United Nations General Assembly (1987), there is none of the universally-official agreed term on sustainability due to the complexity and various approaches to achieve the outcomes. However, the original concept of sustainability was generated from the views of sustainable development in the World Commission on Environment and Development Summit in 1992 in Rio describing "the

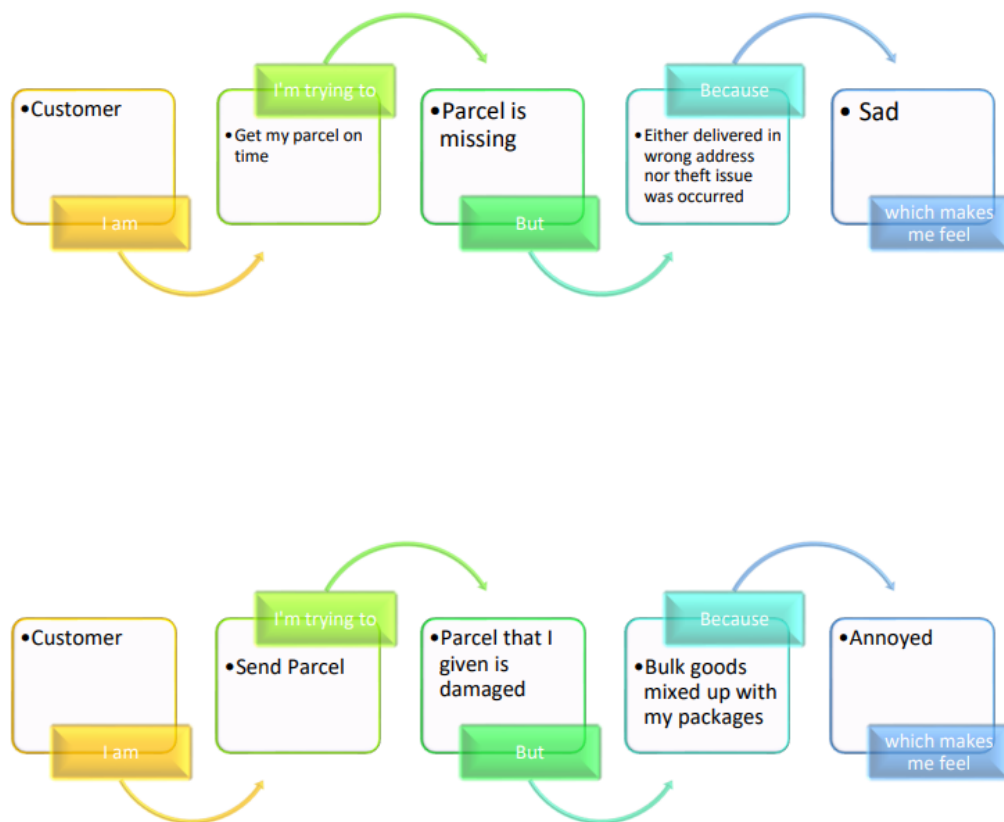
development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Albert, 2019). In the business context, Hoppmannetal. (2018) suggested the sustainability goal requires an increase in profit once the initial investments are made. Any business operation considers environmental, social and economic aspects, then should link to their sustainable activities. Khoshnavaetal. (2018) suggested that sustainability concept can be categorized and illustrated as the three pillars “social, economic and environmental” to fully evaluate sustainable dimensions in the commercial world. Jankeretal. (2019) addresses the social sustainability more focuses on the process of creating healthy and liveable communities which could improve the well-being of people who are living in those places. This dimension of sustainability supports the present and the future generations to maintain healthy living and working societies. From a business perspective, social sustainability refers to the comprehension about the impacts of corporations on people community which might affect their daily-life routine, community engagement and future well being (Hale et al., 2019). On the other hand, Läßle& Thorne (2019) clarified that businesses seek for economic sustainability through the economic system, which implies the current level of productions fulfils the consumptions without compromising future needs.

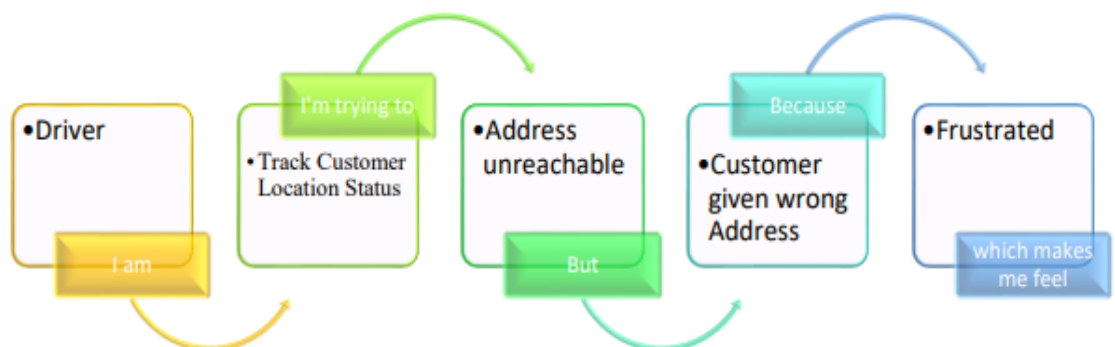
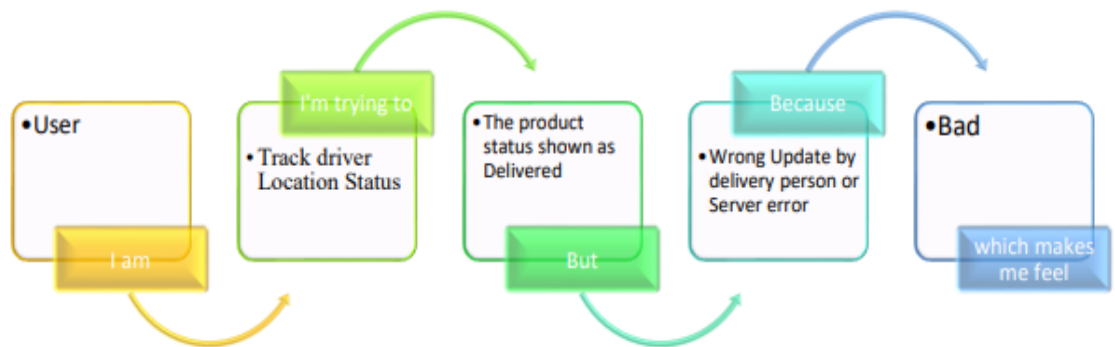
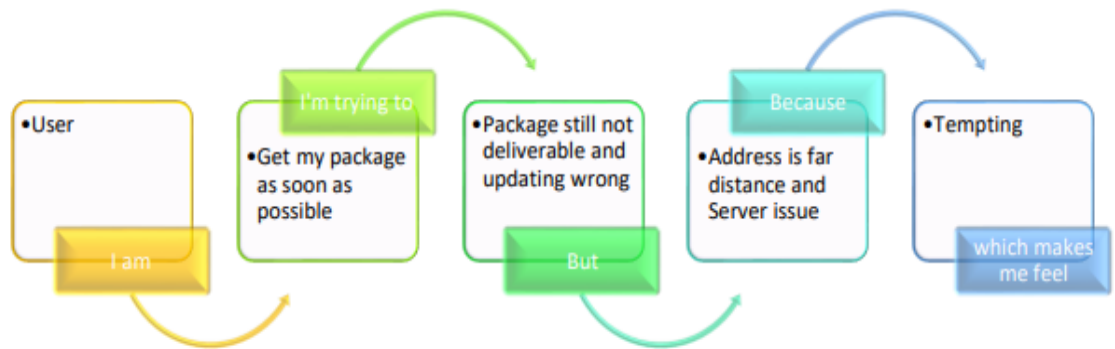
Paper 8: AERIAL VEHICLES (UAVs) TECHNOLOGIES FOR EFFECTIVE TRANSPORT AND LOGISTICS DELIVERY

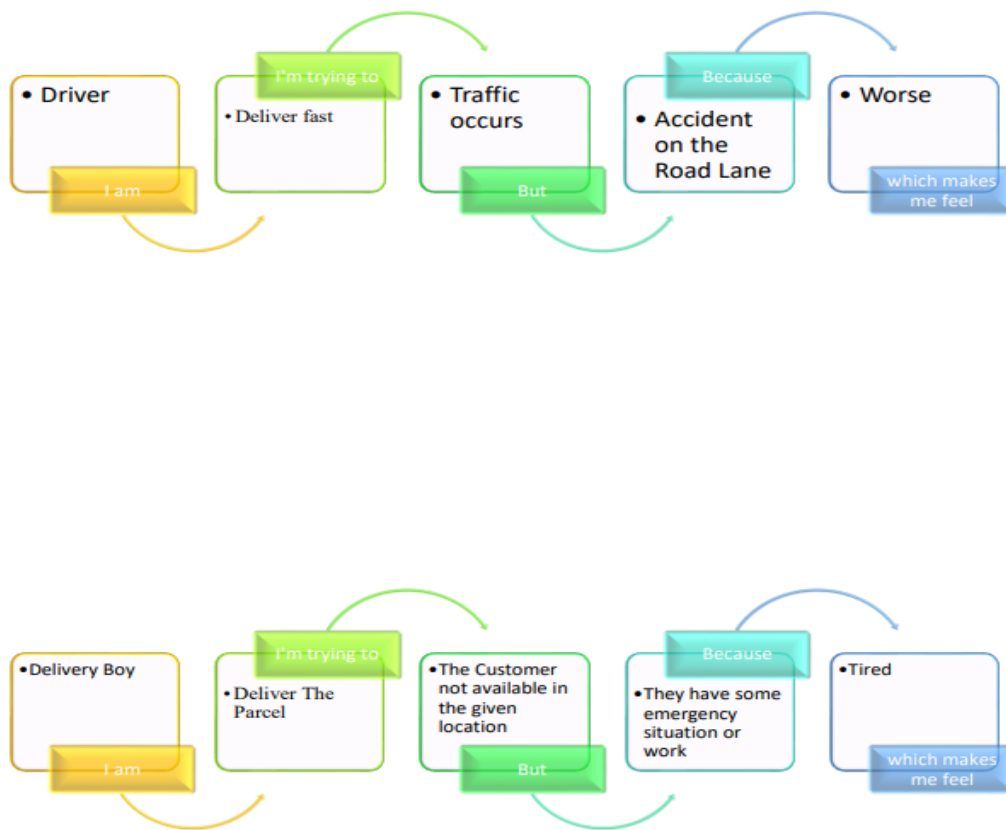
- Publication year: 2019
- Author: Godwin, O
- Journal Name: Value of Nigeria’s Logistics Industry
- Summary: The logistics and chains supply industry has come of age as there exist some local and foreign private business entities that are operating in the logistics industry which include: DHL, Red Star Express (also known as FedEx), United Parcel Service (UPS), NiPOST (Nigerian Post Office) amongst others (Ogunbowale, 2018). Though the Nigerian Postal Service (NPS) is the agency that regulates the activities of stakeholders in country, and it operates a courier delivery service, the

Nigerian Post Office (NiPOST) which competes with other courier operators in private industry. In the first instance, there is the need for Nigeria to engage in and implement the various free-trade and bilateral with various states across the globe which include: the ECOWAS and African Growth and opportunity Act (AGOA) programmes that are much expected to improve trade significantly (Mazur, et al., 2016).

2.3 Problem Statement

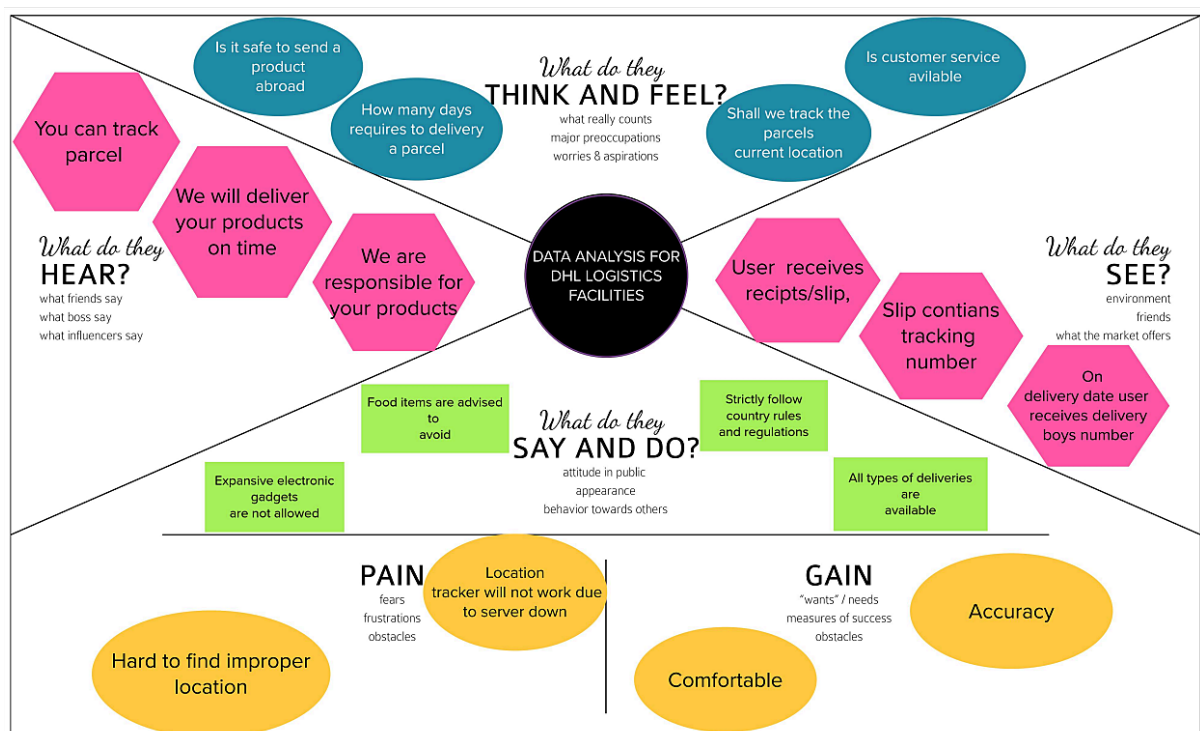






3.IDEATION AND PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation and Brainstorming

Brainstorm & idea prioritization

Use this template to plan your brainstorming session for your team and generate ideas, evaluate them, and select the most promising ones for further development.

- Brainstorming session
- Brainstorming session

Before you collaborate

Before you collaborate, please ensure that you have a clear understanding of the problem you are trying to solve and that you have a clear understanding of the goals of the project.

- Brainstorming session
- Brainstorming session

Define your problem statement

Define your problem statement. This is the first step in the process of solving a problem. It is important to have a clear understanding of the problem before you can start to brainstorm solutions.

PROBLEM

What is the problem you are trying to solve? Please provide a clear and concise statement of the problem.

GOALS

What are the goals of the project? Please provide a clear and concise statement of the goals.

Brainstorm

Brainstorming is a process of generating ideas. It is a collaborative process where team members share their ideas and build on each other's ideas. This process is used to generate a large number of ideas that can be evaluated and selected for further development.

Brainstorming Session

Brainstorming Session 1

Brainstorming Session 2

Brainstorming Session 3

Brainstorming Session 4

Brainstorming Session 5

Brainstorming Session 6

Brainstorming Session 7

Brainstorming Session 8

Brainstorming Session 9

Brainstorming Session 10

Brainstorming Session 11

Brainstorming Session 12

Brainstorming Session 13

Brainstorming Session 14

Brainstorming Session 15

Brainstorming Session 16

Brainstorming Session 17

Brainstorming Session 18

Brainstorming Session 19

Brainstorming Session 20

Brainstorming Session 21

Brainstorming Session 22

Brainstorming Session 23

Brainstorming Session 24

Brainstorming Session 25

Brainstorming Session 26

Brainstorming Session 27

Brainstorming Session 28

Brainstorming Session 29

Brainstorming Session 30

Brainstorming Session 31

Brainstorming Session 32

Brainstorming Session 33

Brainstorming Session 34

Brainstorming Session 35

Brainstorming Session 36

Brainstorming Session 37

Brainstorming Session 38

Brainstorming Session 39

Brainstorming Session 40

Brainstorming Session 41

Brainstorming Session 42

Brainstorming Session 43

Brainstorming Session 44

Brainstorming Session 45

Brainstorming Session 46

Brainstorming Session 47

Brainstorming Session 48

Brainstorming Session 49

Brainstorming Session 50

Brainstorming Session 51

Brainstorming Session 52

Brainstorming Session 53

Brainstorming Session 54

Brainstorming Session 55

Brainstorming Session 56

Brainstorming Session 57

Brainstorming Session 58

Brainstorming Session 59

Brainstorming Session 60

Brainstorming Session 61

Brainstorming Session 62

Brainstorming Session 63

Brainstorming Session 64

Brainstorming Session 65

Brainstorming Session 66

Brainstorming Session 67

Brainstorming Session 68

Brainstorming Session 69

Brainstorming Session 70

Brainstorming Session 71

Brainstorming Session 72

Brainstorming Session 73

Brainstorming Session 74

Brainstorming Session 75

Brainstorming Session 76

Brainstorming Session 77

Brainstorming Session 78

Brainstorming Session 79

Brainstorming Session 80

Brainstorming Session 81

Brainstorming Session 82

Brainstorming Session 83

Brainstorming Session 84

Brainstorming Session 85

Brainstorming Session 86

Brainstorming Session 87

Brainstorming Session 88

Brainstorming Session 89

Brainstorming Session 90

Brainstorming Session 91

Brainstorming Session 92

Brainstorming Session 93

Brainstorming Session 94

Brainstorming Session 95

Brainstorming Session 96

Brainstorming Session 97

Brainstorming Session 98

Brainstorming Session 99

Brainstorming Session 100

Group Ideas

Group Ideas are ideas that are generated by a group of people. They are often used to generate a large number of ideas that can be evaluated and selected for further development.

Group Ideas

Group Ideas 1

Group Ideas 2

Group Ideas 3

Group Ideas 4

Group Ideas 5

Group Ideas 6

Group Ideas 7

Group Ideas 8

Group Ideas 9

Group Ideas 10

Group Ideas 11

Group Ideas 12

Group Ideas 13

Group Ideas 14

Group Ideas 15

Group Ideas 16

Group Ideas 17

Group Ideas 18

Group Ideas 19

Group Ideas 20

Group Ideas 21

Group Ideas 22

Group Ideas 23

Group Ideas 24

Group Ideas 25

Group Ideas 26

Group Ideas 27

Group Ideas 28

Group Ideas 29

Group Ideas 30

Group Ideas 31

Group Ideas 32

Group Ideas 33

Group Ideas 34

Group Ideas 35

Group Ideas 36

Group Ideas 37

Group Ideas 38

Group Ideas 39

Group Ideas 40

Group Ideas 41

Group Ideas 42

Group Ideas 43

Group Ideas 44

Group Ideas 45

Group Ideas 46

Group Ideas 47

Group Ideas 48

Group Ideas 49

Group Ideas 50

Group Ideas 51

Group Ideas 52

Group Ideas 53

Group Ideas 54

Group Ideas 55

Group Ideas 56

Group Ideas 57

Group Ideas 58

Group Ideas 59

Group Ideas 60

Group Ideas 61

Group Ideas 62

Group Ideas 63

Group Ideas 64

Group Ideas 65

Group Ideas 66

Group Ideas 67

Group Ideas 68

Group Ideas 69

Group Ideas 70

Group Ideas 71

Group Ideas 72

Group Ideas 73

Group Ideas 74

Group Ideas 75

Group Ideas 76

Group Ideas 77

Group Ideas 78

Group Ideas 79

Group Ideas 80

Group Ideas 81

Group Ideas 82

Group Ideas 83

Group Ideas 84

Group Ideas 85

Group Ideas 86

Group Ideas 87

Group Ideas 88

Group Ideas 89

Group Ideas 90

Group Ideas 91

Group Ideas 92

Group Ideas 93

Group Ideas 94

Group Ideas 95

Group Ideas 96

Group Ideas 97

Group Ideas 98

Group Ideas 99

Group Ideas 100

Prioritize

Prioritization is the process of selecting the most important ideas from a large number of ideas. It is a collaborative process where team members share their ideas and build on each other's ideas. This process is used to generate a large number of ideas that can be evaluated and selected for further development.

Prioritization

Prioritization 1

Prioritization 2

Prioritization 3

Prioritization 4

Prioritization 5

Prioritization 6

Prioritization 7

Prioritization 8

Prioritization 9

Prioritization 10

Prioritization 11

Prioritization 12

Prioritization 13

Prioritization 14

Prioritization 15

Prioritization 16

Prioritization 17

Prioritization 18

Prioritization 19

Prioritization 20

Prioritization 21

Prioritization 22

Prioritization 23

Prioritization 24

Prioritization 25

Prioritization 26

Prioritization 27

Prioritization 28

Prioritization 29

Prioritization 30

Prioritization 31

Prioritization 32

Prioritization 33

Prioritization 34

Prioritization 35

Prioritization 36

Prioritization 37

Prioritization 38

Prioritization 39

Prioritization 40

Prioritization 41

Prioritization 42

Prioritization 43

Prioritization 44

Prioritization 45

Prioritization 46

Prioritization 47

Prioritization 48

Prioritization 49

Prioritization 50

Prioritization 51

Prioritization 52

Prioritization 53

Prioritization 54

Prioritization 55

Prioritization 56

Prioritization 57

Prioritization 58

Prioritization 59

Prioritization 60

Prioritization 61

Prioritization 62

Prioritization 63

Prioritization 64

Prioritization 65

Prioritization 66

Prioritization 67

Prioritization 68

Prioritization 69

Prioritization 70

Prioritization 71

Prioritization 72

Prioritization 73

Prioritization 74

Prioritization 75

Prioritization 76

Prioritization 77

Prioritization 78

Prioritization 79

Prioritization 80

Prioritization 81

Prioritization 82

Prioritization 83

Prioritization 84

Prioritization 85

Prioritization 86

Prioritization 87

Prioritization 88

Prioritization 89

Prioritization 90

Prioritization 91

Prioritization 92

Prioritization 93

Prioritization 94

Prioritization 95

Prioritization 96

Prioritization 97

Prioritization 98

Prioritization 99

Prioritization 100

3.3 Proposed Solution

Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics for DHL Logistics Facilities
Maximum Marks	2 Marks

Proposed Solution Template:-

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Nowadays, there are many challenges for the logistics industry mainly with the integration of E-commerce and new sources of data such as GPS ,Smart phones ,sensors ,and other devices. Those new data sources generate daily a huge quantity of unstructured data, to deal with such complex data, the use of big data analytic tools becomes an obligation
2.	Idea / Solution description	We propose to give a review of the latest applications of big data analytics in the field of logistics and transportation based on a data analytics system.
3.	Novelty / Uniqueness	The arrival and spread of big data usage dramatically changed the way businesses use to

		work with their analytics. Companies can now anticipate slow and busy periods, potential future supply shortage, and act accordingly.
4.	Social Impact / Customer Satisfaction	Big data analytics allows companies to generate more accurate supply and demand forecasts to inform inventory and shipment planning. As a result, they can reduce waste and improve delivery times. In short it is a mutual benefit for both companies and the customers.
5.	Business Model (Revenue Model)	Identifying a way forward for companies for whom logistics and distribution is a major concern for the overall strategy of the firm. This model will display sustained and stable growth and profitability consistently higher than that of the industry average.
6.	Scalability of the Solution	Data processing systems will increase their processing capabilities along with the data volume. This means that the system must anticipate the exponential growth of data and

		must handle the changing flow of information. Horizontal scalability tends to lead to lower costs in the long run.
--	--	--

3.4 Problem Solution Fit

Team Id: PNT2022TMID29636

Problem Solution Fit

<p>1.Customer Segments:- Customer analytics involves the process of collecting data from different sources and merging it together in order to create a complete picture of the customers. This data can include information about customer demographics, website behaviour, purchase history.</p>	<p>5. Available Solution:- Usage of big data analytics. Which process of uncovering patterns,trends,and correlations in large amounts of Raw data to help make data-informed decisions.</p>	<p>8. Channels of Behaviour:- Data processing systems will increase their processing capabilities along with the data volume.</p>
<p>2. Problems/ pains:- There is a lack of alignment between different teams or departments within an organization and Which is not useful in short run.</p>	<p>6. Customer Limitations:- Lack of alignment within teams, Lack of commitment and patience, Complexity and bias.</p>	<p>9. Problem Root/ Cause:- Nowadays, there are many challenges for the logistics industry mainly with the integration of E-commerce and new sources of data such as smartphones, sensors, GPS and other devices.</p>
<p>3. Triggers to act:- Monitoring the activities and performance of 24/7, User friendly interface.</p>	<p>7. Behaviour:- A review of the latest applications of big data analytics in the field of logistics and transportation.</p>	<p>10. Solution:- Changes the way businesses use to work with their analytics. Companies can now anticipate slow and busy periods and potential future supply shortage.</p>
<p>4. Emotions :- *Before - Complex to keep track of records of goods. *After - Companies can now anticipate slow and busy periods, potential future supply shortage, and act accordingly.</p>		

4.REQUIREMENT ANALYSIS

Solution Requirements (Functional & Non-functional)

Date	03 October 2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics for DHL Logistics Facilities
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through any google account or social media accounts.
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Dataset	The DHL_Facilities.csv record are collected as a dataset and upload to Cognos analytics
FR-4	Prepare/Analyse	The dataset is moved around to prepare and analyse using Cognos
FR-5	Exploration	The data are explored using logistics dataset by Cognos
FR-6	Dashboard	The Prepared and Explored data are Visualize and created in different type of dashboards. i.e., charts, graphs, tree, reports, summary, etc..

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	No prior experience required to use the dashboard. People with basic understanding can use the system.
NFR-2	Security	Only registered user can use this application.
NFR-3	Reliability	The Analytics system ensures the reliability
NFR-4	Performance	Gets updated regularly to improve the performance of the application

5.PROJECT DESIGN

5.1 Data flow Diagrams

Data Flow Diagram

Date	15 October 2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics for DHL Logistics Facilities
Maximum Marks	4 Marks

Data Flow Diagrams:-

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

MURAL TEMPLATE

Visualize data flows and behaviors to explain complex processes

Data Flow Diagram

a template brought to you by your friends at MURAL

INTRODUCTION

Data flow diagrams are typically used by IT and engineering teams to show the flow of information, source of data inputs, and how that data is stored. These visual representations of a system can help be used to explain complex processes to key stakeholders or to build out new products with your team.

Data flow diagrams illustrate relationships between external entities, processes, data stores, and data flows. You can visualize data flows with both parallel and asynchronous behaviors using our data flow diagram template.



TOOL TIPS

Create connections at the speed of thought

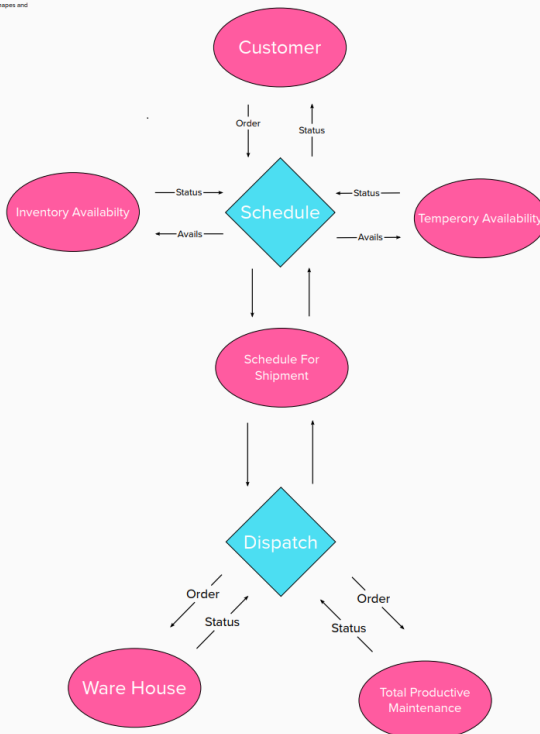
- Press and drag to draw a connection
- Turn on connector points to create new diagrams faster
- Click on the connector points to instantly add new connections and shapes
- Change connector styles
- Switch between different shapes and copy notes quickly
- Build with objects of the same type by filtering your selection from the toolbar
- Add labels to connector points with the text or shape tool

RESOURCES



INSTRUCTIONS

- 1 Define the process you want to visualize, or use a pre-existing one
- 2 Develop the data flow by using the shapes and connectors in the key
- 3 Adjust and fine tune the data flow
- 4 Review the data flow
- 5 Next Steps



FLOW KEY

- Data** This small rectangle is used for data that is required frequently or is produced in the process.
- Process** This shape is used for actions or decisions, the things that must be done.
- External entity** It is where data comes from or goes to, it is outside the process.
- Connector** Connects elements of the flow.

VISUAL KEY

You can also make your diagrams more engaging by using images and icons

- Data
- Process
- External entity
- Add your own!

Share your feedback

5.2 Solution & Tecnical Architecture

Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics for DHL Logistics Facilities
Maximum Marks	4 Marks

Technical Architecture:

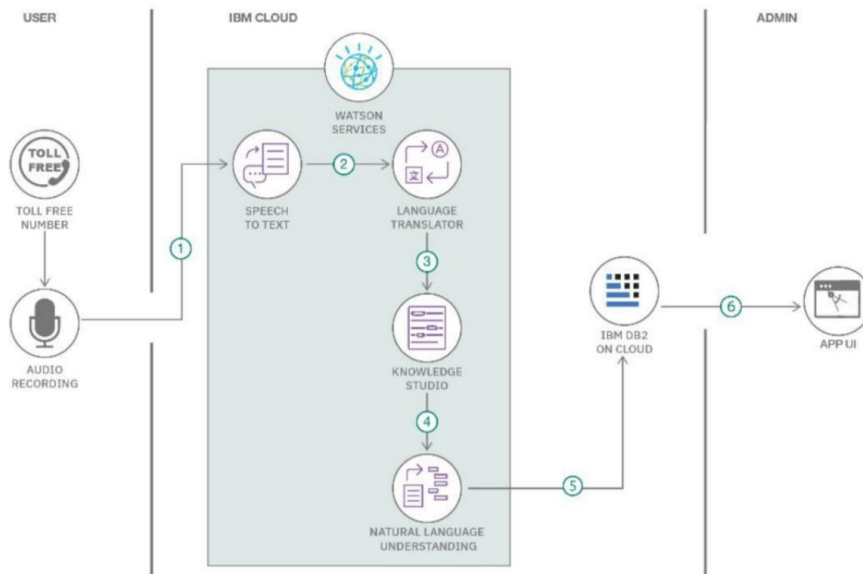


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User uploads the csv or excel format files into the web pages	HTML, CSS, JavaScript
2.	Application Logic-1	The user data will pass into the IBM cloud for storing and acts as a data source	IBM cloud
3.	Application Logic-2	In cloud, data will be fetched by the Cognos analytical tool for data analysis	IBM Cognos analytical tool
4.	Application Logic-3	The pre-trained Dashboards will be present to perform analysis on the incoming data	IBM Cognos analytical tool
5.	Database	Data will be retrieved from cloud	MySQL
6.	Cloud Database	Database Service on cloud	IBM DB2, IBM Cloud
7.	File Storage	Customer sales data is uploaded in cloud through interface	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	To perform data analysis on the user data	IBM Cognos Tool
9.	External API-2	To build the machine learning model for classification	Jupiter Notebook
10.	Machine Learning Model	To do the predictive analysis on the input data	Predictive analysis model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Using the flask Cloud Server Configuration: IBM cloud	Local, Cloud Foundry

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g., SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g., use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

5.3 User Stories

Project Planning Phase Project Planning Template (Product Backlog, Sprint Planning, Stories and Story points)

Date	18 October 2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics for DHL Logistics Facilities
Maximum Marks	8 Marks

Product Backlog, Sprint Schedule, and Estimation

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Login	USN-1	As a user, I can register & log into the application by entering email & password	10	High	Ram Kumar S
Sprint-1	Verify	USN-2	As a user, I can verify the email with given otp and check for correct subscription access	10	Medium	Naveenkumar V
Sprint-2	Collect Data	USN-3	As an admin I can define questions & goals then collect data & provide the dataset in IBM Cognos analytics	10	High	Ram Kumar S
Sprint-2	Prepare & Explore	USN-4	As an admin I can prepare, explore & present the dataset in IBM Cognos analytics	10	High	Ranjithkumar S
Sprint-3	Analyze	USN-5	As an admin, I will analyze the given dataset (Data pre-processing)	10	High	Mareeswara Sethupathy T
Sprint-3	Predict	USN-6	As an admin, I will predict the length of stay (Prediction)	10	High	Ranjithkumar S
Sprint-4	Visualization	USN-7	As a user, I can select the visualization type like Report, Dashboard and story (Creating visualization)	7	Medium	Ram Kumar S

Sprint-4	Dashboard	USN-8	As a user, I can upload the datasets to the dashboard and view visualizations	8	High	Mareeswara Sethupathy T
Sprint-4	Communicate	USN-9	As an admin, I can communicate to the client for user queries and visualize the best dashboards in any platform as a user expected	5	Medium	Naveenkumar V

6.PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Prepare Milestone & Activity List

Date	20-10-2022
Team ID	PNT2022TMID29636
Project Name	Data Analytics For DHL Logistics Facilities

MILESTONES & TASKS:

Project team shall fill the following information in Milestone & Tasks.

S.no	MileStones	Tasks
1.	MileStone-1	Collection of Dataset on the Kaggle.
2.	MileStone-2	Uploading the Dataset on the Platform. (IBM Cognos Analytics)
3.	MileStone-3	Exploration of Data and Visualize the Dataset.
4.	MileStone-4	Creation of Interactive Dashboard in the Platform. (IBM Cognos Analytics)
5.	MileStone-5	Display the Insights in the Dashboard.
6.	MileStone-6	Prepare the Standardized Dataset with the help of Python Program.
7.	MileStone-7	Using Google Colab, Various Algorithm were obtained to get desired result with accurate.
8.	MileStone-8	Display in the Required Format.
9.	MileStone-9	GitHub Deployment

6.2 SPRINT DELIVERY PLAN

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

$$AV = \text{Sprint duration} / \text{Velocity} = 20/6 = 3.33$$

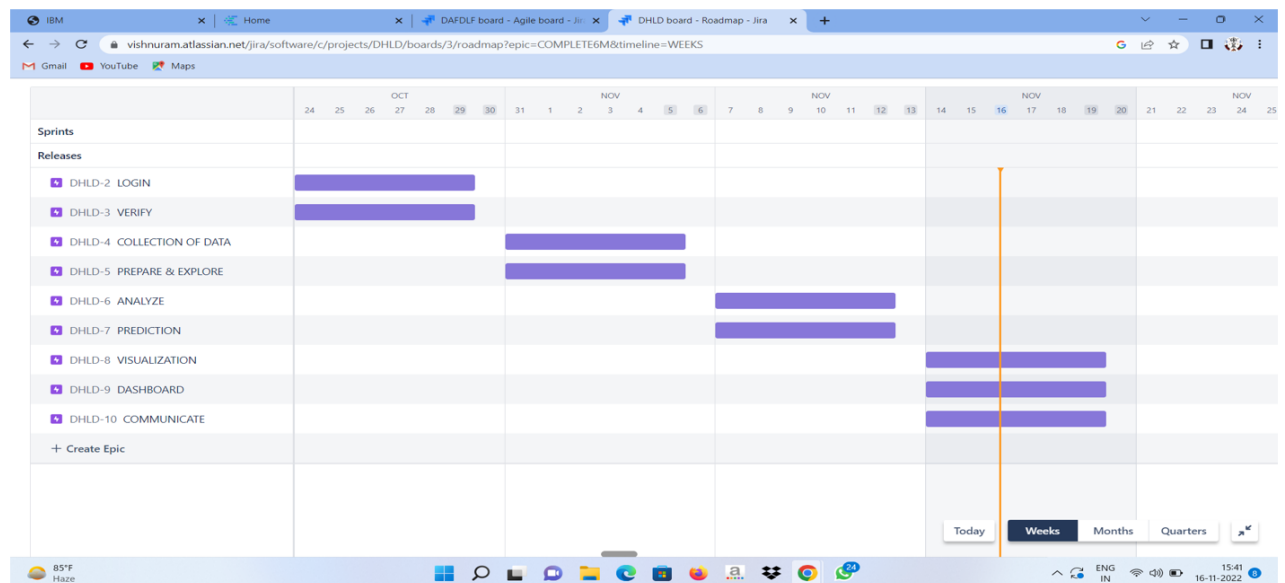
Velocity:

we have a 6-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

6.3 Reports from JIRA

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



7 . ADVANTAGES & DISADVANTAGES

ADVANTAGES:

1. Unlocking key values

First of all, Data Visualization ensures that key values can be unlocked from massive sets of data. Large amounts of data in particular can be overwhelming and difficult to wrap our head around. Data Visualization helps with this by making the key values of the data clear and easily visible. This makes it easy to understand and interpret for everyone in the company.

2. Identify patterns

Second, Data Visualization unlocks other previously invisible patterns. These other emergent properties in the data can formulate new valuable insights, which could not have been discovered before. Visualization allows business users to recognize relationships and patterns between the data, and also gives it greater meaning. By exploring these patterns, users can focus on specific areas that need attention in the data, to determine the importance of these areas to move their business forward.

3. Easy to understand

The aim is to tell a good story by translating the data into a form that would be easy to understand for everyone. Eventually useful information would be highlighted and the noise would thus be eliminated from the data.

4. More attractive and user-engaged

This attractiveness is achieved by using visually appealing ways of presenting data and adhering to design best practices. Next-level visualizations present data in a very sensible way by using the most appropriate chart and formatting options. In addition, elegant transitions facilitate an attractive and smooth way of moving between different points in the storyline of a visualization. This will increase a user's engagement with the visualization, thus facilitating easy and quick interpretation and understanding. As a result, the message resonates strongly with the audience. However, it is not as simple as taking the data and placing them in a graph and making it look better. It's an act of balance between the form and a function. A plain graph can be boring to catch the attention or make a point; the most impressive visualization could take away from the data or it could speak volumes. It is important to realize that visuals and data have to work together to convey a message.

5. Display complex relationships

Standard visuals, such as bar charts or line graphs, are often not sufficient when presenting complex relationships. A dataset with over a million distinct data points, for example, can hardly ever be presented in a standard manner. In that case, a visual that allows for interactive hierarchies and exploration is a much better option. The interactivity of an Data Visualization can facilitate next-level data exploration that matches a user's specific needs.

DISADVANTAGES:

1. It gives assessment not exactness

While the information is exact in foreseeing the circumstances, the perception of similar just gives the assessment. It without a doubt is anything but difficult to change over the robust and protracted information into simple pictorial configuration yet such a portrayal of data may prompt theoretical ends now and then.

2. One-sided

The essential arrangement of information representation occurs with the human interface, which means the information that turns out to be the base of perception can be one-sided. The individual bringing the information for the equivalent may just think about the significant part of the information or the information that requirements center and may reject the remainder of the information which may prompt one-sided results.

3. Absence of help

One of the downsides of information perception is that it can't help, which means an alternate gathering of the crowd may decipher it in an unexpected way.

4. Inappropriate plan issue

On the off chance that information perception is viewed as such a correspondence. At that point, it must be certifiable in clarifying the reason. In the event that the plan isn't legitimate, at that point, this can prompt disarray in correspondence.

5. Wrong engaged individuals can skip center messages

One of the issues with information perception is however it could be logical its clearness in clarification is totally subject to the focal point of its crowd.

8. CONCLUSION

The services marketing mix has an incontrovertible importance for creating a mental picture of intangible products, in other words services. In a similar vein, when logistics sector's disadvantageous position in Porter's Five Forces of Competition Model is considered, it is ought to emphasize the importance of positioning decisions and marketing mix efforts for logistics service providers. Due to the reputation and global operations of Deutsche Post DHL, the developed framework in this paper will act as a guideline for the other alike companies. For further research, customer side can also be considered and customer satisfaction can be measured via surveys.