Project on

Supply Chain Analysis

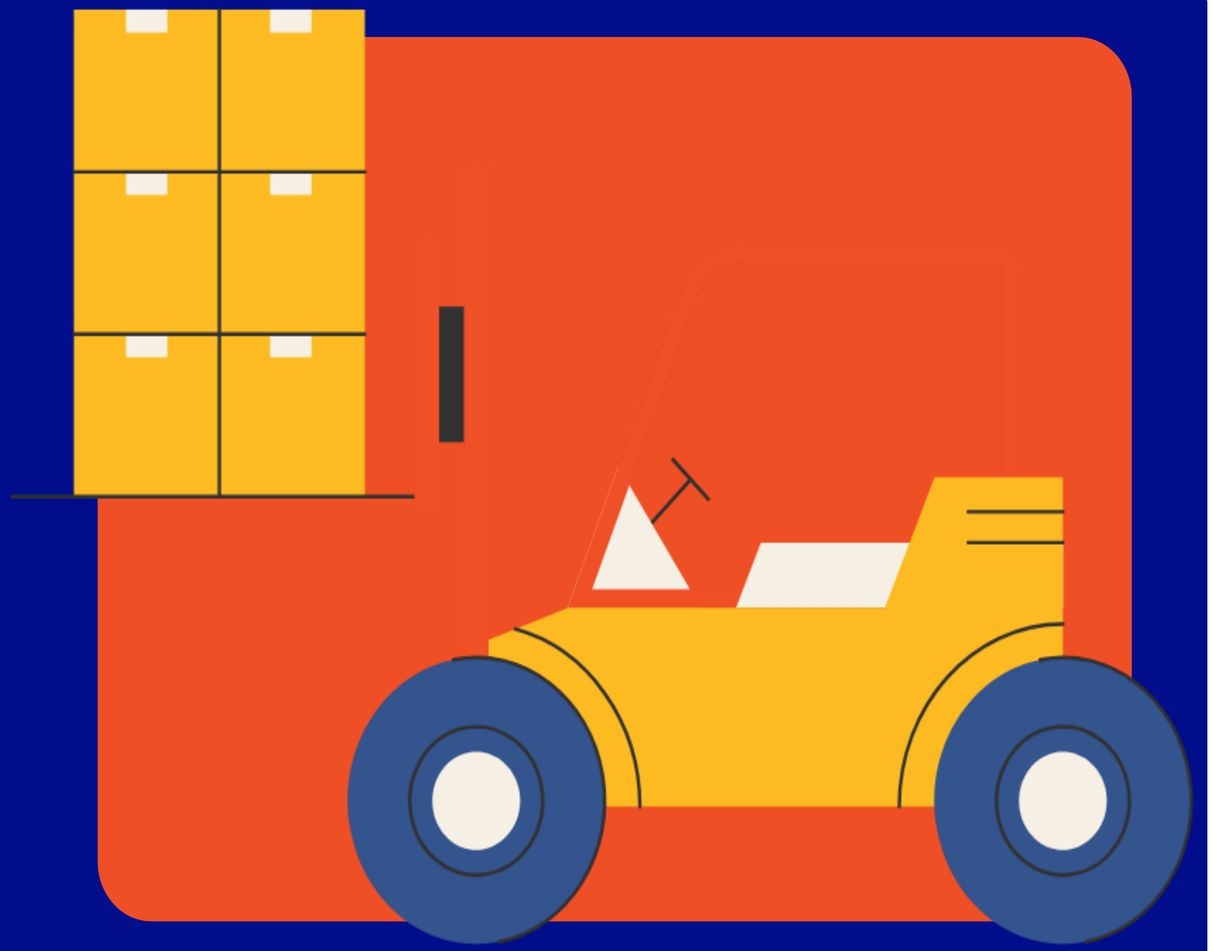
Next Slide | Supply Chain Analysis Presentation

This dataset comes from a Fashion and Beauty startup and reflects the complete supply chain operation of makeup products. It includes detailed information from suppliers to end customers- covering everything from manufacturing and stock management to shipping and customer data.

By analyzing this dataset, we can explore trends in product sales, detect supply chain bottlenecks, evaluate supplier performance, and optimize shipping strategies.

- Dataset Source: kaggle.com

- ***Product Details–*** Product Type, SKU, Price, Availability
- ***Sales Performance–***
  No. of Products Sold, Revenue Generated
- ***Customer Demographics***
- ***Inventory Management–*** Stock Levels, Lead Times, Order Quantities
- ***Shipping Data–*** Shipping Times, Shipping Carriers, Shipping Costs
- ***Supplier & Location*** – Supplier Name, Location, Lead Time
- ***Manufacturing Details*** – Production Volumes, Manufacturing Lead Time, Manufacturing Costs
- ***Quality Checks–*** Inspection Results, Defect Rates
- ***Logistics–*** Transportation Modes, Routes, Transportation Costs.



Create table-

Query Query History

```
create table Supply_Chain(
Product_type varchar(15),
SKU varchar(10),
Price decimal(10,6),
Availability int,
Numbers_of_product_sold int,
Revenue_generated decimal(15,3),
Customer_demographics varchar(15),
Stock_level int,
Lead_time int,
Order_quantities int,
Shipping_times int,
Shipping_carries varchar(10),
Shipping_cost decimal(10,2),
Supplier_name varchar(15),
Location varchar(15),
Supplier_Lead_time int,
Production_volumes int,
Manufacturing_lead_time int,
maufacturing_costs decimal(10,5),
Inspection_results varchar(10),
Defect_rates decimal(10,5),
Transportation_modes varchar(10),
Routes varchar(10),
Costs decimal(10,1));
```

Import data-

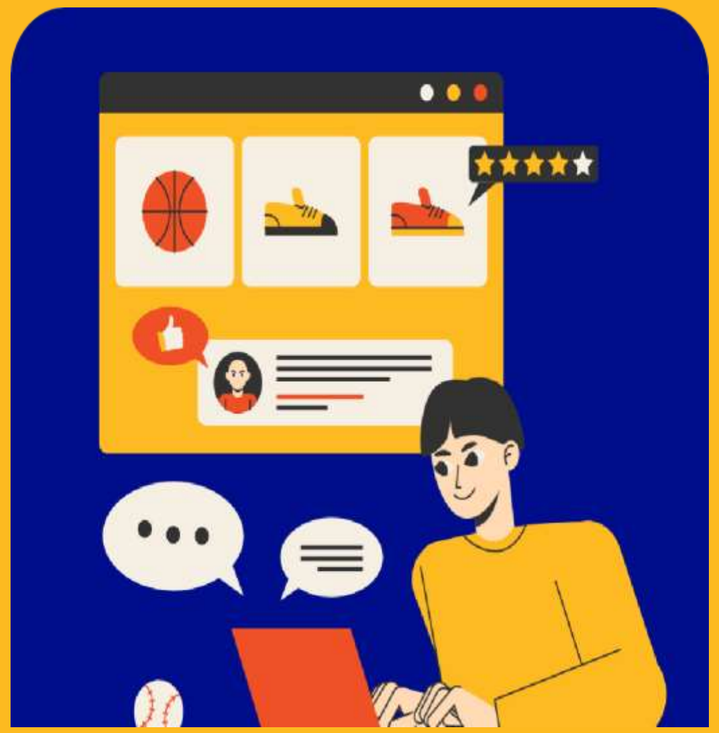
```
28  copy Supply_Chain from  'C:\Program Files\PostgreSQL\16\data\data ressource\supply_chain_data.csv' csv header;
29
```

	product_type character varying (15)	sku character varying (10)	price numeric (10,6)	availability integer	numbers_of_product_sold integer	revenue_generated numeric (15,3)	customer_demographics character varying (15)	stock_leve integer
1	haircare	SKU0	69.808006	55	802	8661.997	Non-binary	
2	skincare	SKU1	14.843523	95	736	7460.900	Female	
3	haircare	SKU2	11.319683	34	8	9577.750	Unknown	
4	skincare	SKU3	61.163343	68	83	7766.836	Non-binary	
5	skincare	SKU4	4.805496	26	871	2686.505	Non-binary	
6	haircare	SKU5	1.699976	87	147	2828.349	Non-binary	
7	skincare	SKU6	4.078333	48	65	7823.477	Male	
8	cosmetics	SKU7	42.958384	59	426	8496.104	Female	

1. Total revenue by product type-

```
34  select product_type, sum(revenue_generated) as Total_revenue
35  from Supply_Chain
36  group by product_type
37  order by Total_revenue desc;
```

	product_type character varying (15)	total_revenue numeric
1	skincare	241628.163
2	haircare	174455.389
3	cosmetics	161521.267



2. Average price and revenue by product type-

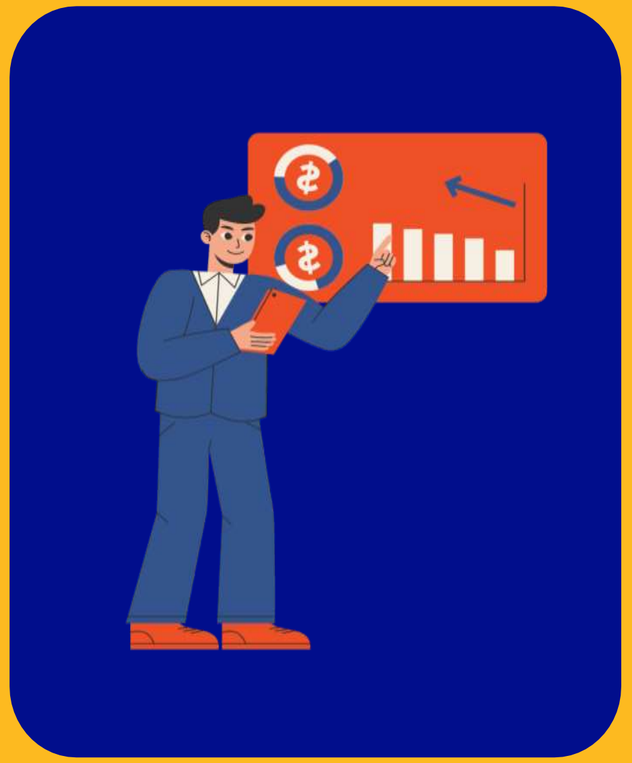
```sql
select product_type, round(avg(price)) as avg_price,
round(avg(revenue_generated)) as avg_revenue
from Supply_Chain
group by product_type;
```

	product_type character varying (15)	avg_price numeric	avg_revenue numeric
1	skincare	47	6041
2	cosmetics	57	6212
3	haircare	46	5131

3. Revenue by customer demographics-

```
46  select coalesce(customer_demographics,'unknown') as customer_group,
47  sum(revenue_generated) as Total_revenue
48  from Supply_Chain
49  group by customer_group
50  order by Total_revenue desc;
51
```

	customer_group character varying	total_revenue numeric
1	Unknown	173090.136
2	Female	161514.487
3	Male	126634.395
4	Non-binary	116365.801

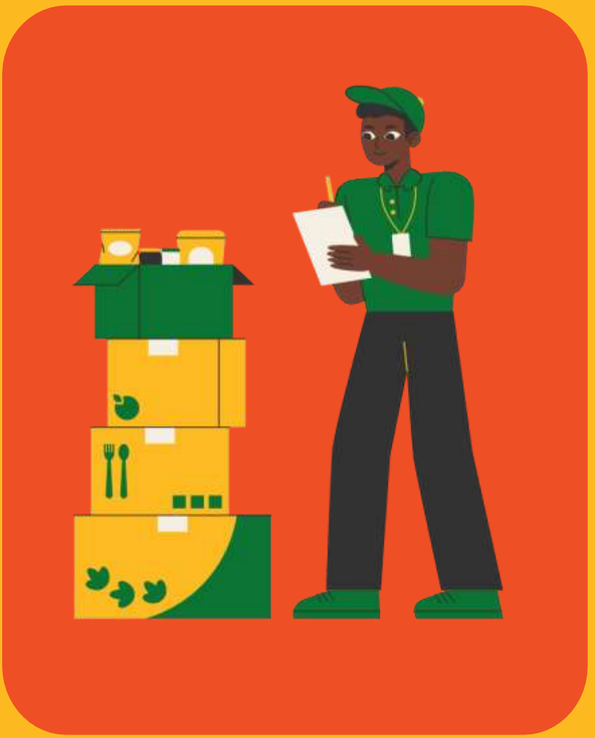


4. large orders with long lead times-

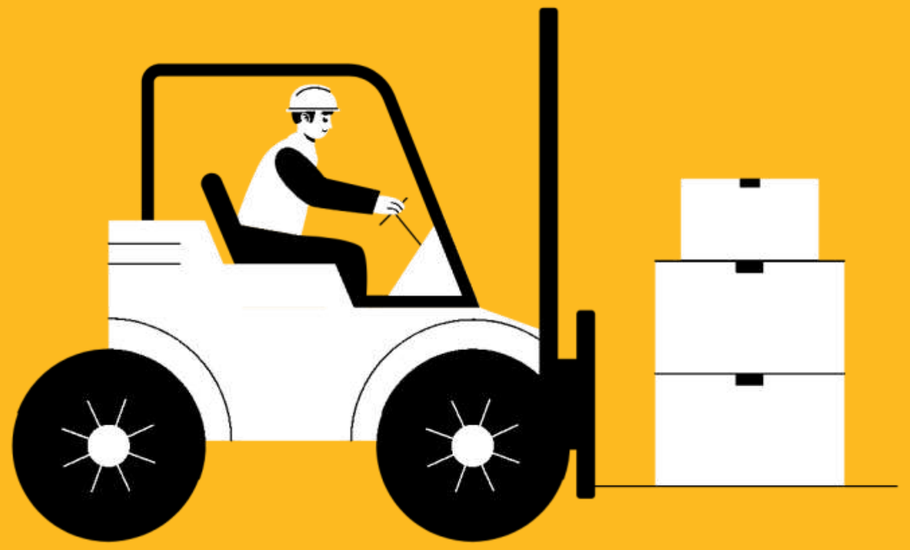
```
53  select product_type,SKU,order_quantities, lead_time
54  from Supply_Chain
55  where order_quantities >60 and lead_time >15;
56
```

	product_type character varying (15)	sku character varying (10)	order_quantities integer	lead_time integer
1	haircare	SKU5	66	27
2	skincare	SKU9	83	27
3	haircare	SKU12	85	30
4	skincare	SKU14	78	29
5	cosmetics	SKU17	85	17
6	cosmetics	SKU33	95	17
7	cosmetics	SKU35	85	27
8	haircare	SKU43	85	29
9	cosmetics	SKU44	72	19
10	cosmetics	SKU50	82	23
11	haircare	SKU54	61	22

Total rows: 24 of 24 Query complete 00:00:00.072



5. Most cost-efficient shipping carrier-



```
58  select shipping_carries,round(avg(shipping_cost),2) as avg_shipping_cost
59  from Supply_Chain
60  group by shipping_carries
61  order by avg_shipping_cost;
```

	shipping_carries character varying (10)	avg_shipping_cost numeric
1	Carrier B	5.51
2	Carrier A	5.56
3	Carrier C	5.60

6.Average shipping time by supplier-

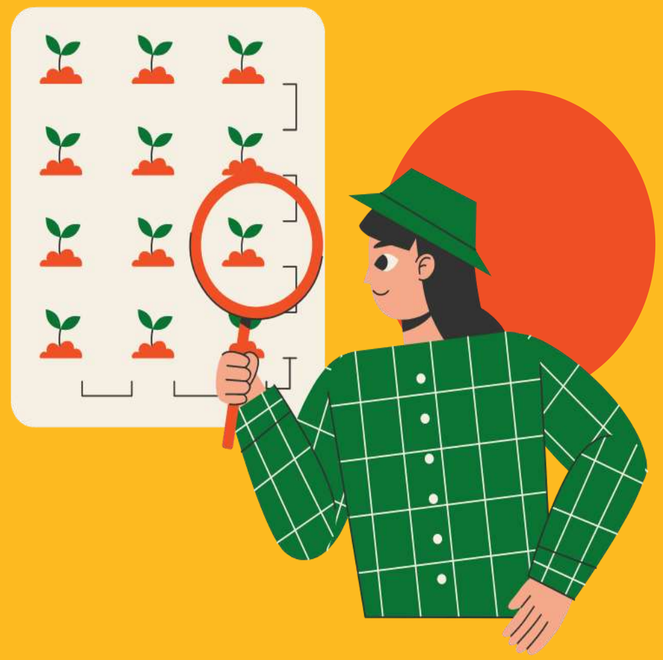
```
64  select supplier_name,
65  round(avg(shipping_times),2) as avg_shipping_times
66  from Supply_Chain
67  group by supplier_name
68  order by avg_shipping_times;
```

	supplier_name character varying (15)	avg_shipping_times numeric
1	Supplier 3	5.20
2	Supplier 2	5.50
3	Supplier 4	5.56
4	Supplier 1	6.07
5	Supplier 5	6.22

7.City with fastest average shipping-

```
71  select location,
72  round(avg(shipping_times),2) as avg_shipping_times
73  from Supply_Chain
74  group by location
75  order by avg_shipping_times;
76
```

	location character varying (15)	avg_shipping_times numeric
1	Bangalore	5.28
2	Mumbai	5.55
3	Delhi	5.93
4	Kolkata	5.96
5	Chennai	6.00

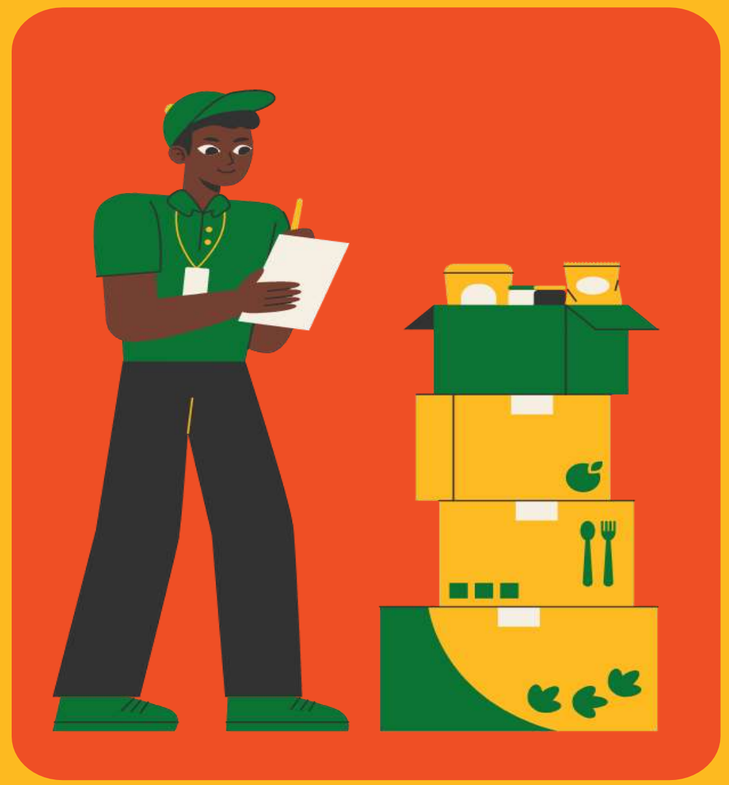


8.Highest production volume supplier-

```
80  select supplier_name,
81  sum(production_volumes) as total_production
82  from Supply_Chain
83  group by supplier_name
84  order by total_production desc
85  limit 1;
```

	supplier_name character varying (15)	total_production bigint
1	Supplier 2	14105

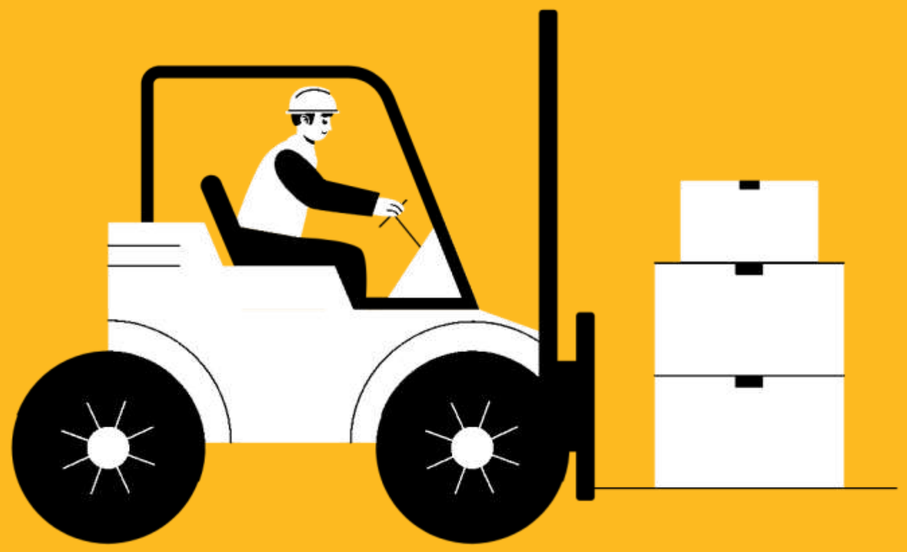
9.Average defect rate by transport mode-



```
88 select transportation_modes,round(avg(defect_rates),2) as avg_defect_rates
89 from Supply_Chain
90 group by transportation_modes
91 order by avg_defect_rates desc;
```

	transportation_modes character varying (10)	avg_defect_rates numeric
1	Road	2.62
2	Sea	2.32
3	Rail	2.32
4	Air	1.82

10.Transport modes used in successful inspections-



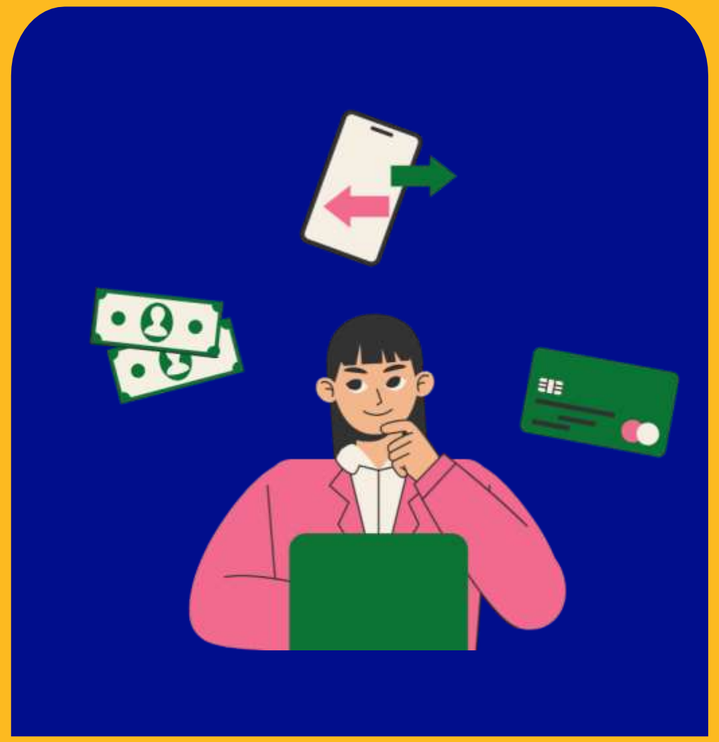
```
96  select transportation_modes,count(*) as successful_shipments
97  from Supply_Chain
98  where inspection_results ='Pass'
99  group by transportation_modes
100 order by successful_shipments desc;
```

	transportation_modes character varying (10)	successful_shipments bigint
1	Rail	7
2	Road	7
3	Air	5
4	Sea	4

11.Average transport cost by route-

```
103  select routes, round(avg(costs),2) as avg_costs
104  from Supply_Chain
105  group by Routes
106  order by avg_costs desc;
```

	routes character varying (10)	avg_costs numeric
1	Route B	595.67
2	Route C	500.48
3	Route A	485.49



12.Failied inspections with defect rates >3% -

```
109  select product_type, SKU, inspection_Results, defect_rates
110  from Supply_Chain
111  where inspection_results = 'Fail' and defect_rates > 0.03;
112
```

	product_type character varying (15)	sku character varying (10)	inspection_results character varying (10)	defect_rates numeric (10,5)
1	skincare	SKU3	Fail	4.74665
2	skincare	SKU4	Fail	3.14558
3	haircare	SKU5	Fail	2.77919
4	cosmetics	SKU7	Fail	0.39818
5	haircare	SKU12	Fail	2.16125
6	cosmetics	SKU17	Fail	0.10202
7	skincare	SKU19	Fail	3.64645
8	haircare	SKU22	Fail	2.59128
9	cosmetics	SKU27	Fail	2.86467

Insights

- Skincare generates the highest revenue **(2,41,628)** followed by hair care**(1,74,455)** and cosmetics **(1,61,521).**
- Skincare is the main revenue driver for the business.

- Cosmetics have the highest price(**57)** but don't make the most money because fewer are sold.
- Skincare is cheaper(**46)** but sells a lot, so it earns more.
- Hair care is the cheapest **(40)** and earns the least.

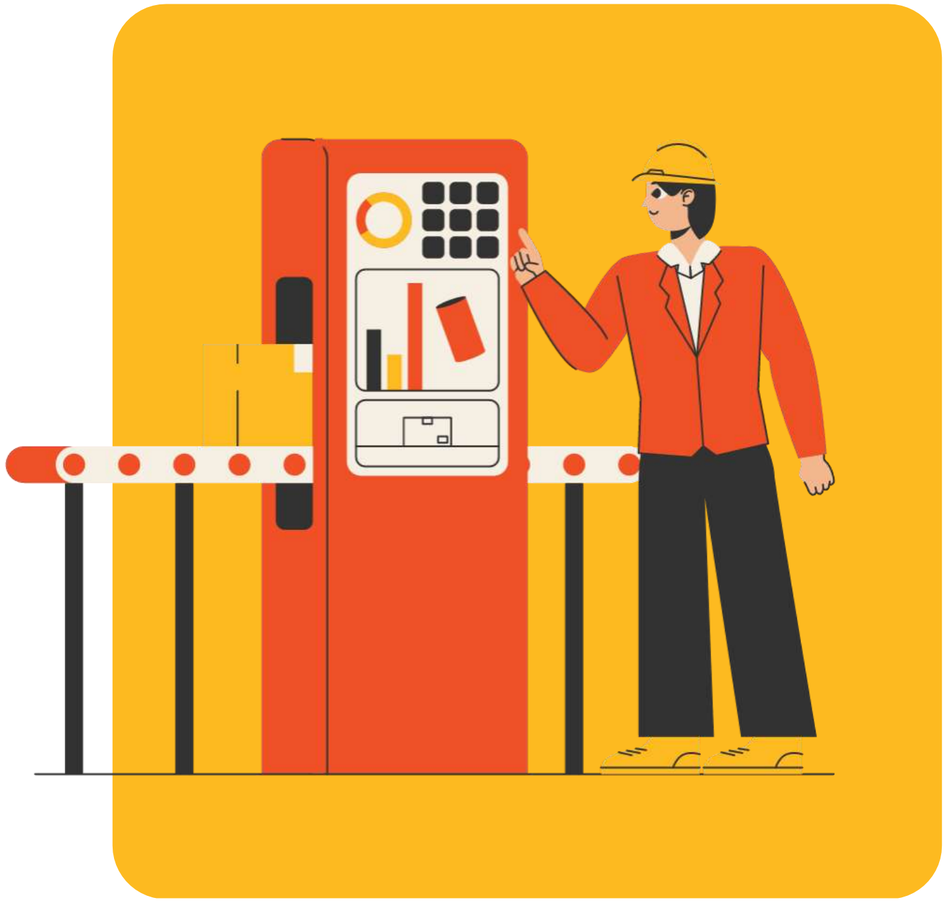
- Unknown customers contribute the most revenue (**1,73,090)** followed by female**(1,61,514)** and male category (**1,26,634).**
- Non-binary customers contribute the least**(1,16,366**).

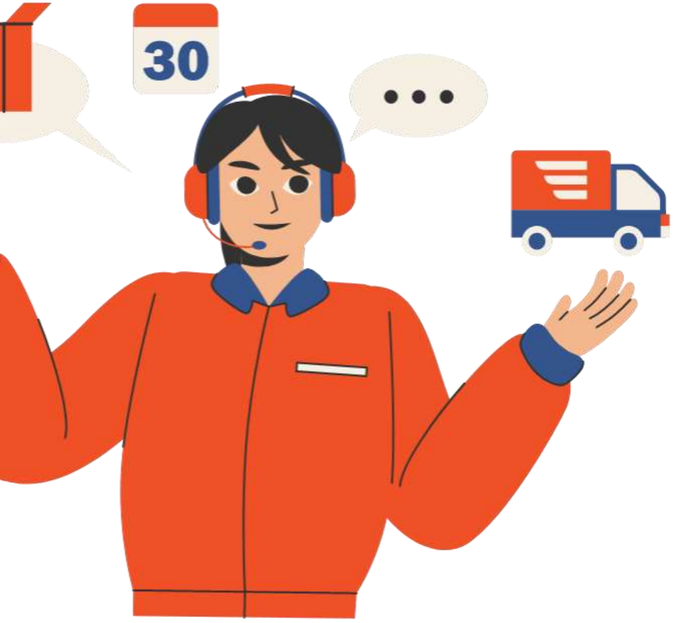
- Carrier B has the lowest average shipping cost**(5.51)**, making it the most cost-effective option.
- Carrier A and Carrier C have slightly higher costs(**5.56 and 5.60 respectively**).

- Supplier 3 delivers the fastest **(5.20 days**) and Supplier 5 has the slowest shipping time**(6.22 days)**.

- Bangalore has the fastest average shipping time **(5.28 days**), followed by Mumbai **(5.55 days**) and Delhi (**5.93 days).**
- Chennai is the slowest **(6 days).**

- Road transport has the most product defects (**2.62).**
- Sea transport is second (**2.32)** and Air transport is the best(**1.82 defects only).**
- This means products are damaged more often in road and sea transport.





Thank You