

# **INDIAN INSTITUTE OF TECHNOLOGY** **( IIT ) MADRAS**

## **Bachelor Of Science ( BS )** *IN* **Data Science & Applications**

**BUSINESS DATA MANAGEMENT ( BDM ) CAPSTONE PROJECT**

**Title: Solving Cosmetics Wholesale Business Problems Using Data Analytics**

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# PROBLEM OBJECTIVES

## ❖ **To find ways to get rid of the loss caused by expired products in stock.**

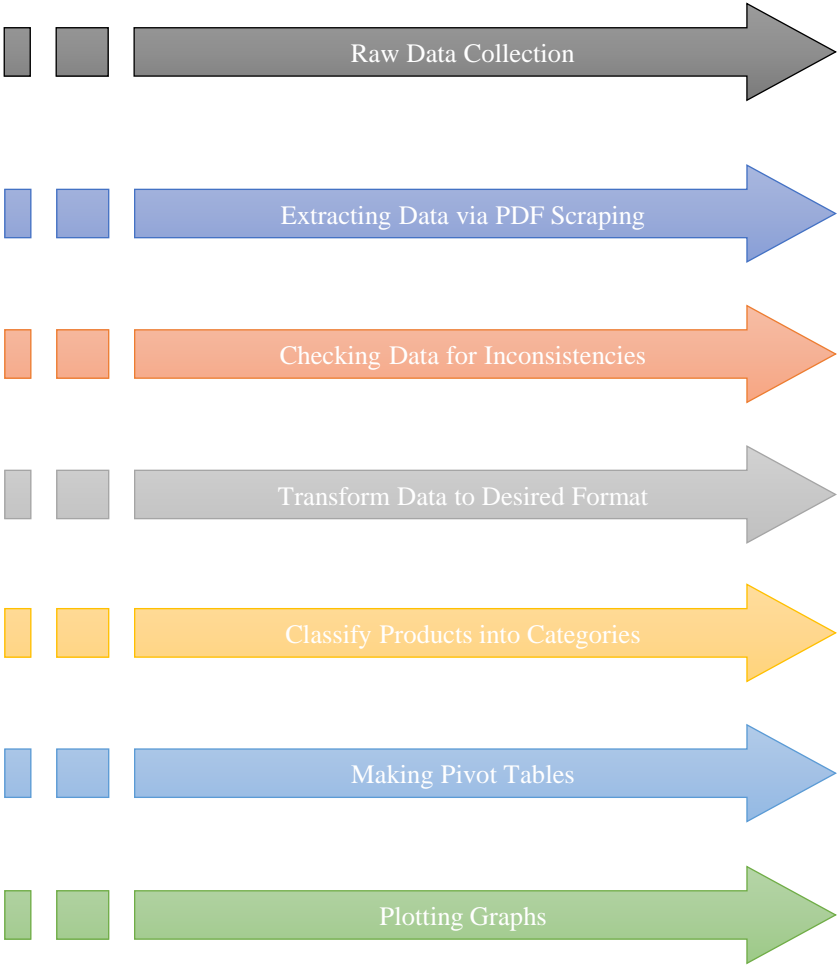
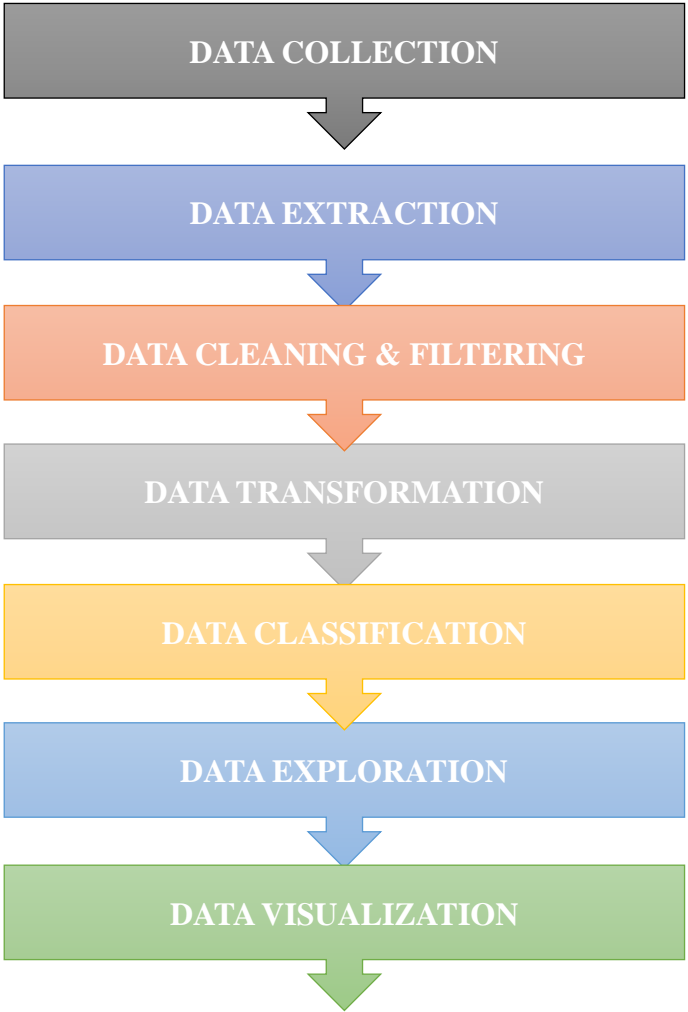
- Initially, product 1 was in high demand among customers, so the owner stocked a large inventory of the product. After a while, customer demand changed from product 1 to product 2. Therefore, the owner has to put product 2 into stock. Currently, no one is asking about product 1. But after a while, customer demand changed again. This time it was changed from product 2 to product 3. This will cause products 1 and 2 to expire in stock and lead to a huge loss.

## ❖ **To find the steps to be taken, in that fixed capital, to increase profit and grow the business.**

- The business was just established six months ago, so the company has not yet made much profit to raise capital. Therefore, it is difficult to establish links with other brands and grow the business.
- The fact that the owner has to bear the loss of the expired stock also makes it difficult for the business to grow.
- The business is new and it is necessary to establish a good relationship with retailers, so the owner had to sell the product at half price, and the second half is paid after the product is sold out.

# METHODOLOGIES

[Link to Dataset](#)

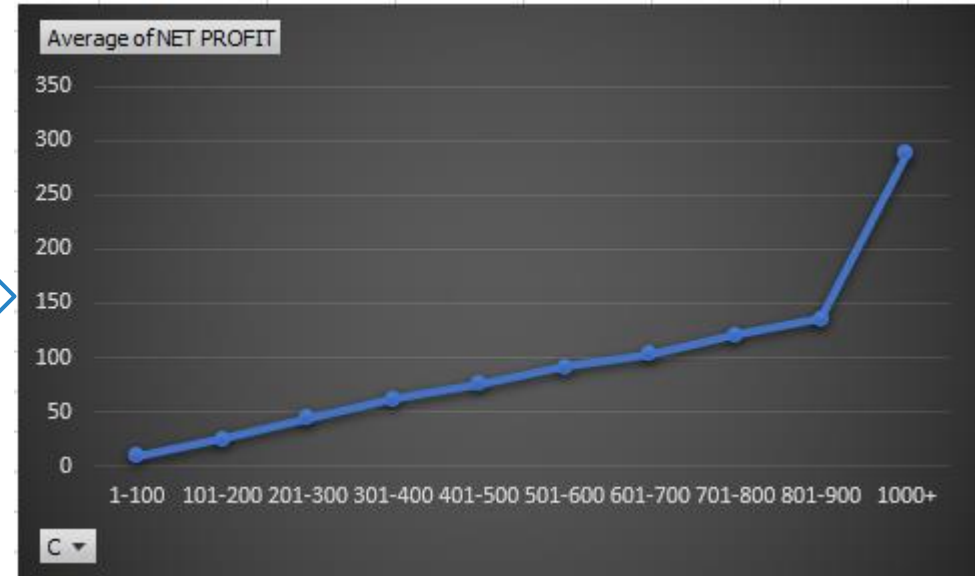


# MRP Ranges v/s Net Profit per Product

## ❖ Observation

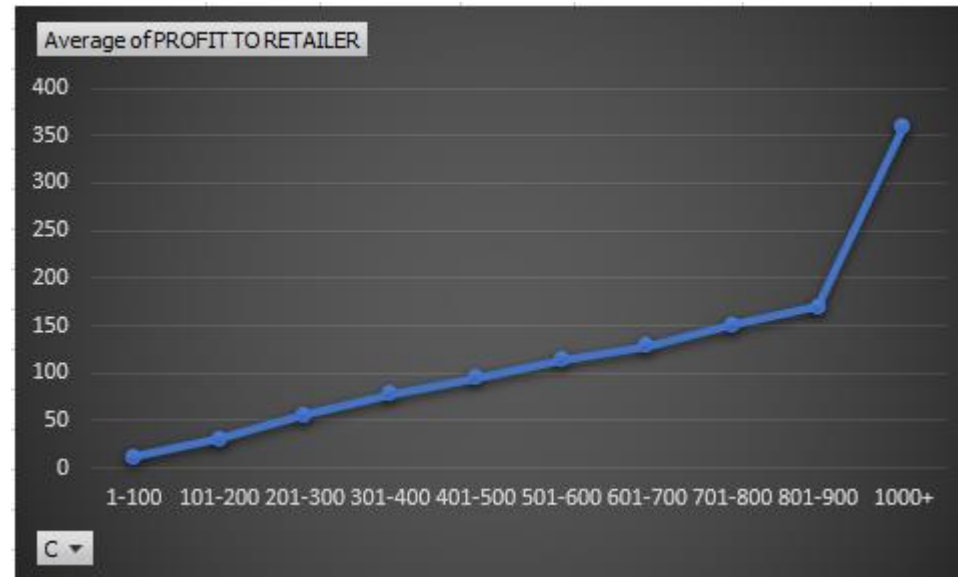
- The average net profit of the products in various price ( M.R.P. ) ranges shows a sudden jump when the product's price exceeds the amount of 1000 Rs.
- The average profit to retailer per product in various price ( M.R.P. ) ranges shows a sudden jump when the product's price exceeds the amount of 1000 Rs.

**MRP  
Ranges v/s  
Net Profit  
per Product**



## ❖ Conclusion

- Try to promote and increase sales of products with MRP above Rs 1000 ( i.e. Category 1000+ ). These products have comparatively high profit percentage for both wholesalers and retailers.

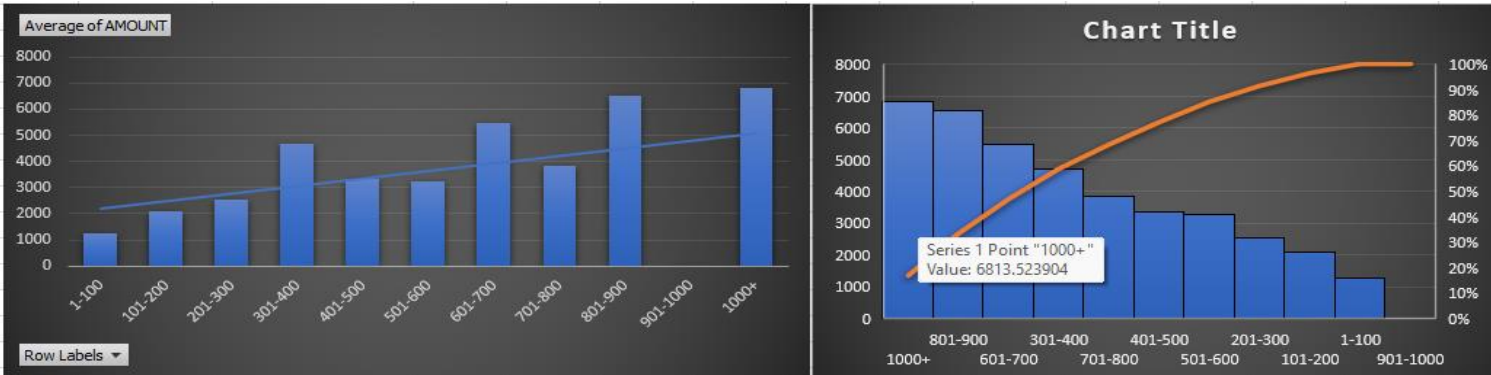


**MRP  
Ranges v/s  
Profit to  
Retailer per  
Product**

# MRP Ranges v/s Average Bill Amount of Products Purchased

## Observation

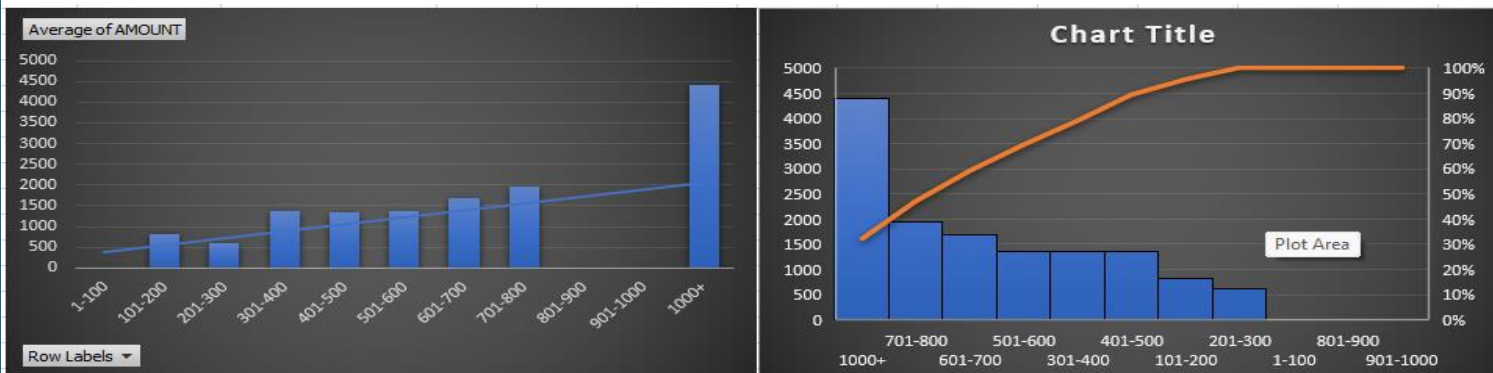
- The Products are in the price ranges 301-400, 601-700, 801-900 & 1000+ are purchase more in comparison to others.
- No products are purchased in the price range 901-1000.



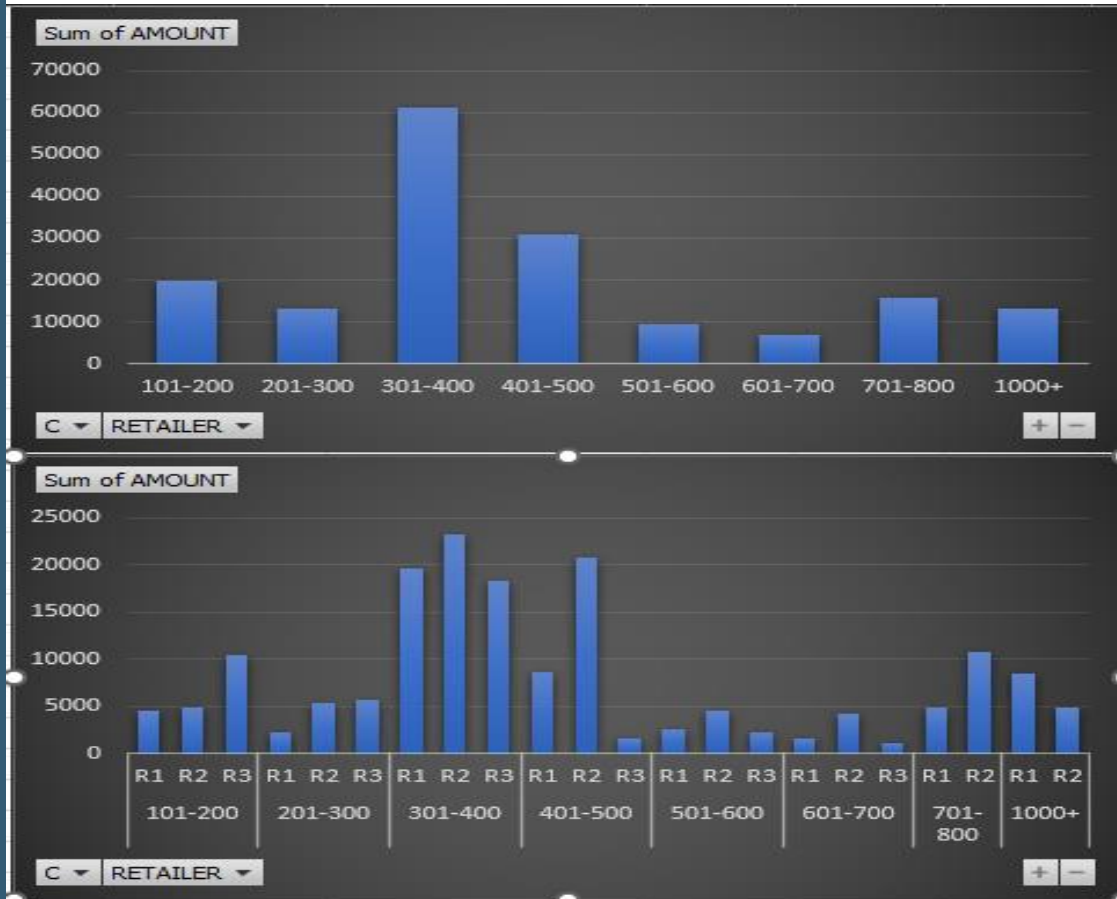
# MRP Ranges v/s Average Bill Amount of Products Sold

## Observation

- The Products in the price ranges 101-200, 301-400 & 1000+ are more in comparison to others.
- No products are sold in the price ranges 1-100, 801-900 & 901-1000.



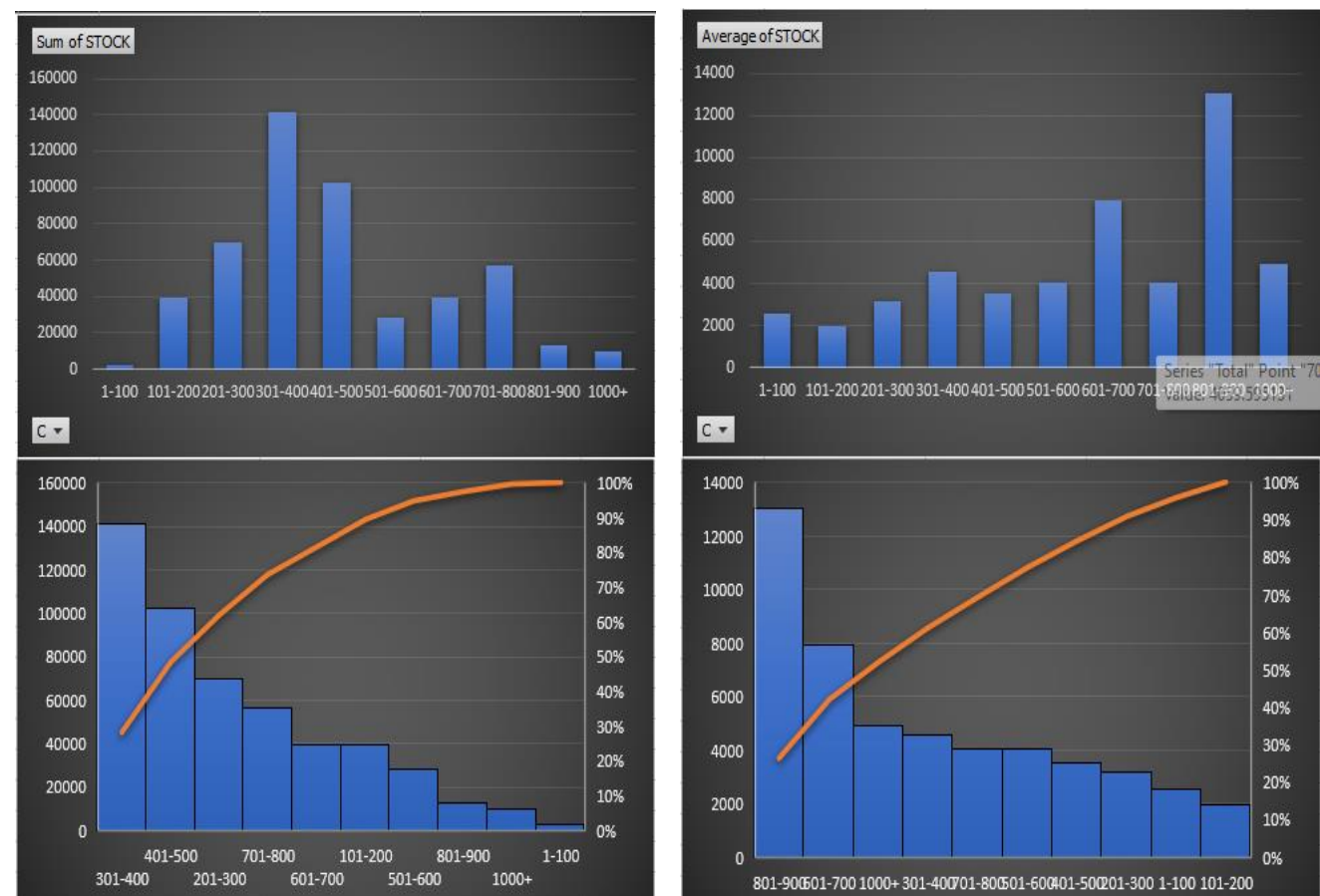
## Price Ranges v/s Total Revenue per Retailer



### Observation

- Retailer R3 is not buying costly products ( MRP > 700 ). In fact, R3 is only interested in products with MRP < 400.
- Retailers R1 & R2 are also comparatively less interested in products of range 501 – 700

## MRP Ranges v/s Price of available Products in Stock

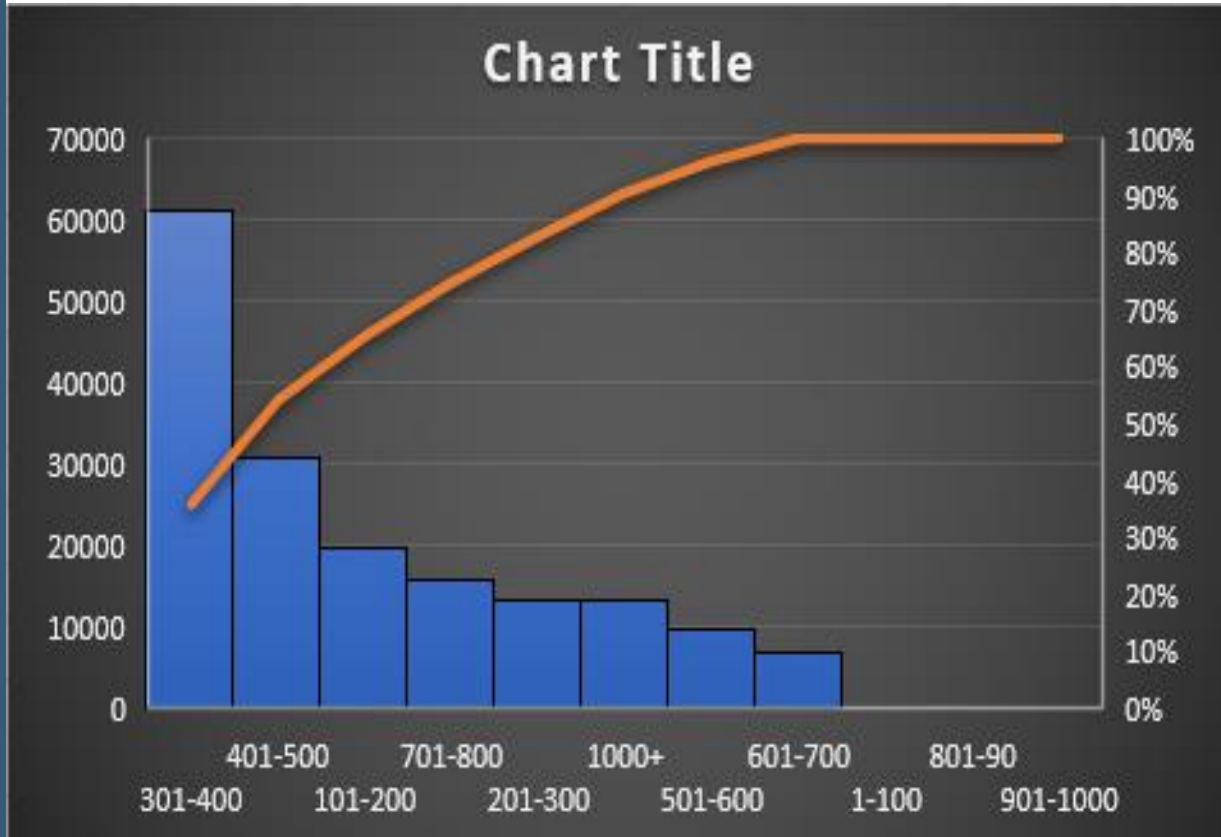


### Observation

- Products in the price range 301-400 acquire maximum amount of stock. In fact products in price ranges 301-400 & 401-500 combinedly acquire approximately 48 % amount of stock.



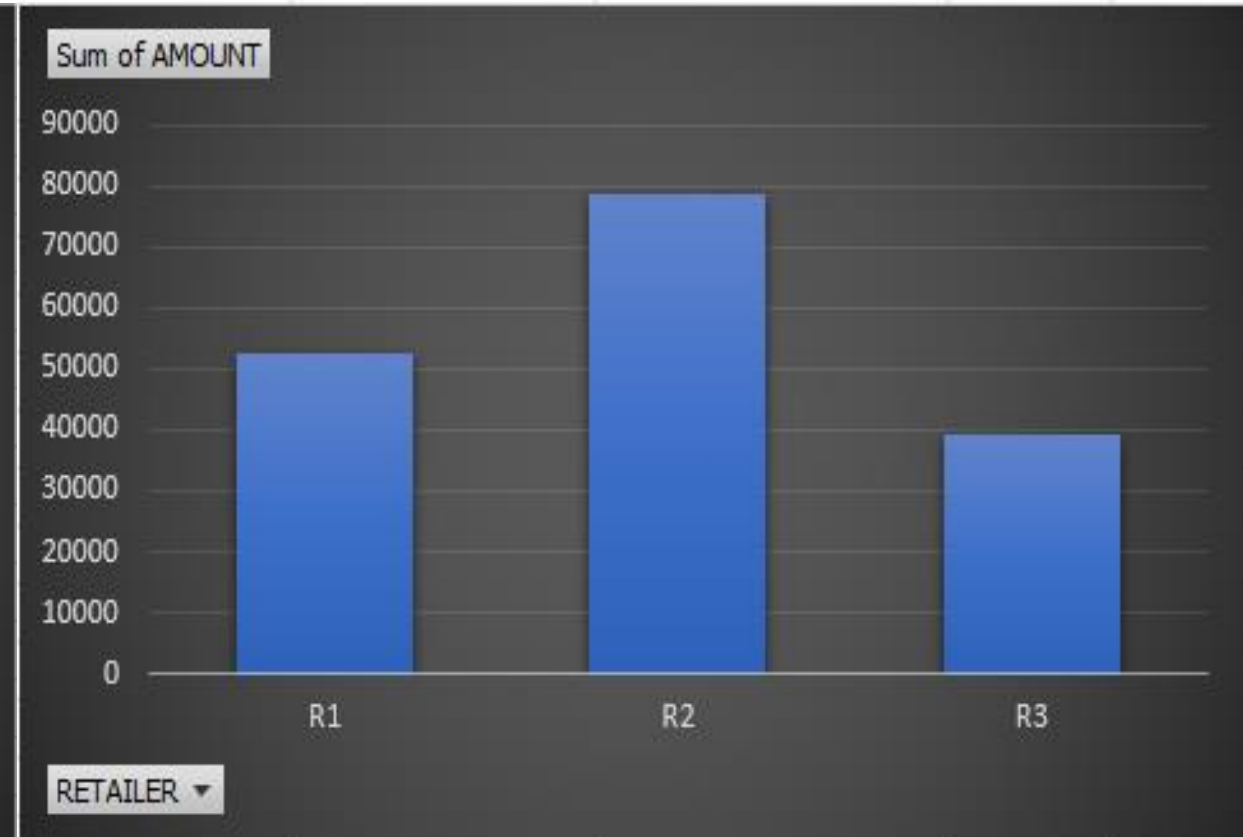
## Price Ranges v/s Total Revenue ( Pareto Analysis )



### Observation

- It does not follow Pareto Principle ( 80 : 20 ) but still approx. 54 % of the revenue is generated by the products in the price range 301-400 & 401-500.

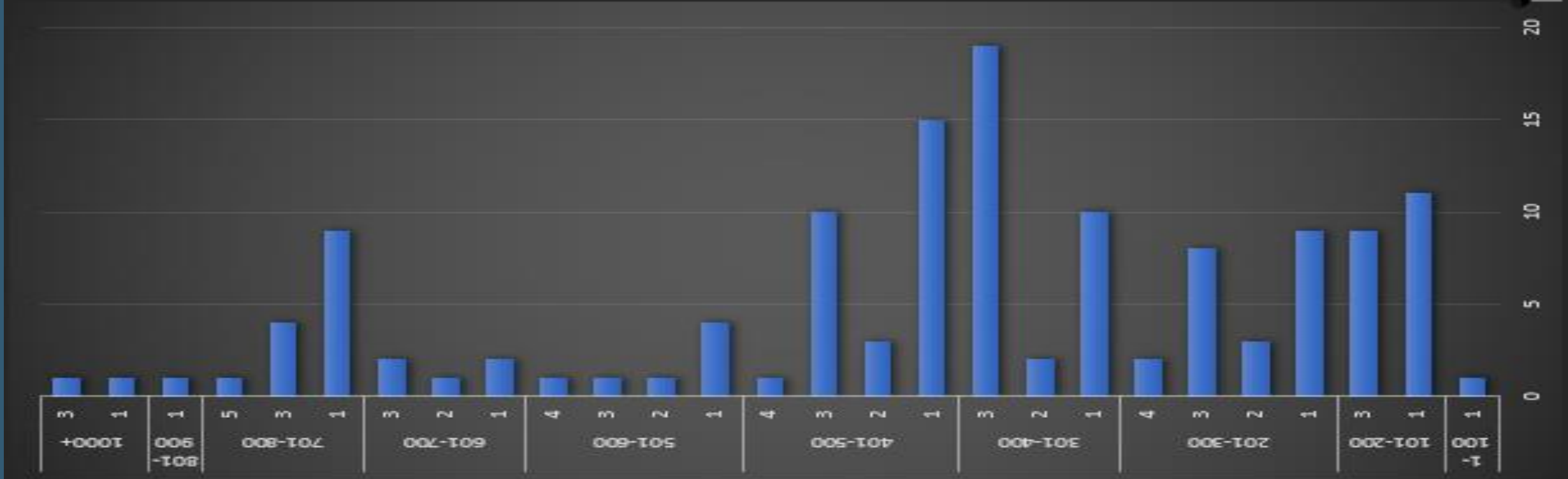
## Retailers v/s Total Revenue



### Observation

- Retailer R2 generates the Maximum Revenue. It generates approximately 46 % of the total revenue.

# MRP Range v/s Category of Product in Stock



## Observation

- In price ranges 1-100 & 801-900 products are not sold during observation period.
- In every price ranges category 1 products are dominant.
- Only range 701-800 contains a product of category 5.
- Category 2 products are in ranges from 201 to 700.
- Category 4 products are only in ranges 201-300, 401-500 & 501-600.



## CONCLUSIONS

### Guidelines for purchasing products from different price ranges:

<u>CATEGORY</u>	<u>WHAT TO DO</u>
0-100	Stop Purchasing
101-200	Continue Purchasing in Same Quantity
201-300	Decrease Purchase Quantity
301-400	Increase Purchase Quantity
401-500	Increase Purchase Quantity
501-600	Continue Purchasing in Same Quantity
601-700	Decrease Purchase Quantity
701-800	Continue Purchasing in Same Quantity
801-900	Stop Purchasing
901-1000	Start Purchasing
1000+	Increase Purchase Quantity

### Retailer wise recommendations:

R1	<ul style="list-style-type: none"><li>➤ Promote products from MRP range 201-300 &amp; 501 to 700.</li><li>➤ Provide some discount to further increase the sales of products from MRP range 301 to 500.</li></ul>
R2	<ul style="list-style-type: none"><li>➤ Promote products from MRP range 501 to 700.</li><li>➤ Provide some discount to further increase the sales of products from MRP range 101 to 300 &amp; 1000+.</li><li>➤ As R2 generates highest revenue, provide some offers to build better relations.</li></ul>
R3	<ul style="list-style-type: none"><li>➤ Promote products whose MRP is greater than 700.</li><li>➤ Provide some discount to further increase the sales of products from MRP range 401 to 700.</li><li>➤ As R3 generates lowest revenue, try some measures to build trust &amp; increase orders.</li></ul>

## CONCLUSIONS

### Guidelines for different categories of products based on their Inventory trends:

<u>CATEGORY</u>	<u>CRITERIA</u>
1	Products which are never sold during the observation period
2	Products which are first sold are but not sold after its second purchase
3	Products which have several sales - purchase & still available in stock
4	Products which get stock out & purchased again
5	Products which get stock out but not purchased again

<u>CATEGORY</u>	<u>WHAT TO DO</u>
1	Stop Purchasing until the current stock gets sold
2	Stop Purchasing until the current stock gets sold
3	Decrease the purchase of products that acquires large portion in stock & Increase for the products which acquires less
4	Purchase again but not in large quantity
5	Start Purchasing & see the trend for next month

THANK YOU