

# Superstore-Data Analysis

Dashboard Link : [https://app.powerbi.com/groups/me/reports/c520e421-d21d-43d2-a10e-fa2b4b199718?ctid=3650a85a-c75e-4c17-a992-3c1258af4319&pbi\\_source=linkShare](https://app.powerbi.com/groups/me/reports/c520e421-d21d-43d2-a10e-fa2b4b199718?ctid=3650a85a-c75e-4c17-a992-3c1258af4319&pbi_source=linkShare)

## Problem Statement

The Superstore is facing difficulties to grow their business and want a dedicated dashboard to constantly have their eyes on their growth status and problem areas. They want to analyse its sales data to gain insights into its performance and identify opportunities for growth. The company has a vast amount of sales data, including information on product categories, sub-categories, regions, customers. The main objective is to extract meaningful insights from this data to analyse the overall sales of superstore and give some business suggestions for its growth.

## About The Data –

The data is about a Superstore holding data of their sales of 4 years (2014-2017). The dataset consists of 17 columns and 9995 rows. The columns are –

1. Order Id – Contains order ids as primary feature.
2. Order Date – The date on which the order has placed.
3. Ship Date – The day orders have shipped.
4. Ship Mode – How the orders have shipped.
5. Address – Address where the orders shipped.
6. Region – The region of shipped orders.
7. Customer Id – Individual customers id.
8. Customer Name – Customers name.
9. Segment – Consumer, corporate and home office as customers' segment.
10. Product Id – Products unique id.
11. Category – Product's category (Furniture, Office supplies, Technology)
12. Sub-category – Sub-categories of products
13. Product Name – Names of products
14. Quantity – The number of products in each order.
15. Discount – Discounts in decimals which are put on the products.
16. Buy Price – Cost price of each product.
17. Price Per Each – Selling price of each product.

## Feature Engineering-

- Removed Address column, Customer Name as there is customer id to represent it, an extra column with all the null values.
- Changed the order date column's type to date format from date/time format.
- Renamed Price Per Each Column as Selling Price
- Added two columns, Profit\_Per\_Each to calculate per product's profit after giving discounts with the expression of **[{Selling price – (Selling Price \* Discount)} – Buying Price]**, and Actual\_Profit to calculate total profit for each order by multiplying Profit\_Per\_Each with

Quantity, and a Profit\_Without\_Discount column where the profit is calculated without discount.

- Created a column named MRP to calculate each product's actual price before giving discounts.

### Data Preprocessing-

- There is a null value in sub-category column. That row's category was office supplies, filtered the data with office supplies first, then filtered again with same discount and price. So from there I came to the actual value that could have been there and that is 'Art' as all the sub-categories in that filtered table is 'Art'.
- Replaced the null with 'Art'.
- Replaced FC with First Class in Ship mode column.

### Assumptions –

- Analyzed the data over last year (2017) of the dataset (YTD format) and build the dashboard assuming it as the current latest year.
- Taken all the Buy price and Price per each (Selling price) as legit data.

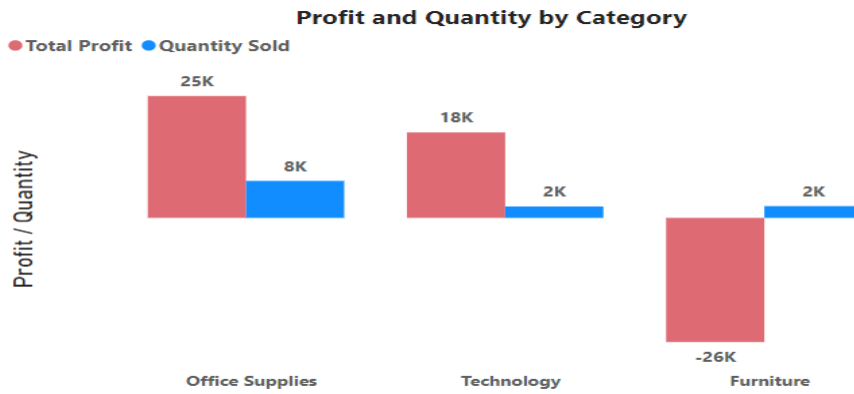
### Analysis –



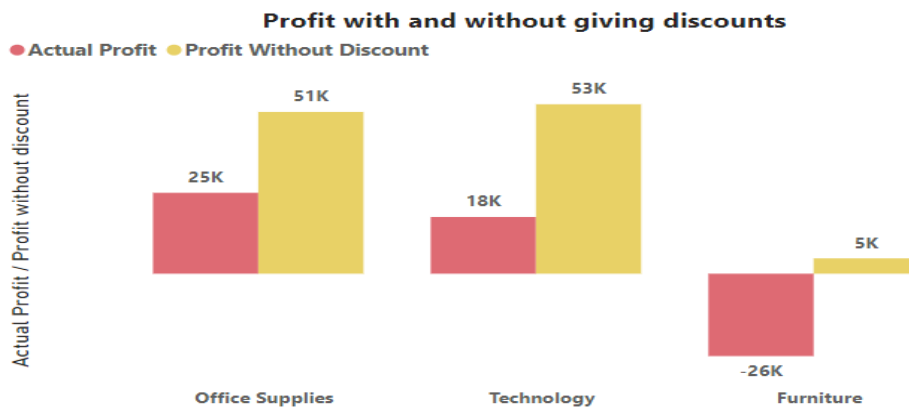
The profit is \$17K on an investment of \$733K dollar, which is just 2.30%.



At 1<sup>st</sup> quarter the profits are quite good but after that it has gone down to almost no profit.



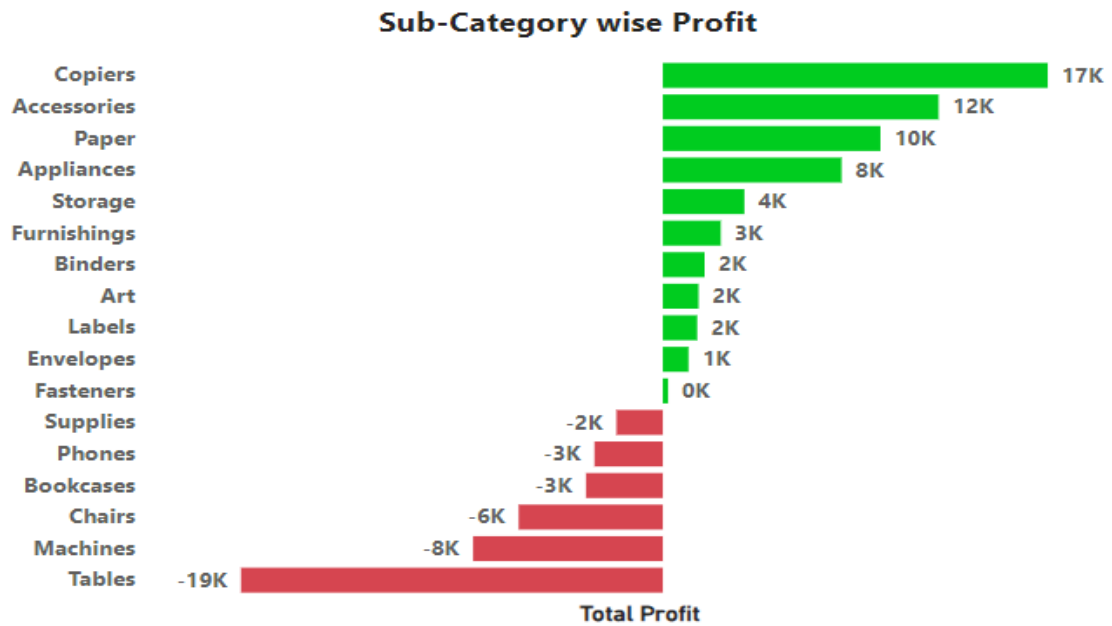
- Office Supplies has the most quantity sold and generating maximum profit of \$25K and Technology with 2K quantity sold giving profit of \$18K. Whereas Furniture having 1/4th quantity of Office Supplies giving loss of \$26K.



- We can see from the graph that without giving the discounts the profits are significantly higher and Furniture is also profitable here, from a loss of \$26K to a profit of \$5K. And also Office Supplies will be having a 2x profit and Technology 3x.

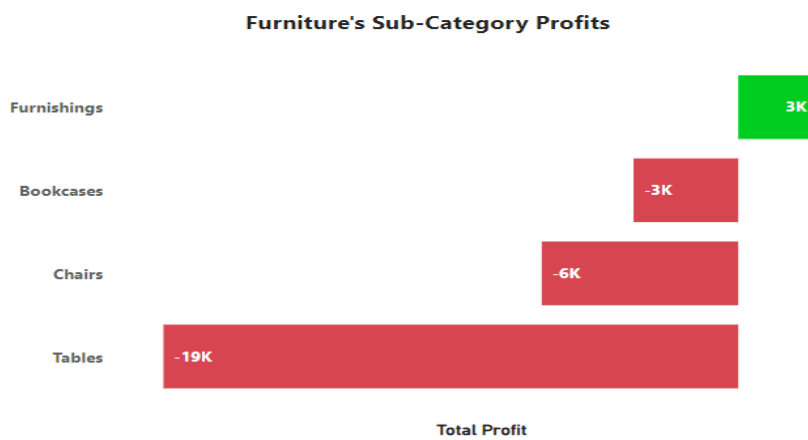


- Here we can see there is no correlation as such between quantity with discount. It means discount has almost no effect on order quantity.

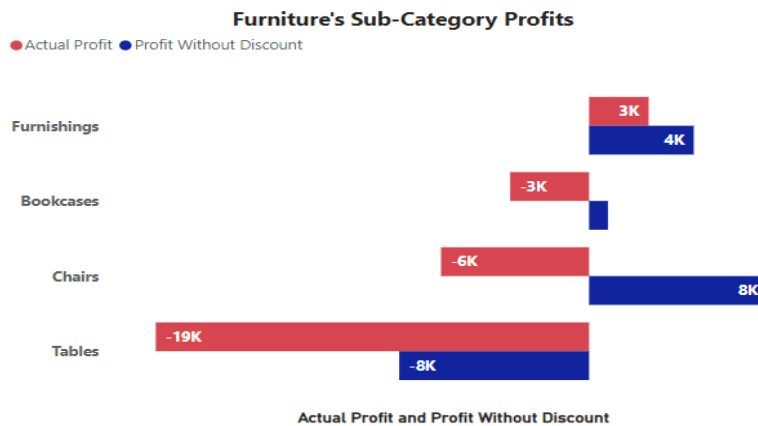


- As we can see Supplies, Phones, Bookcases, Chairs, Machines and Tables are having some products that are causing loss in these sub-categories.

➤ So first let's see what is causing so much loss for Furniture category –



- Here we can see that Bookcases, Chairs and Tables are giving almost \$28K loss.

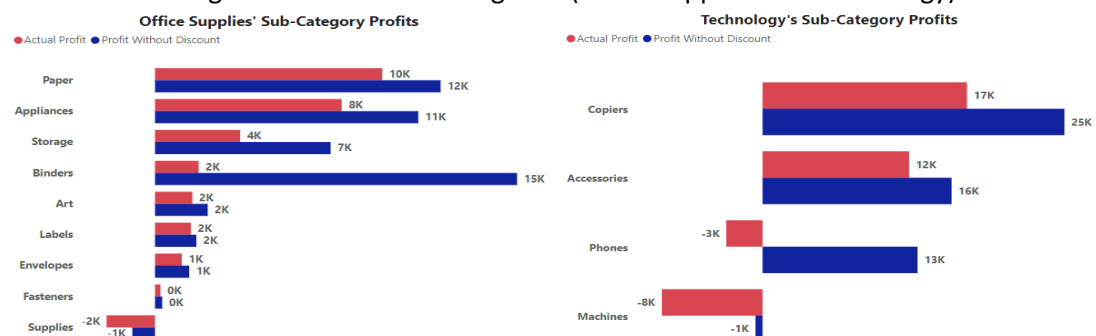


- I calculated a column based on discount less profit. From there we can see in the graph that Chairs' discount should be reduced. But Tables will still be in loss. This means it must be having some product lines that are having MRPs less than their cost price. I have stated some of the product ids below –

Product ID	Product Name	Buy Price	MRP	Loss per each
FUR-TA-10000198	Chromcraft Bull-Nose Wood Oval Conference Tables & Bases	330.59	187.33	-143.25
FUR-TA-10001950	Balt Solid Wood Round Tables	267.89	129.48	-138.41
FUR-TA-10001889	Bush Advantage Collection Racetrack Conference Table	233.32	118.78	-114.54
FUR-TA-10004442	Riverside Furniture Stanwyck Manor Table Series	172.11	77.45	-94.66
FUR-TA-10001889	Bush Advantage Collection Racetrack Conference Table	254.53	161.20	-93.33
FUR-TA-10001932	Chromcraft 48" x 96" Racetrack Double Pedestal Table	160.32	70.54	-89.78
FUR-TA-10001932	Chromcraft 48" x 96" Racetrack Double Pedestal Table	160.32	70.54	-89.78
FUR-TA-10002958	Bevis Oval Conference Table, Walnut	130.49	44.37	-86.12
FUR-TA-10003473	Bretford Rectangular Conference Table Tops	206.87	124.12	-82.75
FUR-TA-10004289	BoxOffice By Design Rectangular and Half-Moon Meeting Room Tables	109.38	28.44	-80.94
FUR-TA-10000688	Chromcraft Bull-Nose Wood Round Conference Table Top, Wood Base	108.93	37.03	-71.89
FUR-CH-10002024	HON 5400 Series Task Chairs for Big and Tall	490.69	420.59	-70.10
FUR-TA-10004289	BoxOffice By Design Rectangular and Half-Moon Meeting Room Tables	120.31	50.31	-70.00

- These are some top products from Furniture category that has MRP minimum \$70K below the buy price. And these MRPs are without discounts.

➤ Now checking for the other two categories (Office Supplies and Technology) –



- So much products of Supplies from Office Supplies and Machines from Technology have MRPs less than buy price. Phones will be in profit if the discounts are reduced.

Product ID	Product Name	Buy Price	MRP	Loss per each
TEC-MA-10004125	Cubify CubeX 3D Printer Triple Head Print	2,000.00	1,040.00	-960.00
TEC-MA-10000822	Lexmark MX611dhe Monochrome Laser Printer	510.00	170.00	-340.00
OFF-BI-10004995	GBC DocuBind P400 Electric Binding System	408.30	81.66	-326.64
OFF-BI-10001359	GBC DocuBind TL300 Electric Binding System	269.10	62.79	-206.31
OFF-BI-10001359	GBC DocuBind TL300 Electric Binding System	269.10	62.79	-206.31
OFF-BI-10001120	Ibico EPK-21 Electric Binding System	378.00	207.90	-170.10
OFF-SU-10002881	Martin Yale Chadless Opener Electric Letter Opener	666.25	516.34	-149.91
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FUR-TA-10000198	Chromcraft Bull-Nose Wood Oval Conference Tables & Bases	330.59	187.33	-143.25
FUR-TA-10001950	Balt Solid Wood Round Tables	267.89	129.48	-138.41

- These are top 10 product ids with less MRP than buy price from all categories.

## Insights –

1. The profit is \$17,000 on an investment of \$733K in 2017. It is just 2.4% of the investment.
2. Office supplies category product has the most sales.
3. Furniture is the category which should be look after because it is going in the loss.
4. Non-calculated discounts are causing products to be sold at a loss.
5. Some products are bought at higher price than their MRP.

## Suggestions –

1. The discounts should be reduced as there is no as such relation between quantity with discounts and must be well calculated as it is affecting very badly on profit gains.
2. The products which have a MRP lower than their cost price should be cancelled from stock.
3. An excel file link with two sheets are added with this document. One is for products to disband and another one is for products to reduce discounts. Link - <https://drive.google.com/drive/folders/1wv8Xzdei2ChwDHS4Gud6tMcly0DYeoCR?usp=sharing>

## Performance Tracker Dashboard –

