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**Year: Final Year**

**College: Narsimha Reddy Engineering College**

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## **Project Title Name:**

### **Report and Dashboard of Super store Sales market analysis Using Advanced Excel and Power BI.**

## **Tools and Technology:**

### **1. Advanced Excel**

Excel is spread sheet software developed by Microsoft, commonly used for data manipulation, calculations, and analysis. Advanced Excel refers to a higher level of proficiency in using the software, including complex formulas, functions, data analysis tools, pivot tables, macros, and more. It's widely used in various industries for managing and analyzing data.

### **2. Power BI**

Power BI is a business analytics service by Microsoft that allows you to connect to various data sources, transform and model the data, and create interactive visualizations and reports. It's widely used for data visualization, data exploration, and business intelligence. Power BI helps organizations make data-driven decisions by providing insights through interactive dashboards and reports.

**Organization Name:** IBM India

## **Problem Statement:**

Analysis of Super Store Market Analysis to help the organization take a meaningful right decision and find Insights to excel their business

By observing the raw datasets there is so many columns present which is unwanted to output solution. Remove the columns which is unwanted in the data set

Removing of columns from the dataset

We can remove the columns from the dataset in excel by using commands that is Click on the column in the dataset and press 'cntrl-' (control + Minus) then automatically the columns are removed from the dataset.

There are totally 51219 rows are present in dataset and 24 columns are present in the dataset.

The unwanted columns which is to be removed from the dataset are

Order date, ship date, ship mode, customer id, Postal Code, category, sub category, product names, Order priority

In postal codes column there is so many blank spaces if we use that data with the blank spaces, we will get unwanted solution which is not useful

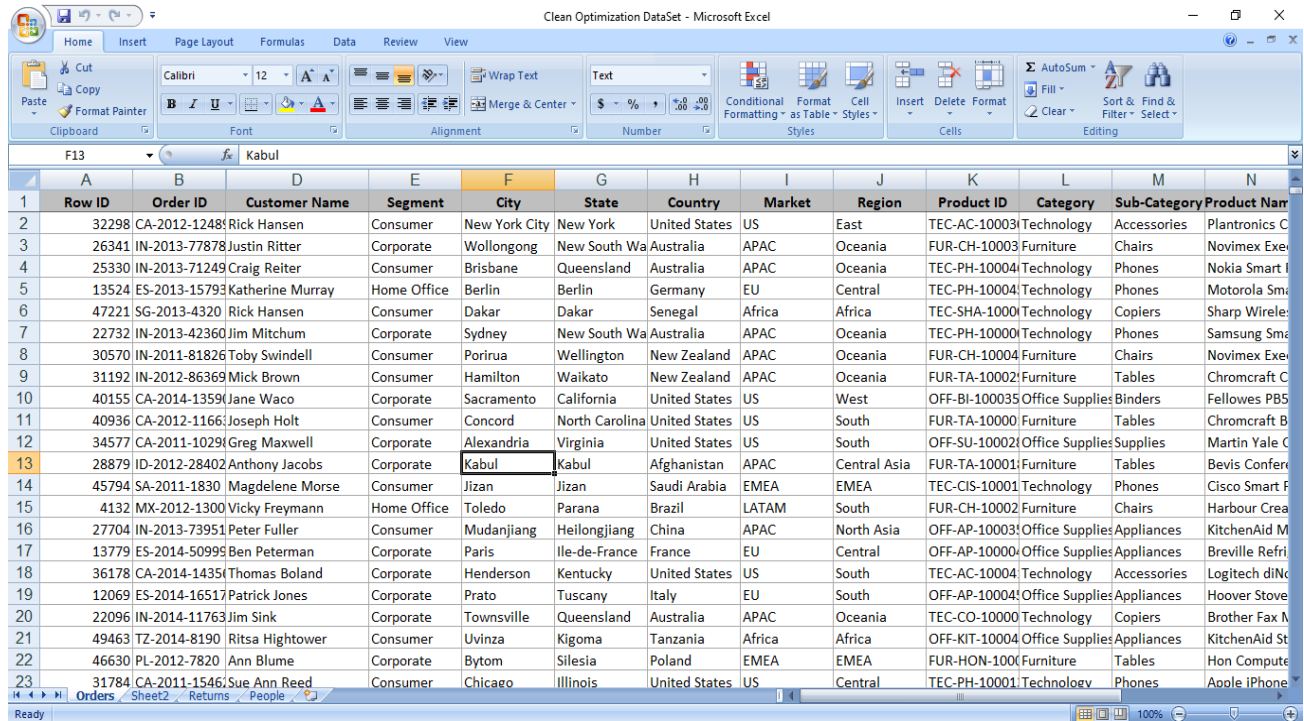
By using some excel commands blank spaces are filled with the zeros

The data which is represented with the dummy

## Raw Data

1	A	B	C	D	E	F	G	H	I	J	K	L	M
2	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	City	State	Country	Postal Code	Market
3	32298	CA-2012-1248	31/07/2012	31/07/2012	Same Day	RH-19495	Rick Hansen	Consumer	New York City	New York	United States	10024	US
4	26341	IN-2013-77878	05/02/2013	07/02/2013	Second Class	JR-16210	Justin Ritter	Corporate	Wollongong	New South Wa	Australia		APAC
5	25330	IN-2013-71249	17/10/2013	18/10/2013	First Class	CR-12730	Craig Reiter	Consumer	Brisbane	Queensland	Australia		APAC
6	13524	ES-2013-15793	28/01/2013	30/01/2013	First Class	KM-16375	Katherine Murray	Home Office	Berlin	Berlin	Germany		EU
7	47221	SG-2013-4320	05/11/2013	06/11/2013	Same Day	RH-9495	Rick Hansen	Consumer	Dakar	Dakar	Senegal		Africa
8	22732	IN-2013-42360	28/06/2013	01/07/2013	Second Class	JM-15655	Jim Mitchum	Corporate	Sydney	New South Wa	Australia		APAC
9	30570	IN-2011-81826	07/11/2011	09/11/2011	First Class	TS-21340	Toby Swindell	Consumer	Porirua	Wellington	New Zealand		APAC
10	31192	IN-2012-86369	14/04/2012	18/04/2012	Standard Class	MB-18085	Mick Brown	Consumer	Hamilton	Waikato	New Zealand		APAC
11	40155	CA-2014-1359	14/10/2014	21/10/2014	Standard Class	JW-15220	Jane Waco	Corporate	Sacramento	California	United States	95823	US
12	40936	CA-2012-1166	28/01/2012	31/01/2012	Second Class	JH-15985	Joseph Holt	Consumer	Concord	North Carolina	United States	28027	US
13	34577	CA-2011-1029	05/04/2011	09/04/2011	Second Class	GM-14695	Greg Maxwell	Corporate	Alexandria	Virginia	United States	22304	US
14	28879	ID-2012-28402	19/04/2012	22/04/2012	First Class	AJ-10780	Anthony Jacobs	Corporate	Kabul	Kabul	Afghanistan		APAC
15	45794	SA-2011-1830	27/12/2011	29/12/2011	Second Class	MM-7260	Magdelene Morse	Consumer	Jizan	Jizan	Saudi Arabia		EMEA
16	4132	MX-2012-1300	13/11/2012	13/11/2012	Same Day	VF-21715	Vicky Freymann	Home Office	Toledo	Parana	Brazil		LATAM
17	27704	IN-2013-73951	06/06/2013	08/06/2013	Second Class	PF-19120	Peter Fuller	Consumer	Mudanjiang	Heilongjiang	China		APAC
18	13779	ES-2014-50995	31/07/2014	03/08/2014	Second Class	BP-11185	Ben Peterman	Corporate	Paris	Ile-de-France	France		EU
19	36178	CA-2014-1435	03/11/2014	06/11/2014	Second Class	TB-21175	Thomas Boland	Corporate	Henderson	Kentucky	United States	42420	US
20	12069	ES-2014-16517	08/09/2014	14/09/2014	Standard Class	PJ-18835	Patrick Jones	Corporate	Prato	Tuscany	Italy		EU
21	22096	IN-2014-11763	31/01/2014	01/02/2014	First Class	JS-15685	Jim Sink	Corporate	Townsville	Queensland	Australia		APAC
22	49463	TZ-2014-8190	05/12/2014	07/12/2014	Second Class	RH-9555	Ritsa Hightower	Consumer	Uvinza	Kigoma	Tanzania		Africa
23	46630	PL-2012-7820	08/08/2012	10/08/2012	First Class	AB-600	Ann Blume	Corporate	Bytomo	Silesia	Poland		EMEA
24	31784	CA-2011-1546	29/10/2011	31/10/2011	First Class	SA-20830	Sue Ann Reed	Consumer	Chicago	Illinois	United States	60610	US

## Clean Data



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Row ID	Order ID	Customer Name	Segment	City	State	Country	Market	Region	Product ID	Category	Sub-Category	Product Name	Product Description
2	32298	CA-2012-1248	Rick Hansen	Consumer	New York City	New York	United States	US	East	TEC-AC-10003	Technology	Accessories	Plantronics C	
3	26341	IN-2013-77878	Justin Ritter	Corporate	Wollongong	New South Wa	Australia	APAC	Oceania	FUR-CH-10003	Furniture	Chairs	Novimex Exe	
4	25330	IN-2013-71249	Craig Reiter	Consumer	Brisbane	Queensland	Australia	APAC	Oceania	TEC-PH-10004	Technology	Phones	Nokia Smart f	
5	13524	ES-2013-15793	Katherine Murray	Home Office	Berlin	Berlin	Germany	EU	Central	TEC-PH-10004	Technology	Phones	Motorola Sm	
6	47221	SG-2013-4320	Rick Hansen	Consumer	Dakar	Dakar	Senegal	Africa	Africa	TEC-SHA-1000	Technology	Copiers	Sharp Wirele	
7	22732	IN-2013-42360	Jim Mitchum	Corporate	Sydney	New South Wa	Australia	APAC	Oceania	TEC-PH-10000	Technology	Phones	Samsung Sm	
8	30570	IN-2011-81826	Toby Swindell	Consumer	Porirua	Wellington	New Zealand	APAC	Oceania	FUR-CH-10004	Furniture	Chairs	Novimex Exe	
9	31192	IN-2012-86369	Mick Brown	Consumer	Hamilton	Waikato	New Zealand	APAC	Oceania	FUR-TA-10002	Furniture	Tables	Chromcraft C	
10	40155	CA-2014-1359	Jane Waco	Corporate	Sacramento	California	United States	US	West	OFF-BI-100035	Office Supplies	Binders	Fellowes PB5	
11	40936	CA-2012-1166	Joseph Holt	Consumer	Concord	North Carolina	United States	US	South	FUR-TA-10000	Furniture	Tables	Chromcraft B	
12	34577	CA-2011-1029	Greg Maxwell	Corporate	Alexandria	Virginia	United States	US	South	OFF-SU-10002	Office Supplies	Supplies	Martin Yale C	
13	28879	ID-2012-28402	Anthony Jacobs	Corporate	Kabul	Kabul	Afghanistan	APAC	Central Asia	FUR-TA-10001	Furniture	Tables	Bevis Confer	
14	45794	SA-2011-1830	Magdelene Morse	Consumer	Jizan	Jizan	Saudi Arabia	EMEA	EMEA	TEC-CIS-10001	Technology	Phones	Cisco Smart F	
15	4132	MX-2012-1300	Vicky Freymann	Home Office	Toledo	Parana	Brazil	LATAM	South	FUR-CH-10002	Furniture	Chairs	Harbour Crea	
16	27704	IN-2013-73951	Peter Fuller	Consumer	Mudanjiang	Heilongjiang	China	APAC	North Asia	OFF-AP-10003	Office Supplies	Appliances	KitchenAid M	
17	13779	ES-2014-50995	Ben Peterman	Corporate	Paris	Ile-de-France	France	EU	Central	OFF-AP-10000	Office Supplies	Appliances	Breville Refri	
18	36178	CA-2014-1435	Thomas Boland	Corporate	Henderson	Kentucky	United States	US	South	TEC-AC-10004	Technology	Accessories	Logitech diNo	
19	12069	ES-2014-16517	Patrick Jones	Corporate	Prato	Tuscany	Italy	EU	South	OFF-AP-10004	Office Supplies	Appliances	Hoover Stove	
20	22096	IN-2014-11763	Jim Sink	Corporate	Townsville	Queensland	Australia	APAC	Oceania	TEC-CO-10000	Technology	Copiers	Brother Fax M	
21	49463	TZ-2014-8190	Ritsa Hightower	Consumer	Uvinza	Kigoma	Tanzania	Africa	Africa	OFF-KIT-10004	Office Supplies	Appliances	KitchenAid St	
22	46630	PL-2012-7820	Ann Blume	Corporate	Bytom	Silesia	Poland	EMEA	EMEA	FUR-HON-100	Furniture	Tables	Hon Compute	
23	31784	CA-2011-1546	Sue Ann Reed	Consumer	Chicago	Illinois	United States	US	Central	TEC-PH-10001	Technology	Phones	Apple iPhone	

After removing the unwanted columns, the optimized data is enabled with the 18 columns

## Project Methodology:

Raw data is unstructured and unformatted data that comes directly from a source.

Process of Raw data converting it into clean data

1. Extraction Transformation Load
2. Data Cleaning

- Three main factors
  - i. Cleaning
  - ii. Filtering
  - iii. Gathering
- Check type casting
- Conversion
- Check the Null values

## **Insights:**

### **E-commerce Sales Analysis Report**

- Sales by Market
- Sales by City
- Sales by Category
- Sales by Sub-Category
- Top 5 Sales by State
- Bottom 5 Sales by State
- Top 5 Sales by Country
- Bottom 5 Sales by Country

### **Sales by Market**

The stacked bar chart depicting sales across different markets, several trends emerge. The US market stands out with a significant and rising sales trajectory, indicating a robust and growing demand. In contrast, the APAC market shows a slight decline, suggesting a potential shift in consumer behavior or market dynamics. Similarly, the EC market exhibits a slight decrease, possibly influenced by external factors. These trends underscore the importance of targeted strategies to sustain the momentum in the US market while exploring opportunities for recovery and growth in both the APAC and EC markets.

### **Sales by City**

The line chart that aligns sales with different shipping modes by city, a clear correlation emerges. As sales increase, there's a parallel rise in the adoption of automated order shipping to customers. This indicates an efficient response to higher demand, streamlining operations through automation. Conversely, when sales decline, a reduction in automated shipping follows suit, showcasing an adaptive approach that aligns shipping with market trends. This interplay between sales and automated shipping underscores the significance of data-driven logistics strategies, ensuring optimal customer service and cost-effectiveness.

### **Sales by Category**

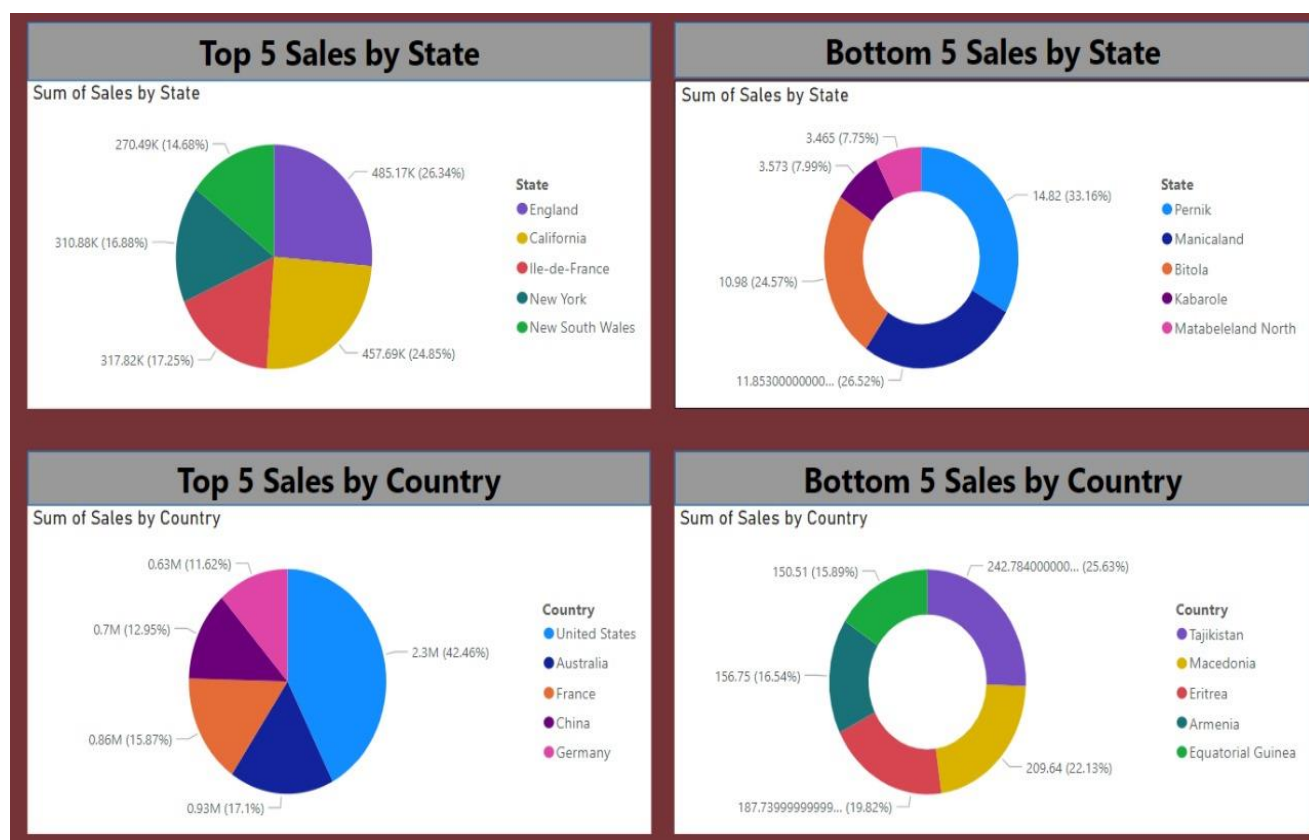
The stacked column chart's depiction of sales by category offers valuable insights. Notably, the technology category shines with remarkable sales figures, indicating strong market demand and adoption. Conversely, the office supplies category displays a minor decline, hinting at potential shifts in consumer preferences. The most prominent trend, however, lies in the furniture category, where sales have experienced a significant decline. These trends underscore the need

for strategic attention: capitalizing on the flourishing technology segment, adapting approaches for office supplies, and exploring avenues to revive the furniture category's sales.

Sales by Sub-Category

The stacked column chart's depiction of sales by category offers valuable insights. Notably, the technology category shines with remarkable sales figures, indicating strong market demand and adoption. Conversely, the office supplies category displays a minor decline, hinting at potential shifts in consumer preferences. The most prominent trend, however, lies in the furniture category, where sales have experienced a significant decline. These trends underscore the need for strategic attention: capitalizing on the flourishing technology segment, adapting approaches for office supplies, and exploring avenues to revive the furniture category's sales.





## Top 5 Sales by State

The top 5 sales by state showcase prominent economic hubs. England, California, Île-de-France, New York, and New South Wales stand out for their high sales figures, indicating strong consumer activity and business engagement. This insight underscores the importance of these regions in driving economic growth and market trends within their respective countries.

## Bottom 5 Sales by State

The presence of Pernik, Manicaland, Bitola, Kaborole, and Matabeleland in the bottom 5 sales list indicates challenges in these regions. Businesses could explore localized approaches to address economic constraints, market conditions, or consumer preferences, aiming to transform these regions into potential growth opportunities.

## **Top 5 Sales by Country**

The top 5 sales by country highlight a diverse global market landscape. United States, Australia, France, China, and Germany lead in sales, indicating strong consumer demand and economic prowess. This insight emphasizes the significance of tailored strategies to cater to unique market dynamics and preferences in each of these influential countries.

## **Bottom 5 Sales by Country**

The presence of Tajikistan, Macedonia, Eritrea, Armenia, and Equatorial Guinea in the bottom 5 sales list suggests potential untapped markets with economic, cultural, and infrastructure challenges. Businesses can strategically tailor their offerings, overcome barriers, and engage in patient market development to unlock growth opportunities in these countries.

## **RECOMMENDATIONS TO IBM TO OPTIMIZE THEIR OPERATIONAL STRATEGIES AND ENHANCE MARKET PERFORMANCE**

### **Efficient Manufacturing Allocation based on Stacked Bar Chart**

Upon a thorough examination of the stacked bar chart, it becomes evident that the United States stands out with considerably higher sales in comparison to other markets. To capitalize on this advantageous trend, a strategic course of action would involve concentrating the majority of manufacturing operations within the USA. This focused approach would likely result in heightened profitability due to the substantial demand present in the domestic market. Considering the relatively lower sales in the APAC and EU regions, it's prudent to prudently allocate manufacturing resources in these markets to avoid undue overheads.

### **Strategic Emphasis on Technology Sales via Clustered Column Chart Insights**

The clustered column chart underscores the exceptional success of technology sales within IBM's product lineup. To harness this strength, our recommendation entails bolstering efforts in the technology domain. By allocating resources towards innovation, product advancement, and targeted marketing campaigns within the technology category, IBM can effectively amplify sales growth. Such a strategic move would likely position IBM as a frontrunner in the market, enhancing its competitive edge significantly.



## **Balanced Approach to Product Categories**

With the technology segment exhibiting remarkable sales figures, our suggestion is to capitalize on this opportunity. Concurrently, it's advisable for IBM to prudently reduce manufacturing efforts related to furniture and office supplies. This approach aims to minimize potential losses stemming from categories with comparatively lower sales figures. By orchestrating a harmonious product category strategy, IBM can adeptly navigate the market landscape and ensure a balanced and profitable portfolio.

In conclusion, the insights gleaned from the visuals serve as a strategic compass for IBM's decision-making. Directing manufacturing towards the high-sales USA market, leveraging the technology segment's potential, and thoughtfully managing product categories can collectively propel IBM's market presence and financial success. Embracing these recommendations positions IBM for optimized operations and prosperity within a competitive business environment.

## **TOP 5 SALES BY COUNTRY AND STATE and TOP 5 BOTTOM SALES BY STATE AND COUNTRY**

Based on the sales data indicating top and bottom performing states and countries, it is recommended to focus on high-performing markets like the USA, Australia, California, France, and Germany by increasing manufacturing and marketing efforts to capitalize on robust demand and boost profits. Tailoring products and strategies to these markets can establish a strong brand presence. Meanwhile, for low-performing regions, strategic interventions should be explored to rejuvenate sales and adapt offerings to local preferences. To mitigate losses, scaling down operations in the bottom 5 states and countries is advisable. Regular monitoring of sales data, data-driven decision-making, and adaptability to dynamic market conditions will be key to sustaining growth and competitive advantage.

**THANK YOU**