Grocery Sales Analytics Dashboard in Excel

Introduction

This report introduces an Excel model designed for analysing sales in the grocery store industry, offering valuable insights to drive data-driven decision-making and effective marketing strategies. Leveraging Excel's visualization and data analysis capabilities, this model provides a comprehensive analysis of sales patterns in grocery stores, identifying current trends to maximize revenue opportunities.

The objective of this model is to conduct a thorough sales analysis using a dataset comprising 11 variables. By utilizing this data, the model focuses on understanding sales volume across multiple categories, cities, regions, time periods, and customer segments, aiming to identify patterns, trends, and correlations among these factors.

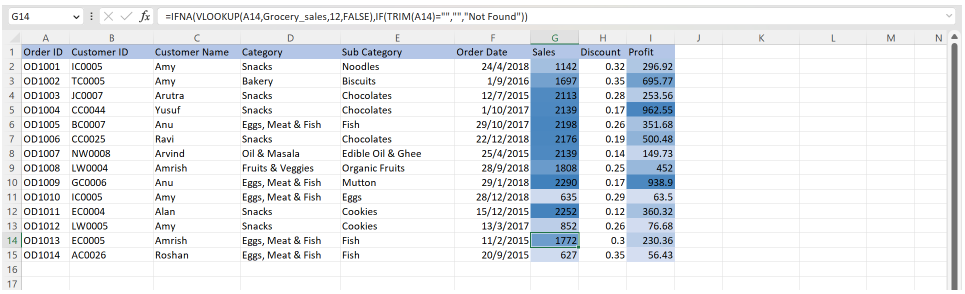
Additionally, the model evaluates the performance of different product categories to assess their impact on overall sales. This evaluation helps identify high-performing items and areas for improvement, enabling optimized resource allocation and enhanced marketing strategies.

In conclusion, this Excel model offers a robust financial dashboard that demonstrates the effectiveness of the current system in generating profit. It serves as a valuable decision support system for grocery store owners and managers, helping identify areas for improvement and optimizing profit. By leveraging the insights provided, grocery stores can gain a competitive edge, enhance decision-making processes, and maximize revenue opportunities effectively.

Data

We have selected multiple datasets from the Kaggle website, but we choose the Supermart Grocery Sales – Retail Analytics Dataset by Mohamed Harris. This is because the information in the dataset the sufficient, many variables that allow us to get more analysis results to help us achieve our goals. This is a retail and shopping business dataset.

VLOOKUP report



	A	B	C	D	E	F	G	H	I
1	Order ID	Customer ID	Customer Name	Category	Sub Category	Order Date	Sales	Discount	Profit
2	OD1001	IC0005	Amy	Snacks	Noodles	24/4/2018	1142	0.32	296.92
3	OD1002	TC0005	Amy	Bakery	Biscuits	1/9/2016	1697	0.35	695.77
4	OD1003	JC0007	Arutra	Snacks	Chocolates	12/7/2015	2113	0.28	253.56
5	OD1004	CC0044	Yusuf	Snacks	Chocolates	1/10/2017	2139	0.17	962.55
6	OD1005	BC0007	Anu	Eggs, Meat & Fish	Fish	29/10/2017	2198	0.26	351.68
7	OD1006	CC0025	Ravi	Snacks	Chocolates	22/12/2018	2176	0.19	500.48
8	OD1007	NW0008	Arvind	Oil & Masala	Edible Oil & Ghee	25/4/2015	2139	0.14	149.73
9	OD1008	LW0004	Amrish	Fruits & Veggies	Organic Fruits	28/9/2018	1808	0.25	452
10	OD1009	GC0006	Anu	Eggs, Meat & Fish	Mutton	29/1/2018	2290	0.17	938.9
11	OD1010	IC0005	Amy	Eggs, Meat & Fish	Eggs	28/12/2018	635	0.29	63.5
12	OD1011	EC0004	Alan	Snacks	Cookies	15/12/2015	2252	0.12	360.32
13	OD1012	LW0005	Amy	Snacks	Cookies	13/3/2017	852	0.26	76.68
14	OD1013	EC0005	Amrish	Eggs, Meat & Fish	Fish	11/2/2015	1772	0.3	230.36
15	OD1014	AC0026	Roshan	Eggs, Meat & Fish	Fish	20/9/2015	627	0.35	56.43
16									
17									

Figure 1

Figure 1 represents the model created using the VLOOKUP function. VLOOKUP is a powerful function in spreadsheet software, such as Excel, that enables efficient analysis of datasets by searching and retrieving values from specific columns in a table. In this dataset, the VLOOKUP function is used to extract sales data based on the Order ID.

To utilize the VLOOKUP function effectively, it is essential to define the data that needs to be retrieved from the dataset. In this case, the VLOOKUP function is used to extract Customer ID, Customer Name, Category, Subcategory, Order Date, Sales, Discount, and Profit by inserting the Order ID.

The formula used to apply the VLOOKUP function is as follows:

IFNA(VLOOKUP(A2, Grocery_sales, 2, FALSE), IF(TRIM(A2)="", "", "Not Found"))

This formula combines the VLOOKUP function with the IFNA function to enhance the presentation of the retrieved data. The main structure of the VLOOKUP formula is "=VLOOKUP(lookup value, table array, col_index_num, range_lookup)". In this case, the lookup value is represented by "A2", which is the Order ID used to search for the desired values. The table array refers to the range of cells containing the dataset, represented by "Grocery_sales". The col_index_num represents the column number within the "Grocery_sales" table.

To improve the presentation, the IFNA function is utilized. It ensures that if the value being searched for is not found in the dataset, instead of displaying "#NA", the model will display "Not Found". Additionally, the IF function with the TRIM function is used to handle cases where the Order ID cell is empty, preventing any unwanted errors.

To enhance the visual representation of sales and profit sizes, we utilize conditional formatting techniques. By applying a colour gradient, ranging from light blue to dark blue, we effectively visualize the range of values from the minimum to the maximum. This gradient accurately represents the progression of sales or profit values, allowing for easier interpretation. The colour spectrum helps highlight the varying magnitudes of sales and profit, providing a visual cue for the range of values from lowest to highest. This approach facilitates a more intuitive understanding of the data, enabling stakeholders to quickly identify the extent of sales or profit fluctuations across the dataset.

The utilization of the VLOOKUP function offers numerous benefits for supermarkets in data tracing and invoice generation. By leveraging the Order ID, the supermarket can effortlessly locate specific data within their dataset. For instance, if a customer requests a refund, the supermarket can easily trace the relevant information by inserting the Order ID from the customer's receipt. This simplifies the process of retrieving the necessary details for refund processing.

Moreover, the VLOOKUP function enables the supermarket to trace data for a range of Order IDs, facilitating comprehensive analysis. By inputting a range of Order IDs, the supermarket can obtain a consolidated view of relevant data, such as sales figures or customer preferences. This capability empowers supermarkets to gain valuable insights and make informed decisions based on a broader dataset.

Furthermore, the versatility of the VLOOKUP function extends to the creation of an invoice model. By having a dataset that includes Product IDs and corresponding prices per unit, the supermarket can easily access product information by inserting the Product ID. Additionally, by entering the quantity of each requested product and using the SUM function, the supermarket can effortlessly calculate the total price of the items. This streamlined process enables the supermarket to generate accurate and efficient invoices for their customers, ensuring smooth transactions and customer satisfaction.

Pivot table

Customer ID	AC0001								
Order ID	All								
City	All								
	Column Labels								
	Sum of Profit			Sum of Sales			Total Sum of Profit	Total Sum of Sales	
Row Labels	Beverages	Fruits & Veggies	Snacks	Beverages	Fruits & Veggies	Snacks			
2015									
Sep									
OD167									
AC0001									
Central			343.57			2021	343.57	2021	
2017									
Jun									
OD239									
AC0001									
Central		518.35			1481		518.35	1481	
2018									
Feb									
OD1531									
AC0001									
Central	640.5			1525			640.5	1525	
Grand Total	**640.5**	**518.35**	**343.57**	**1525**	**1481**	**2021**	**1502.42**	**5027**	

Figure 2

Figure 2 showcases a sales pivot table, which offers efficient data summarization and visualization to support decision-making within the company. In the context of the supermarket grocery sales dataset, the pivot table serves as a valuable tool for enhanced data analysis and visualization. Stakeholders within the supermarket can easily analyse sales data from various perspectives by utilizing the sales pivot table.

To construct the pivot table, customer IDs are assigned to each customer, ensuring unique identification. Given the presence of multiple customers with the same names but different cities and regions within the dataset, distinct customer IDs are assigned to differentiate individuals across various locations. The customer ID format employs a combination of two letters representing the city code, a second letter representing the region code, and a four-digit number representing each unique name within each city and region.

The pivot table is built by establishing relationships between the Customer Group, Category Group, Region Group, and City Group tables with the grocery sales table. Each table provides a unique ID for every cell, enabling effective data organization. Upon completing the pivot table modelling, specific values of interest such as total profit, total sales, sales quantity, customer ID, date, order ID, city, and region are placed in the columns and rows to visualize the data.

The resulting sales pivot table facilitates comprehensive analysis and visualization of data. Stakeholders can gain insights into various aspects of sales, such as total profit and sales figures, customer behaviours, geographic trends, and overall performance. This enables informed decision-making processes and supports the identification of key areas for improvement and strategic initiatives. Stakeholders can further leverage the sales pivot table to filter customer IDs and delve into individual customer sales history and preferences. This allows the supermarket to conduct detailed analyses of customer segments based on factors such as age range, behavior, occupation, and more. By examining the sales patterns of specific customer groups, the supermarket can identify trends and preferences within each category.

For instance, by filtering customer IDs belonging to a particular age range, the supermarket can analyse the purchasing behaviour and preferences of customers within that age group. This analysis can reveal insights about which products are more popular among customers of similar demographics. Understanding customer preferences within specific categories enables the supermarket to tailor marketing strategies, optimize product placement, and offer personalized promotions.

Descriptive Analysis

This sheet is used to find out the basic descriptive analysis by using the Data Analysis tool in Excel.

	A	B	C	D	E	F	G	H
1	*Sales*			*Discount*			*Profit*	
2								
3	Mean	1496.596		Mean	0.226817		Mean	374.9371
4	Standard Error	5.777324		Standard Error	0.000747		Standard Error	2.400049
5	Median	1498		Median	0.23		Median	320.78
6	Mode	2045		Mode	0.25		Mode	409.92
7	Standard Deviation	577.559		Standard Deviation	0.074636		Standard Deviation	239.9329
8	Sample Variance	333574.4		Sample Variance	0.005571		Sample Variance	57567.79
9	Kurtosis	-1.18834		Kurtosis	-1.17611		Kurtosis	-0.18137
10	Skewness	0.000927		Skewness	-0.02649		Skewness	0.767397
11	Range	2000		Range	0.25		Range	1095.7
12	Minimum	500		Minimum	0.1		Minimum	25.25
13	Maximum	2500		Maximum	0.35		Maximum	1120.95
14	Sum	14956982		Sum	2266.81		Sum	3747121
15	Count	9994		Count	9994		Count	9994
16								

Figure 3

From Figure 3, we can find the basic descriptive analysis values we need to gain insights into the distribution and central tendencies of the data. We can determine the most common sales/discount/profit value using the mode, calculate the average sales/discount/profit value using the mean, identify the middle value or central tendency using the median, determine the range, minimum and maximum values, and find the sum of the data. By analysing these values, we can gain different perspectives on the data that assist in decision-making, identifying outliers, and understanding the overall performance.

Category Sales and Category Sales Pivot (Sheet)

Excel is an ideal tool for this task due to its versatility and functionality. It provides efficient data organization with dedicated columns for categories, subcategories, and sales figures. Excel's pivot tables can be utilized to obtain aggregated information, such as total sales by category or subcategory, and customized with additional variables for deeper insights. Moreover, Excel's visualization features allow for the creation of graphs and charts to identify trends, compare sales performance, and highlight variations or outliers.

The data used here for analysis is extracted from the main spreadsheet and is divided into two sheets: 'category sales' and 'category pivot.' The 'category sales' sheet contains data obtained from the main sheet, while the 'category pivot' sheet includes a pivot table that segments sales data by different product categories.

Order	Category ID	Category	Sub Category	Sales	Sales Group
OD1	#007	Snacks	Chocolates	2201	Very High
OD2	#001	Bakery	Breads & Buns	609	Low
OD3	#007	Snacks	Noodles	1866	High
OD4	#004	Food Grains	Organic Staples	2117	Very High
OD5	#003	Eggs, Meat & Fish	Chicken	1477	Medium
OD6	#004	Food Grains	Organic Staples	2305	Very High
OD7	#004	Food Grains	Organic Staples	2421	Very High
OD8	#002	Beverages	Health Drinks	2112	Very High
OD9	#002	Beverages	Health Drinks	815	Low
OD10	#001	Bakery	Cakes	1795	High
OD11	#005	Fruits & Veggies	Organic Vegetables	1702	High
OD12	#002	Beverages	Soft Drinks	1481	Medium
OD13	#003	Eggs, Meat & Fish	Chicken	704	Low
OD14	#005	Fruits & Veggies	Organic Fruits	2102	Very High
OD15	#007	Snacks	Cookies	995	Low
OD16	#001	Bakery	Breads & Buns	2251	Very High
OD17	#006	Oil & Masala	Masalas	545	Low
OD18	#002	Beverages	Health Drinks	1617	High
OD19	#007	Snacks	Noodles	2275	Very High
OD20	#001	Bakery	Breads & Buns	1029	Medium
OD21	#006	Oil & Masala	Edible Oil & Ghee	1008	Medium
OD22	#004	Food Grains	Atta & Flour	1792	High
OD23	#004	Food Grains	Dals & Pulses	552	Low
OD24	#006	Oil & Masala	Spices	1239	Medium
OD25	#004	Food Grains	Dals & Pulses	506	Low
OD26	#004	Food Grains	Atta & Flour	1295	Medium
OD27	#004	Food Grains	Dals & Pulses	693	Low
OD28	#001	Bakery	Biscuits	1224	Medium
OD29	#001	Bakery	Biscuits	1657	High
OD30	#006	Oil & Masala	Spices	550	Low
OD31	#001	Bakery	Cakes	1507	High
OD32	#002	Beverages	Soft Drinks	1693	High
OD33	#006	Oil & Masala	Spices	929	Low
OD34	#002	Beverages	Soft Drinks	1126	Medium

Sales	800	<-
Sales Group	Low	

Figure 4

The 'category sales' sheet is separated from the main spreadsheet, which contains the original data obtained online. The variables in cells A1 to F1 are applied with the filter function, allowing for easy sorting of desired data.

The sales grouping criteria are implemented using the IF function to categorize the sales data. The criteria for sales grouping are as follows:

Very Low	<=	500

Low	<=	1000
Medium	<=	1500
High	<=	2000
Very High	<=	2500

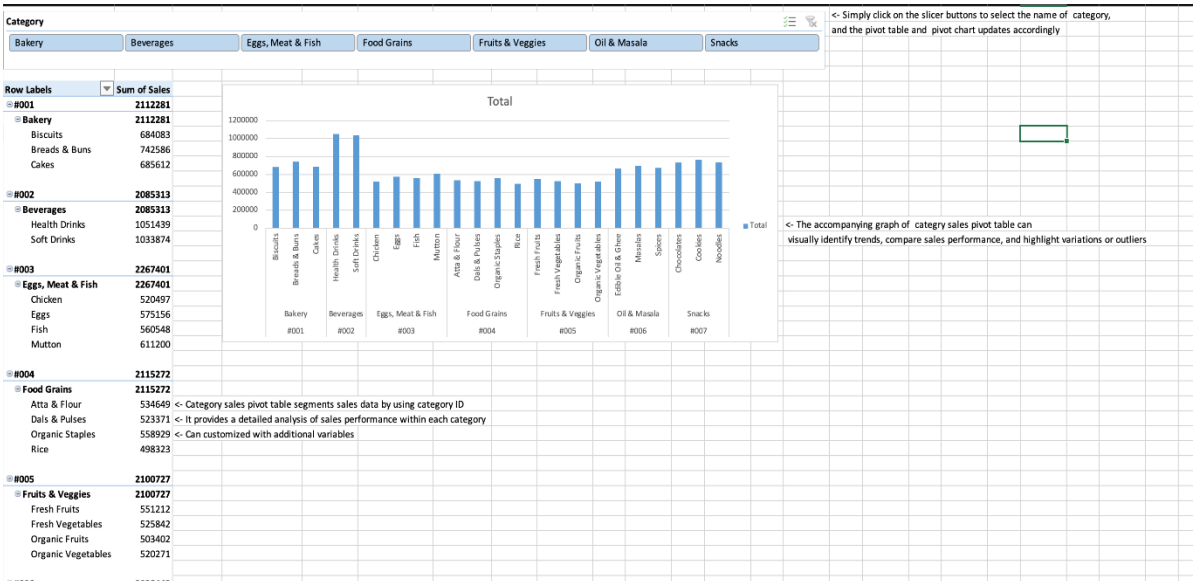


Figure 5

By using pivot table, we can observe that the 'Eggs, Meat & Fish' category is the best-selling category, with a total sales amount of 2,267,401. This indicates high customer demand for products within this category.

Among the subcategories within the 'Eggs, Meat & Fish' category, 'mutton' has the largest sales contribution. This suggests that mutton products are particularly popular and have generated significant revenue.

On the other hand, the 'Oil & Masala' category is the worst-performing category, contributing only 2,038,442 in sales. This indicates relatively lower sales compared to other categories.

Among the subcategories within the 'Oil & Masala' category, 'masalas' has the largest sales contribution. Despite the overall category underperforming, 'masalas' still generate relatively higher sales compared to other subcategories.

Based on these insights, recommendations for the grocery shop include focusing on the best-selling category ('Eggs, Meat & Fish') by allocating more resources and marketing efforts to meet customer demand. The shop should ensure a sufficient supply of mutton and explore opportunities to expand the range of products within this category. Additionally, efforts should be made to improve subcategory performance within 'Eggs, Meat & Fish' through promotions, introducing new variants or packaging options, and improving product visibility in-store or online.

For the worst-performing category ('Oil & Masala'), the shop should evaluate the reasons for its underperformance. Market research or customer surveys can be conducted to identify potential issues. Based on the findings, strategic changes such as revaluating product selection, adjusting pricing, or enhancing marketing strategies should be implemented, specifically targeting 'masalas', 'spices', and 'edible oil & ghee' within this category.

City Sales and City Sales Pivot (Sheet)

These two sheets can help us easily see the sales volume of each city and region, allowing us to determine the city with the highest sales and the city with the lowest sales.

Order ID	City CODE	City	Region COD	Region	Sales	Sales Group
OD1	V	Vellore	E	East	2201	Very High
OD2	I	Krishnagiri	W	West	609	Low
OD3	N	Perambalur	E	East	1866	High
OD4	E	Dharmapuri	S	South	2117	Very High
OD5	M	Ooty	C	Central	1477	Medium
OD6	E	Dharmapuri	W	West	2305	Very High
OD7	U	Trichy	C	Central	2421	Very High
OD8	P	Ramanadhapuram	W	West	2112	Very High
OD9	T	Tirunelveli	S	South	815	Low
OD10	B	Chennai	W	West	1795	High
OD11	H	Karur	W	West	1702	High
OD12	L	Namakkal	C	Central	1481	Medium
OD13	F	Dindigul	S	South	704	Low
OD14	G	Kanyakumari	W	West	2102	Very High
OD15	G	Kanyakumari	C	Central	995	Low
OD16	I	Krishnagiri	C	Central	2251	Very High
OD17	E	Dharmapuri	C	Central	545	Low
OD18	A	Bodi	W	West	1617	High
OD19	R	Tenkasi	C	Central	2275	Very High
OD20	G	Kanyakumari	W	West	1029	Medium
OD21	V	Vellore	W	West	1008	Medium
OD22	H	Karur	C	Central	1792	High
OD23	I	Krishnagiri	C	Central	552	Low
OD24	R	Tenkasi	C	Central	1239	Medium
OD25	M	Ooty	S	South	506	Low
OD26	T	Tirunelveli	W	West	1295	Medium
OD27	U	Trichy	C	Central	693	Low
OD28	W	Viluppuram	C	Central	1224	Medium
OD29	I	Krishnagiri	E	East	1657	High
OD30	G	Kanyakumari	E	East	550	Low
OD31	E	Dharmapuri	E	East	1507	High

Figure 6

City

Bodi	Chennai	Coimbatore	Cumbum	Dharmapuri	Dindigul	Kanyakumari	Karur	Krishnagiri
Ooty	Perambalur	Pudukottai	Ramanadhapu...	Salem	Tenkasi	Theni	Tirunelveli	Trichy

Row Labels	Sum of Sales
Trichy	541403
Nagercoil	551435
Dharmapuri	571553
Dindigul	575631
Theni	579553
Viluppuram	581274
Namakkal	598530
Ooty	599292
Virudhunagar	606820
Madurai	617836
Cumbum	626047
Ramanadhapuram	634386
Coimbatore	634748
Chennai	634963
Krishnagiri	637273
Karur	642273
Tenkasi	643652
Pudukottai	653179
Salem	657093
Perambalur	659738
Tirunelveli	659812
Bodi	667177
Vellore	676550
Kanyakumari	706764
Grand Total	**14956982**

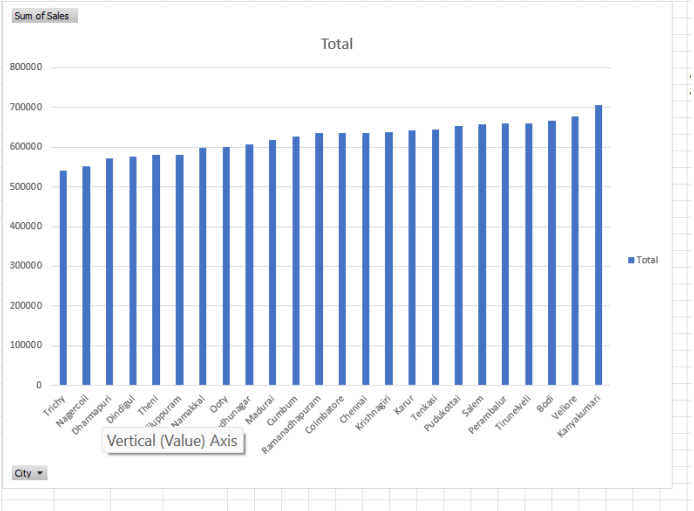


Figure 7

Figures 6 and 7 show sales by city and region. By this sheet, we can see every city, regions, and sales of each output order. We generate codes for every city and region. These codes will help us generate a very accurate customer ID so that we can find the customer's information more conveniently.

In addition, we created a sales group to make it easier for us to confirm the level of sales. Due to the minimum sales is 500 and maximum sales is 2500, we divided the sales into 5 group. Below is how we are determining the level of sales:

Very Low	<=	500
Low	<=	1000
Medium	<=	1500
High	<=	2000
Very High	<=	2500

The formula to create this sales group is:

=IF(F2<=500,"Very Low",IF(F2<=1000,"Low",IF(F2<=1500,"Median",IF(F2<=2000,"High",IF(F2<=2500,"Very High")))))

In City Sales Pivot, we create a pivot table which includes the city and the sum of sales. At the PivotTable Fields, we add City Code and City to Rows and Sales to Values. In this pivot table, we can find out the sum of sales of each city and the grand total of sales. Next, we create a column PivotChart by using the pivot table we just created. In this pivot chart, X-axis will be the city and Y-axis will be the sum of sales. Lastly, we created a slicer of city for the pivot table and chart to

make our analysis work easier. We can just click on what city we want to find, then the result will automatically come out.

In the PivotChart, we can easily find out that the city which has the highest sales is Kanyakumari with the sum of sales of 706764. The city which has the lowest sales is Trichy with a sum of sales of 541403. Kanyakumari has the highest sales can be due to many factors. First, Kanyakumari is a popular tourist destination. Besides, it is a pilgrimage centre too. It attracts many devotees from different parts of India to Kanyakumari Temple (Britannica, 2023). There are many other factors too such as its local cuisine, the beauty of nature and hospitality industry (Cook,2022). Due to these factors, many tourists from India or abroad will continue to visit Kanyakumari, which will increase the sales a lot.

Order Date

Order ID	Order Date	Customer I	Customer Name	Sales	Sales Group
OD1	12/4/2016	VE0001	Adavan	2201	Very High
OD2	8/16/2016	IW0001	Adavan	609	Low
OD3	11/21/2017	NE0001	Adavan	1866	High
OD4	10/27/2018	ES0001	Akash	2117	Very High
OD5	9/8/2017	MC0001	Adavan	1477	Medium
OD6	6/9/2015	EW0001	Adavan	2305	Very High
OD7	12/5/2018	UC0001	Adavan	2421	Very High
OD8	12/3/2016	PW0001	Adavan	2112	Very High
OD9	6/1/2015	TS0001	Adavan	815	Low
OD10	6/9/2015	BW0020	Krithika	1795	High
OD11	5/11/2018	HW0001	Adavan	1702	High
OD12	12/22/2018	LC0001	Adavan	1481	Medium
OD13	5/23/2016	FS0001	Adavan	704	Low
OD14	6/17/2017	GW0001	Adavan	2102	Very High
OD15	4/4/2018	GC0001	Adavan	995	Low
OD16	5/29/2016	IC0001	Adavan	2251	Very High
OD17	12/14/2015	EC0001	Adavan	545	Low
OD18	5/13/2015	AW0008	Arutra	1617	High
OD19	6/26/2018	RC0001	Adavan	2275	Very High

Figure 8

Figure 8 presents a table extracted from the original dataset, containing several variables as shown in the figure. The order id serves as a unique identifier for each individual order, enabling easy identification. The order date indicates the specific date when customers placed their orders for products. Customer id is a unique identification assigned to each customer. Sales denotes the quantity of goods purchased by each customer.

The primary objective of this table is to examine the correlation between the order date and sales. The aim is to assess the effectiveness of sales across different time periods and analyse the underlying factors contributing to variations in sales performance. By analysing this data, insights can be gained regarding the impact of order dates on sales outcomes, enabling a more informed understanding of sales trends and potential influencing factors.

Pivot Table

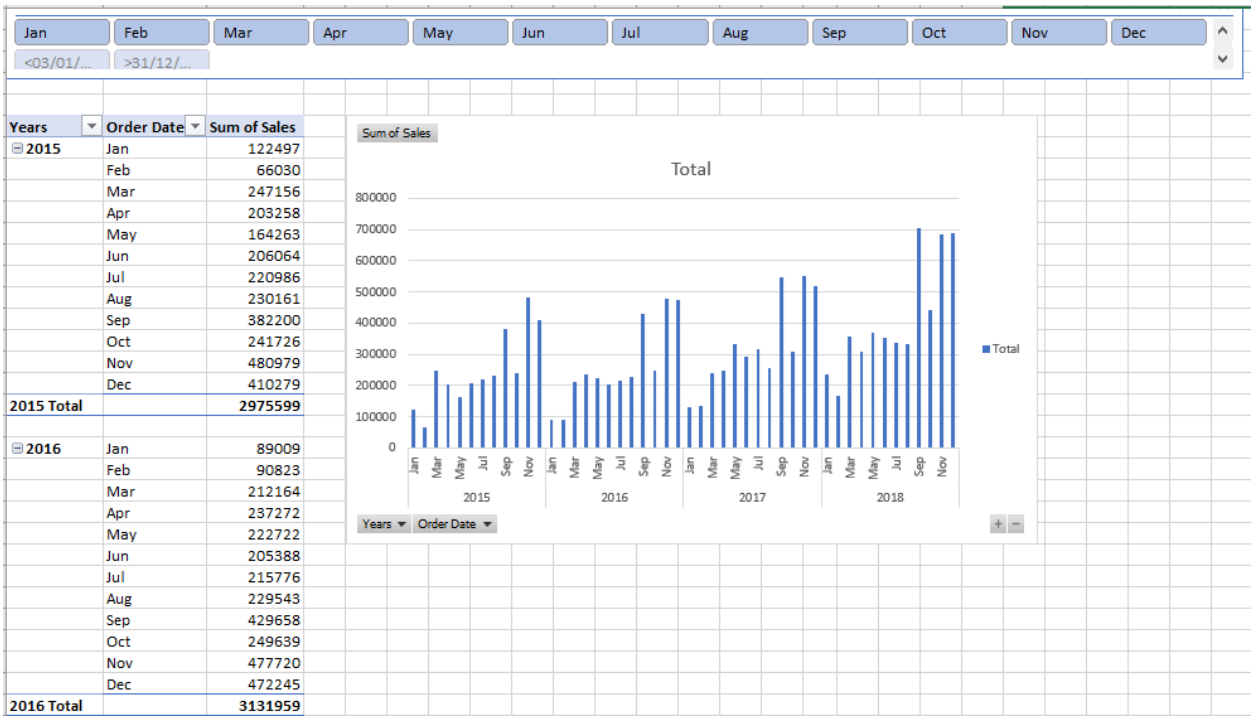

Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
<03/01/...
>31/12/...
Years
Order Date
Sum of Sales
2015
Jan 122497
Feb 66030
Mar 247156
Apr 203258
May 164263
Jun 206064
Jul 220986
Aug 230161
Sep 382200
Oct 241726
Nov 480979
Dec 410279
2015 Total 2975599
2016
Jan 89009
Feb 90823
Mar 212164
Apr 237272
May 222722
Jun 205388
Jul 215776
Aug 229543
Sep 429658
Oct 249639
Nov 477720
Dec 472245
2016 Total 3131959
Sum of Sales
Total
800000
700000
600000
500000
400000
300000
200000
100000
0
Jan Mar May Jul Sep Nov
2015
2016
2017
2018
Total
Years
Order Date

Figure 9

⊟2017	Jan	131727
	Feb	132982
	Mar	238956
	Apr	247773
	May	332524
	Jun	291454
	Jul	315531
	Aug	256089
	Sep	546728
	Oct	308026
	Nov	551815
	Dec	518307
2017 Total		**3871912**
⊟2018	Jan	234739
	Feb	166267
	Mar	355704
	Apr	310150
	May	367411
	Jun	354902
	Jul	337092
	Aug	331014
	Sep	705680
	Oct	443898
	Nov	683410
	Dec	687245
2018 Total		**4977512**

Figure 10

Description:

Figures 9 and 10 showcase the pivot table generated using the order date and sales table. The table organizes the data by placing the years and order date variables in the row field, while the sales variable is placed in the value field. This pivot table presents the total sales for each month across four different years, aggregating the sales for each month within a specific year.

Additionally, a pivot chart has been included to visually compare the sales between different months and years. The pivot chart provides a comprehensive visualization that enables readers to quickly grasp the overall sales performance of the grocery stores. A slicer has also been incorporated to facilitate the analysis process. The slicer allows data to be sorted by month, enabling a closer examination of the grocery stores' performance on a monthly basis for each year. By selecting a specific month option in the slicer, both the pivot table and chart dynamically adjust to display only the sales data for the chosen month across all the years.

Analysis:

Upon analysing the data using the slicer, it becomes evident that the sales for each month in every year consistently surpass the previous year. This observation suggests that the grocery stores have been steadily developing over time. The pivot chart also illustrates a notable trend: sales tend to peak towards the end of the year and decline earlier in the year.

One possible explanation for this trend could be the weather conditions in Tamil Nadu. September marks the transition from the monsoon season to post-monsoon weather, creating a pleasant environment that encourages people to venture outdoors. This could lead to increased sales during this month. In November and December, the onset of winter prompts individuals to stock up on essential supplies in preparation for the colder months. Consequently, sales are likely to be higher during this period.

Conversely, sales start to decline in January as it falls in the midst of winter, when people are generally less inclined to go out. The data indicates that customer behaviour is influenced by seasonal factors, further emphasizing the significance of considering the order date for marketing strategies and future planning.

Customer Details

Customer ID	Customer Na	Categ	Category	Sub Category	City CODE	City	Regio	Region	Order Date	Order ID	Discour
VE0001	Adavan	#007	Snacks	Chocolates	V	Vellore	E	East	12/4/2016	OD1	0.32
IW0001	Adavan	#001	Bakery	Breads & Buns	I	Krishnagiri	W	West	8/16/2016	OD2	0.24
NE0001	Adavan	#007	Snacks	Noodles	N	Perambalur	E	East	11/21/2017	OD3	0.25
ES0001	Akash	#004	Food Grains	Organic Staples	E	Dharmapuri	S	South	10/27/2018	OD4	0.33
MC0001	Adavan	#003	Eggs, Meat & Fish	Chicken	M	Ooty	C	Central	9/8/2017	OD5	0.23
EW0001	Adavan	#004	Food Grains	Organic Staples	E	Dharmapuri	W	West	6/9/2015	OD6	0.26
UC0001	Adavan	#004	Food Grains	Organic Staples	U	Trichy	C	Central	12/5/2018	OD7	0.11
PW0001	Adavan	#002	Beverages	Health Drinks	P	Ramanadhapuram	W	West	12/3/2016	OD8	0.28
TS0001	Adavan	#002	Beverages	Health Drinks	T	Tirunelveli	S	South	6/1/2015	OD9	0.29
BW0020	Krithika	#001	Bakery	Cakes	B	Chennai	W	West	6/9/2015	OD10	0.27
HW0001	Adavan	#005	Fruits & Veggies	Organic Vegetables	H	Karur	W	West	5/11/2018	OD11	0.31
LC0001	Adavan	#002	Beverages	Soft Drinks	L	Namakkal	C	Central	12/22/2018	OD12	0.11
FS0001	Adavan	#003	Eggs, Meat & Fish	Chicken	F	Dindigul	S	South	5/23/2016	OD13	0.26
GW0001	Adavan	#005	Fruits & Veggies	Organic Fruits	G	Kanyakumari	W	West	6/17/2017	OD14	0.1
GC0001	Adavan	#007	Snacks	Cookies	G	Kanyakumari	C	Central	4/4/2018	OD15	0.28
IC0001	Adavan	#001	Bakery	Breads & Buns	I	Krishnagiri	C	Central	5/29/2016	OD16	0.21
EC0001	Adavan	#006	Oil & Masala	Masalas	E	Dharmapuri	C	Central	12/14/2015	OD17	0.31
AW0008	Arutra	#002	Beverages	Health Drinks	A	Bodi	W	West	5/13/2015	OD18	0.19
RC0001	Adavan	#007	Snacks	Noodles	R	Tenkasi	C	Central	6/26/2018	OD19	0.18
GW0001	Adavan	#001	Bakery	Breads & Buns	G	Kanyakumari	W	West	6/20/2017	OD20	0.35
VW0001	Adavan	#006	Oil & Masala	Edible Oil & Ghee	V	Vellore	W	West	6/8/2015	OD21	0.29
HC0001	Adavan	#004	Food Grains	Atta & Flour	H	Karur	C	Central	4/26/2018	OD22	0.16
IC0002	Akash	#004	Food Grains	Dals & Pulses	I	Krishnagiri	C	Central	9/8/2015	OD23	0.25
RC0001	Adavan	#006	Oil & Masala	Spices	R	Tenkasi	C	Central	4/10/2018	OD24	0.34
MS0001	Adavan	#004	Food Grains	Dals & Pulses	M	Ooty	S	South	9/12/2015	OD25	0.22
TW0001	Adavan	#004	Food Grains	Atta & Flour	T	Tirunelveli	W	West	12/13/2015	OD26	0.35
UC0001	Adavan	#004	Food Grains	Dals & Pulses	U	Trichy	C	Central	11/7/2015	OD27	0.15
WC0001	Adavan	#001	Bakery	Biscuits	W	Viluppuram	C	Central	3/31/2018	OD28	0.16
IE0001	Adavan	#001	Bakery	Biscuits	I	Krishnagiri	E	East	5/28/2018	OD29	0.27
GE0001	Adavan	#006	Oil & Masala	Spices	G	Kanyakumari	E	East	12/10/2018	OD30	0.21
EE0001	Adavan	#001	Bakery	Cakes	E	Dharmapuri	E	East	12/9/2018	OD31	0.16
VS0001	Adavan	#002	Beverages	Soft Drinks	V	Vellore	S	South	1/8/2017	OD32	0.21

Figure 11

The figure provided presents detailed information about each customer. Additionally, it includes the discount variable, which represents the discount percentage given to individual customers for their purchases. In cases where individuals share the same name but are not the same person, the customer id serves as a unique identifier to distinguish between them. The City and Region columns provide further details about the customers' locations, enabling clear identification of each individual.

This information about customers allows the company to implement various customer loyalty programs and offer personalized discounts based on their purchase history. By analysing customer data, including purchase history and preferences, the company can stay updated with trends and gain insights into individual customer preferences. This analysis can be instrumental in providing tailored offers to customers, enhancing marketing research and analytics efforts, and facilitating an efficient inventory management system. Overall, these details provide valuable opportunities for the company to optimize customer engagement and improve overall business performance.

Log of the process

Date	Activity Performed	Distributed Hours	Students Involved
04-02	Researching on Excel model and database	6	33245215 33295638 33297436 34330046 (25% each)
04-06	Decision made on Excel model and database	2	33245215 33295638 33297436 34330046 (25% each)
04-07	Creating input variables and data tables in Excel	8	33245215 33297436 34330046 33295638 (25% each)
04-22	Developing formulas and equations for transforming inputs to outputs as well as graph and table	12	33245215 33295638 33297436 34330046 (25% each)
05-02	Writing the problem description and justification for using Excel	4	33245215 33295638 33297436 34330046 (25% each)
05-04	Describing the data sources, types, units, and performing descriptive analysis	6	33245215 33295638 33297436 34330046 (25% each)

05-08	Documenting formulas, equations, and their rationale	8	33245215 33295638 33297436 34330046 (25% each)
05-13	Presenting outputs with tables and graphs, providing interpretation	6	33245215 33295638 33297436 34330046 (25% each)
05-16	Reviewing and editing the report and Excel model documentation	8	33245215 33295638 33297436 34330046 (25% each)
05-24	Finalizing the project and preparing for submission	4	33245215 33295638 33297436 34330046 (25% each)

Final reflection

Throughout the process of creating our Excel model, we have witnessed the incredible power of Excel. Excel's capability to handle complex calculations, organize data, and generate visually informative graphs and tables has proven to be indispensable in analysing and visualizing our business function.

In addition, our journey has deepened our understanding of data analysis techniques and the significance of descriptive statistics. By carefully examining our data sources, we were able to identify meaningful trends in sales and make informed decisions based on our findings.

Furthermore, this assignment has emphasized the importance of setting realistic timelines and maintaining adaptability in the face of unexpected challenges. We have learned the value of effective time management and how it contributes to the successful completion of projects.

In conclusion, this experience of creating the Excel model and documenting our process has been both challenging and rewarding. We have not only enhanced our technical skills in Excel and data analysis but have also developed essential soft skills such as collaboration, communication, and time management. This project has prepared us for future endeavours and has reinforced the vital role of teamwork in achieving overall success.

(Word Count: 3298)