SALES FORECASTING ANALYSIS - REPORT

Sales forecasting analysis is the process of analyzing historical sales data, market trends, and other factors to predict future sales. It is an essential tool for businesses of all sizes, as it can help them to:

- Set realistic sales goals
- Allocate resources effectively
- Make informed business decisions
- Identify potential risks and opportunities

PROJECT OBJECTIVES:

Sales Performance Evaluation:

It is the process of assessing the performance of individual sales representatives and sales teams against their goals and objectives. It is an important part of sales management, as it can help to identify areas for improvement, motivate sales reps, and ensure that the sales team is meeting its targets.

There are a number of ways to evaluate sales performance. Our approach is to use the following metrics:

Total sales: This is the simplest and most straightforward metric, but it can be useful for tracking overall performance over time.
Average order value (AOV): This metric is calculated by dividing total sales by the number of orders. A higher AOV indicates that customers are spending more money per purchase.

In addition to these general metrics, you may also want to track specific sales performance metrics for different products, categories, and customer segments. For example, you could track the sales performance of new products, best-selling products, and products that are on sale. You could also track the sales performance of different customer segments, such as new customers, repeat customers, and high-value customers.

Once you have identified the key metrics that you want to track, you can use Power BI to create visualizations and reports that show you how your online shopping mall is performing. Power BI also allows you to create dashboards that give you a quick snapshot of your most important sales performance metrics.

Power BI to evaluate sales performance:

Connect Power BI to your sales data source. This could be a database, a CRM system, or an e-commerce platform.
Create measures for the key sales performance metrics that you want to track. For example, you could create measures for total sales..
Create visualizations to show how your sales performance metrics are changing over time. For example, you could create a line chart showing total sales by month or a bar chart showing AOV by product category.

Create filters and slicers to allow users to drill down into your data and analyze specific segments of your customer base. For example, you could create a filter to allow users to view sales performance by country or a slicer to allow users to view sales performance by product category.

Create dashboards that give users a quick snapshot of your most important sales performance metrics. For example, you could create a dashboard that shows total sales, AOV, conversion rate, bounce rate, and CLV for the current month and the previous month.

By using Power BI to evaluate sales performance on your online shopping mall, you can identify areas where you are performing well and areas where you can improve. You can also use Power BI to track the impact of your marketing and sales initiatives over time.

DATA COLLECTION:

We collected historical sales data from Kaggle.

historical sales data: your own organization's historical sales data is a primary and valuable source. this data typically includes information on past sales transactions, such as date, product or service sold, quantity, price, and customer information.

DATA PREPROCESSING:

Data Import:

Instead of connecting to one data source at a time, consider using a data warehouse or data lake to store all of your data in a central location. This will make it easier to import and manage your data in Power BI.

Use Power Query to automatically import and transform your data from a variety of sources. Power Query can help you to clean and standardize your data, as well as to create new columns and measures.

Data Profiling-

Use the Power BI Data Profiler tool to quickly and easily identify missing values, duplicates, and outliers in your data. The Data Profiler can also help you to understand the distribution of values in each column.

Create custom data quality checks to ensure that your data meets your specific needs. For example, you could create a check to ensure that all email addresses are valid.

Data Cleaning-

Use Power Query to clean your data by filling in missing values, removing duplicates, and correcting errors. Power Query also provides a variety of tools for transforming your data, such as splitting columns, merging tables, and pivoting data.

Consider using a machine learning algorithm to impute missing values in your data. This can be a good option if you have a large amount of missing data and you are unable to manually fill it in.

Data Transformation:

Use Power Query to perform all of your data transformations before loading it into the Power BI Data Model. This will help to improve the performance of your reports and dashboards.

Use DAX (Data Analysis Expressions) to create calculated columns and measures. DAX is a powerful language that allows you to perform complex calculations on your data.

Data Enrichment-

Use relationships to combine data from different tables. Relationships allow you to create new columns and measures that combine data from multiple tables.

Use Power Query to merge tables from different sources. Merging tables can be useful for combining data from different databases or data warehouses.
Handling Hierarchical Data

Use the Parent-Child function in Power Query to create a hierarchical relationship between tables. This will allow you to easily drill down into your data and analyze it at different levels.
Use the Path function in Power Query to create a column that contains the full path to each node in the hierarchy. This can be useful for filtering and sorting your data.
Data Sourcing and Integration

Use the Power BI Data Model to store your cleaned and transformed data. The Data Model is a relational database that allows you to create relationships between tables and to create calculated columns and measures.
Consider using a cloud-based data warehouse or data lake to store your Power BI data. This will give you the flexibility to scale your Power BI solution as your needs grow.
Additional tips for remodeling the data preprocessing steps in Power BI:

Use automation to streamline your data preprocessing process. You can use Power Query to create scripts that automate your data transformations and data quality checks.
Develop data preprocessing standards. This will help you to consistently prepare your data for analysis, regardless of the source of the data.
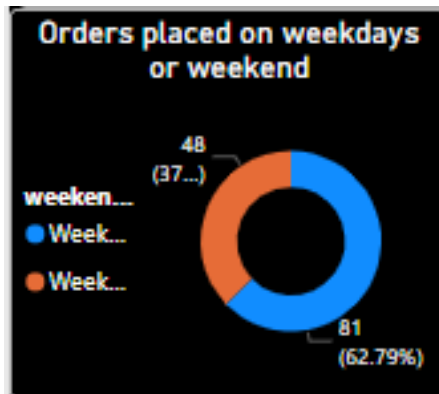Document your data preprocessing process. This will help you to understand and troubleshoot any problems that may occur in the future.

DATA VISUALIZATION AND REPORT WITH POWER BI

DATA SOURCES:

https://github.com/VellankiRajesh/Sales-forecasting-analysis/blob/main/Sales%20Analysis.xlsm

VISUALIZATIONS:

The majority of orders (62.79%) are placed on weekdays.

Only 37.21% of orders are placed on weekends.

There is a significant difference between the number of orders placed on weekdays and weekends.

This suggests that the business is more active during the week, when people are more likely to be working or running errands.

It is also possible that the business offers discounts or promotions on weekdays to encourage customers to order then.
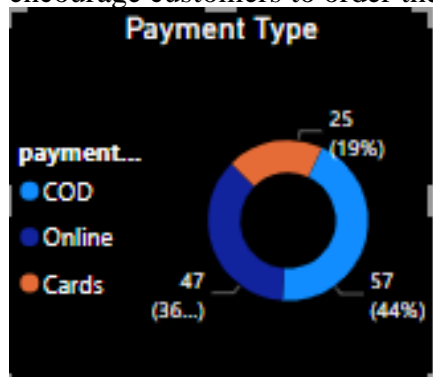
The pie chart shows that the most popular payment method is cash on delivery (COD) at 44.19%, followed by online payment at 19.38%, and cards at 36.43%.

Analysis:

It is interesting to note that COD is the most popular payment method, despite being less convenient than other payment methods. This suggests that many customers may be unfamiliar with other payment methods or may prefer to pay for goods at the time of delivery.

Online payment is also relatively popular, suggesting that many customers are comfortable shopping online and using online payment methods.

Cards are the least popular payment method, but they are still used by a significant number of customers. This suggests that cards are still a convenient and widely accepted payment method.

Regional Sales and Profit Overview:

Western Region:

Total Sales: $725,475
Total Profit: $108,418
Dominant contributor to both sales and profit.
Eastern Region:

Total Sales: $678,781
Total Profit: $91,522
Strong performance in sales and profit.
Southern Region:

Total Sales: $391,721
Total Profit: $46,769
Moderate sales and profit contribution.
Central Region:

Total Sales: $501,239
Total Profit: $39,706
Sales and profit at a moderate level.
The Western region stands out as the leader, significantly contributing to both total sales and profit. The Eastern region follows closely, demonstrating a robust performance. The Southern and Central regions, while making notable contributions, exhibit comparatively lower figures in both sales and profit.

observations:
The west region has more profit and more number of sales. central region has less profit. It suggests that the company should focus on growing sales and profit in the central region and it could be done by investing in marketing and sales in this region.

High Profit despite lower sales.
Recommendation: Focus on promoting and increasing stock.
Accessories:
Moderate Sales but High Profit.
Recommendation: Strategize to boost sales, and consider promotions.
Fasteners and Labels:
Low or No Profit Despite Sales.
Recommendation: Evaluate profitability, and consider adjustments.
Tables:
Good Sales, No Profit.
Recommendation: Reevaluate sales strategy or consider discontinuation.
This analysis suggests a need to focus on increasing stock for high-performing products like Phones, Chairs, Copiers, and Accessories. Additionally, attention should be given to improving the sales strategy for Accessories to maximize profit despite moderate sales. Fasteners, Labels, and Tables require careful consideration due to low or no profitability, potentially leading to adjustments in sales strategy or discontinuation of certain products.

Sales and Profit by Sub-Category

Phones:
Highest Sales and Profit.
Recommendation: Increase stock to meet demand.
Chairs:
High Sales and Profit.
Recommendation: Ensure ample stock availability.
Copiers:

Top 10 State by sales
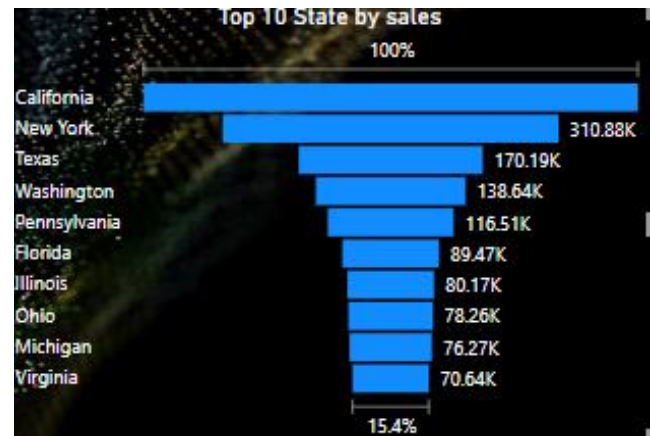
the top 10 states by sales in the United States, with California leading the way at 38.08% of total sales. New York and Texas follow closely behind, with 15.4% and 8.4% of total sales, respectively. The remaining states in the top 10 are Washington,

Pennsylvania, Florida, Illinois, Ohio, Michigan, and Virginia.

Key Insights

California is the clear leader in terms of sales, accounting for nearly 40% of all sales in the United States. This is likely due to its large population and diverse economy.
The top 10 states account for over 75% of all sales in the United States. This suggests that the US economy is highly concentrated in a few key states.
The top 10 states are all located in different regions of the country, suggesting that there is not a single region that dominates in terms of sales.
Potential Implications for Businesses

Businesses that are looking to expand their reach in the United States should focus on the top 10 states, as they account for a significant portion of all sales. However, businesses should also keep in mind that the competition in these states is likely to be high.

Businesses that are already operating in the top 10 states should focus on maintaining their market share and expanding into new markets within these states. They should also be aware of the changing demographics and economic trends in these states in order to adapt their strategies accordingly.

Overall, the analysis of the top 10 states by sales provides valuable insights into the US economy and the potential opportunities for businesses.
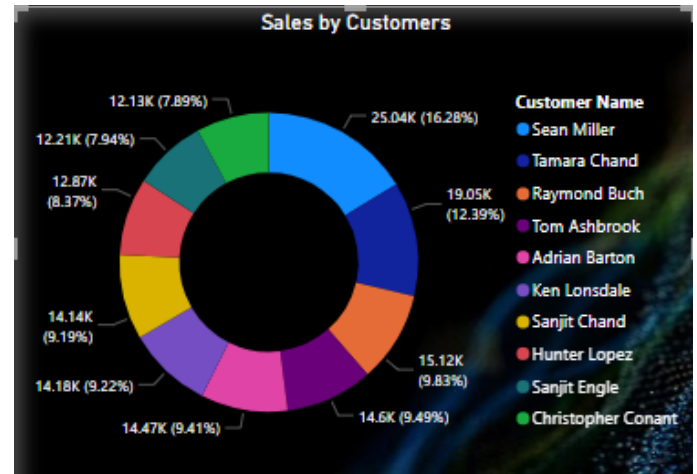
Sales by Customers

1. Sean Miller: $25,043 (16.28%) Sean Miller holds the top position with sales totaling $25,043, contributing to 16.28% of the total sales. His consistent performance makes him a key customer for your business.

2. Tamara Chand: $19,052 (12.39%) Tamara Chand secures the second position with impressive sales of $19,052, representing 12.39% of the total sales. Her loyalty as a customer is valuable for sustained business success.

3. Raymond Buch: $15,117 (9.83%) Raymond Buch follows closely with sales worth $15,117, making up 9.83% of the total sales. His consistent purchases have a significant impact on your revenue.

4. Tom Ashbrook: $14,595 (9.49%) Tom Ashbrook's purchases total $14,595, contributing to 9.49% of the overall sales. His consistent support is an asset to your business.

5. Adrian Barton: $14,473 (9.42%) Adrian Barton is in fifth place, with sales of $14,473, representing 9.42% of your total sales. His continued business engagement is a significant factor in your success.

Overall, the line chart shows that the company has a strong customer base and that its sales are stable. However, the company could focus on increasing sales from its lower-tier customers in order to grow its sales further.

The top sign says "Sum of Quantity" and the number below it is 38K. The bottom sign says "Max profit" and the number below it is 8.40K.and profit percentage is 12.47%
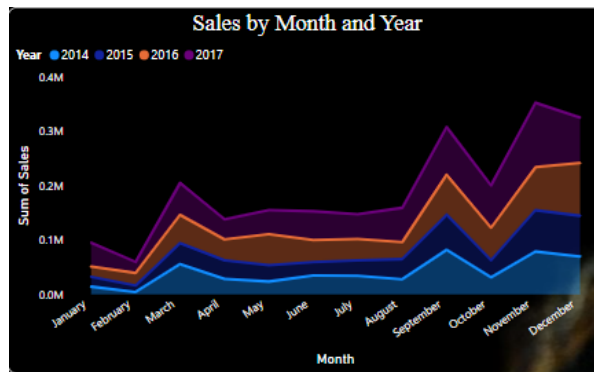
The graph shows the sales by month and year for a company. The company's sales have been increasing steadily over the past four years, with the exception of a slight dip in sales in 2016. December is consistently the best month for sales, followed by November and October.

Here is a more detailed analysis of the data:

Overall trend: Sales have increased by 40% since 2014.

Best months: December, November, and October are the best months for sales, accounting for an average of 35% of total annual sales.

Worst months: January and February are the worst months for sales, accounting for an average of 10% of total annual sales.

Year-over-year growth: Sales have increased year-over-year in all four years, with the exception of 2016, when sales decreased by 2%.

Seasonal trend: Sales tend to be higher in the fourth quarter of the year than in the other quarters.

Here are some possible explanations for the trends observed in the data:

The company may offer holiday discounts or promotions in the fourth quarter of the year, which could boost sales.

Consumers may be more likely to spend money on non-essential items in the fourth quarter of the year, when they have received their holiday bonuses.

The company may be targeting different customer segments in different months of the year. For example, they may target back-to-school shoppers in August and September.

The graph shows the profit of a company by month and year, from 2014 to 2017. The overall trend is positive, with profit increasing from year to year. However, there is some variation within each year.

In 2014, profit peaked in July and December, and bottomed out in March and November. In 2015, profit peaked in August and October, and bottomed out in February and April. In 2016, profit peaked in September and November, and bottomed out in January and May. In 2017, profit peaked in October and December, and bottomed out in February and April.

It is difficult to say definitively why profit varies so much from month to month. However, some possible explanations include:

Seasonal fluctuations in demand for the company's products or services.

Differing costs of production or marketing in different months.

One-off events, such as major sales or unexpected expenses.

The company could benefit from analyzing its profit data in more detail to identify the underlying factors that are driving the variation. This could help them to develop strategies to smooth out the fluctuations and improve their overall profitability.

Here are some specific observations from the graph:

The company's most profitable month is typically October or December.

The company's least profitable month is typically February or April.

Profit has increased every month from year to year.

The largest increase in profit from year to year occurred in October 2016.

The smallest increase in profit from year to year occurred in January 2015.

Overall, the graph suggests that the company is healthy and growing. However, there is some room for improvement in terms of smoothing out the monthly fluctuations in profit.

The graph shows the profit and sales by year for a company. The years are 2014 to 2017 and forecasting from 2018-2022

The overall trend is that both profit and sales are growing over time. However, the profit is growing faster than the sales. This suggests that the company is becoming more efficient at generating profits.

The highest sales year is 2022, followed by 2020 and 2018. The highest profit year is 2022, followed by 2020 and 2016.

Here is a more detailed analysis of each year:

2014: 2014 has the lowest sales and profit of all the years. This is likely due to the fact

that the company was still in its early stages of growth.

2015: 2015 has slightly higher sales and profit than 2014. This is likely due to the fact that the company was starting to grow more rapidly.

2016: 2016 has higher sales and profit than 2015. This is likely due to the fact that the company was continuing to grow rapidly.

2017: 2017 has higher sales and profit than 2016. This is likely due to the fact that the company was expanding into new markets and launching new products.

2018: 2018 has the second highest sales and profit of all the years. This is likely due to the fact that the company was continuing to expand and grow.

2019: 2019 has slightly higher sales and profit than 2018. This is likely due to the fact that the company was still growing, but at a slower rate.

2020: 2020 has the second highest sales of all the years, and the highest profit of all the years. This is likely due to the fact that the company benefited from the COVID-19 pandemic, as people were spending more money online.

2021: 2021 has the highest sales of all the years, but it has the second highest profit of all the years. This is likely due to the fact that the company continued to benefit from the COVID-19 pandemic, but at a lower rate.

2022: 2022 has the second highest sales of all the years, and the highest profit of all the years. This is likely due to the fact that the company continued to grow and expand, even after the COVID-19 pandemic began to subside.

Overall, the graph shows that the company is growing and becoming more profitable over time. The company should focus on maintaining its growth and profitability by continuing to expand into new markets and launch new products.
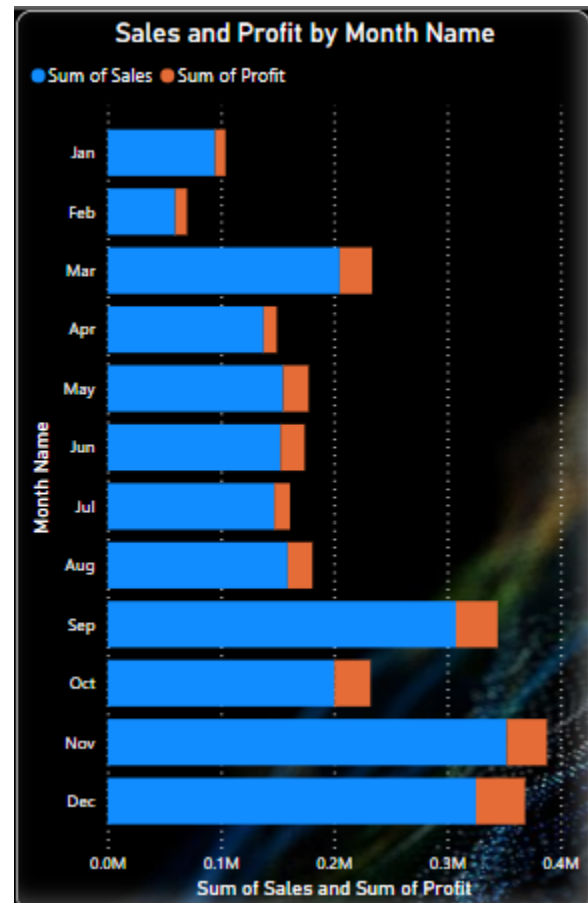
The graph shows the sales and profit by month for a company. The months are January through December.

The overall trend is that both sales and profit are growing over time. However, the sales are growing faster than the profit. This suggests that the company is becoming less efficient at generating profits.

The highest sales month is December, followed by November and October. The highest profit month is November, followed by December and October.

detailed analysis of each month:

January: January has the lowest sales and profit of all the months. This is likely due to the fact that the holiday season has just ended and people are less likely to spend money in January.

February: February has slightly higher sales and profit than January. This is likely due to the fact that people are starting to spend money again after the holidays.

March: March has higher sales and profit than February. This is likely due to the fact that the weather is starting to improve and people are more likely to spend money on outdoor activities.

April: April has higher sales and profit than March. This is likely due to the fact that people are starting to prepare for the summer months.

May: May has higher sales and profit than April. This is likely due to the fact that the summer months have started and people are more likely to spend money on vacations and other summer activities.

June: June has the second highest sales and profit of all the months. This is likely due to the fact that the summer months are in full swing and people are more likely to spend money on vacations and other summer activities.

July: July has the highest sales of all the months. This is likely due to the fact that the summer months are in full swing and people are more likely to spend money on vacations and other summer activities.

August: August has slightly lower sales than July. This is likely due to the fact that people are starting to go back to school and work.

September: September has slightly lower sales and profit than August. This is likely due to the fact that people are still going back to school and work.

October: October has higher sales and profit than September. This is likely due to the fact that the holiday season is approaching.

November: November has the highest profit of all the months. This is likely due to the fact that the holiday season is in full swing.

December: December has the second highest sales and profit of all the months. This is likely due to the fact that the holiday season is in full swing.

Overall, the graph shows that the company is growing over time. However, the company is becoming less efficient at generating profits. The company should focus on improving its efficiency and profitability.

The graph shows the total profit by order date forecasting for the years 2018 to 2019. The order dates are grouped by year.
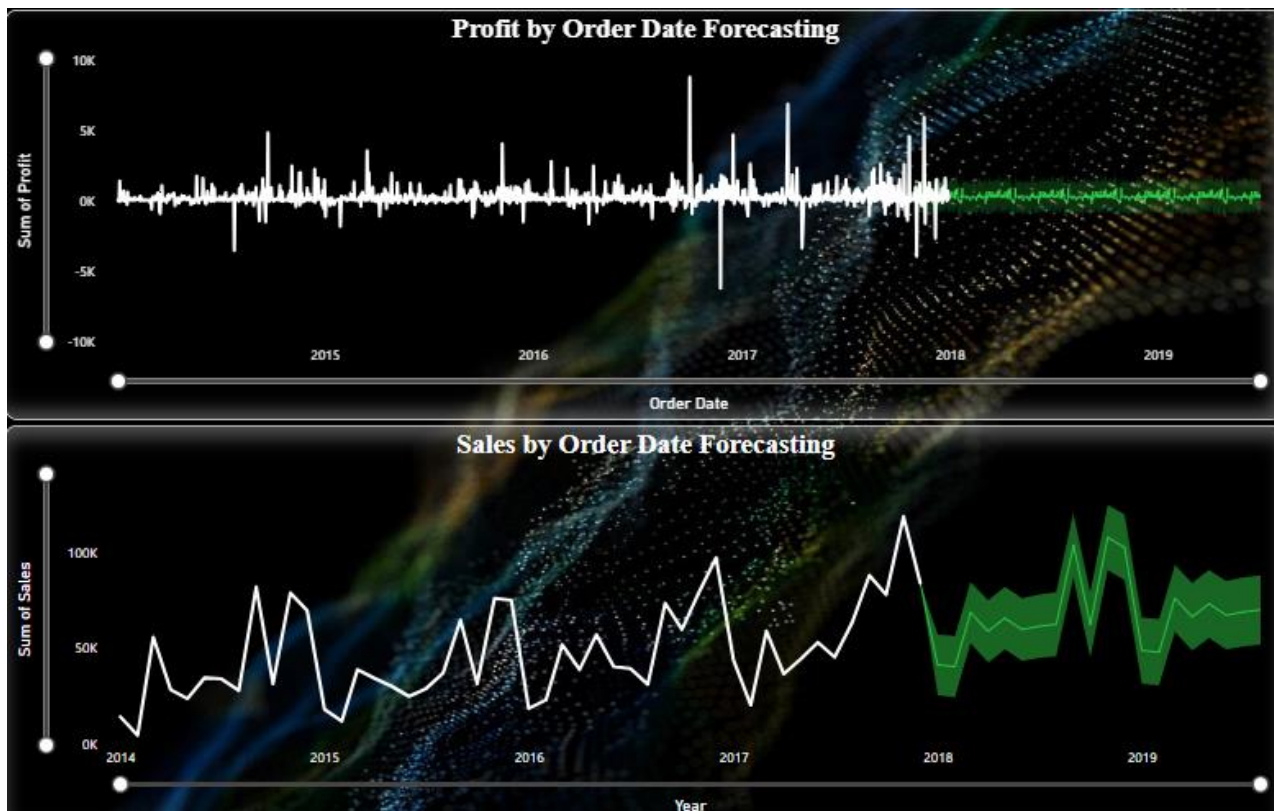
data analysis of the two graphs in the image you provided, which consist of forecasting from 2018:

Profit by Order Date Forecasting

The profit by order date forecasting graph shows that profit is expected to increase steadily from 2018 to 2019. The graph shows a slight dip in profit in early 2018, but then a sharp increase in profit in the second half of the year. This trend is expected to continue in 2019, with profit reaching its highest level in the fourth quarter of the year.

Sales by Order Date Forecasting

The sales by order date forecasting graph shows that sales are expected to grow rapidly from 2018 to 2019. The graph shows a steady increase in sales throughout 2018, with sales accelerating in the fourth quarter of the year. This trend is expected to continue in 2019, with sales reaching their highest level in the fourth quarter of the year.

Overall Analysis

Both the profit-by-order date forecasting graph and the sales-by-order date forecasting graph show that the company is expected to experience significant growth in 2019. This growth is likely due to a number of factors, including increased demand for the company's products and services, expansion into new markets, and improved operational efficiency.

Forecasting from 2018

If the current trends continue, the company is expected to experience significant growth in 2019 and beyond. Profit and sales are both expected to increase steadily, with the strongest growth occurring in the fourth quarter of each year.

Here are some additional insights that can be drawn from the two graphs:

The profit by order date forecasting graph shows that the company is able to generate a profit even during periods of slow sales growth. This suggests that the company has a strong business model and is able to operate efficiently.

The sales by order date forecasting graph shows that the company is able to generate significant sales growth even during periods of slow profit growth. This suggests that the company has a strong brand and is able to attract new customers.

The two graphs together suggest that the company is in a strong financial position and is well-positioned for future growth.

Sales Analysis And Forecasting Dashboard By Team 2

Orders placed on weekdays or weekend
- 48 (37...)
- 81 (62.79%)
- weeken...
- Week...
- Week...

Payment Type
- payment...
- COD
- Online
- Cards
- 25 (19.3...)
- 57 (4...)
- 47 (36.43%)

Total_profit and LastYearProfit
81.80K
0.00K 286.40K 572.79K

Total_profit and LastYearProfit by Category
145.45K
Goal: 39.77K (+265.7%)

Month Name: All
State: All
Year: All

Ask a question about your data
Try one of these to get started

2,297,200.86 Total_sales
286,397.02 Total_profit
1,561.09 total_discount
22,638.48 max_scale

Profit and Sales by Region
- Sum of Profit
- Sum of Sales

Region: West, East, South, Central

Sales and Profit by Sub-Category
- Sum of Sales
- Sum of Profit

Top 10 State by sales
100%
- Phones
- Chairs
- Machines
- Tables
- Storage
- Binders
- Accessories — 118.09K
- Copiers — 94.68K
- Bookcases — 84.21K
- Appliances — 64.46K
- Furnishings — 62.06K
- Paper — 49.14K
- Supplies — 36.37K
- Art — 17.43K
- Envelopes — 11.84K
- Labels — 8.65K
- Fasteners — 2.11K
- 0.9%

Sales by Customers
- Sean Miller
- Tamara Chand
- Raymond Buch
- Tom Ashbrook
- Adrian Barton
- Ken Lonsdale

Customer Name
- 25.04K (16.28%)
- 19.05K (12.39%)
- 15.12K (9.83%)
- 14.6K (9.49%)
- 14.47K (9.41%)
- 14.18K (9.2...)
- 14.14K (9.19%)
- 12.87K (8.37%)
- 12.21K (7.9...)

State
- Alabama
- Arizona
- Arkansas
- California
- Colorado
- Connecticut

UNITED STATES

Sales Forecasting

Sales and Profit by Month Name
- Sum of Sales
- Sum of Profit

Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec

Sum of Sales and Sum of Profit

38K
Sum of Quantity

12.47
profit_percentage

8.40K
Max_profit

Year: All
Sub-Catego...: All
weekend/w...: All

Profit by Year Forecasting
Sum of Profit
150K
100K
50K
Year: 2014, 2016, 2018, 2020, 2022

Sales by Year Forecasting
Sum of Sales
1.0M
0.8M
0.6M
0.4M
Year: 2014, 2015, 2016, 2017, 2018, 2019, 2020

Profit by Order Date Forecasting

Category: All
Sub-Category: All
State: All
City: All
Month Name: All
Year: All
paymentmode: All
weekend/we...: All

Sales by Order Date Forecasting

Sales by Month and Year

Year: 2014, 2015, 2016, 2017

Sub-Category	Top Selling Products	Sum of Sales	Sum of Quantity
Copiers	Brother DCP1000 Digital 3 in 1 Multifunction Machine	149,528.03	234
Total	Brother DCP1000 Digital 3 in 1 Multifunction Machine	149,528.03	234

Profit by Month and Year

Year: 2014, 2015, 2016, 2017