



# AD-HOC ANALYSIS

Data Analysis Project  
(MS-Excel + Python )



The Amazon logo is displayed in white on a black rectangular background. It features the word "amazon" in a lowercase, sans-serif font, with a curved orange arrow underneath it pointing from the letter 'a' to the letter 'z'.

**TimeLine**

**May** ————— **June**



Amazon, founded by Jeff Bezos in 1994, is a global e-commerce giant headquartered in Seattle, Washington. Initially an online bookstore, it has expanded to offer a vast range of products and services, including electronics, apparel, and cloud computing through Amazon Web Services (AWS). Known for its customer-centric approach, Amazon introduced innovations like Amazon Prime, which offers fast shipping and streaming services. The company also develops consumer electronics, such as the Kindle e-reader and Echo smart speaker. Amazon's market influence extends to areas like artificial intelligence, logistics, and entertainment, making it a significant player in the tech industry.

Electronic Accessories  
Fashion Accessories  
Beauty and Personal Care Products  
Travel and Sports  
Food & Beverages  
Home and Lifestyle

## **In this Presentation, I will address the following questions based on the Analysis of Amazon sales data:**

- Top Selling Products
- Yearly Sales Analysis
- Sales Analysis Based on Product Category
- Profit Analysis Based on Product Category
- Furniture Sales Performance from 2009-2012
- Office Supplies Sales Performance from 2009-2012
- Technology Sales Performance from 2009-2012
- Peak Sales Days and Trends
- Customer Segment Sales Trends and Distribution
- Customer Segment Profit Trends and Distribution
- Top Revenue Generating Customer Analysis
- Revenue Breakdown of Top Customer
- Customer Visit Frequency Analysis (2009-2012)
- Top 2 Customer's Shopping Preferences (2009-2012)
- Sales Forecasting for Next 3 Months (Jan2013-Mar2013)
- Seasonal Sales Analysis

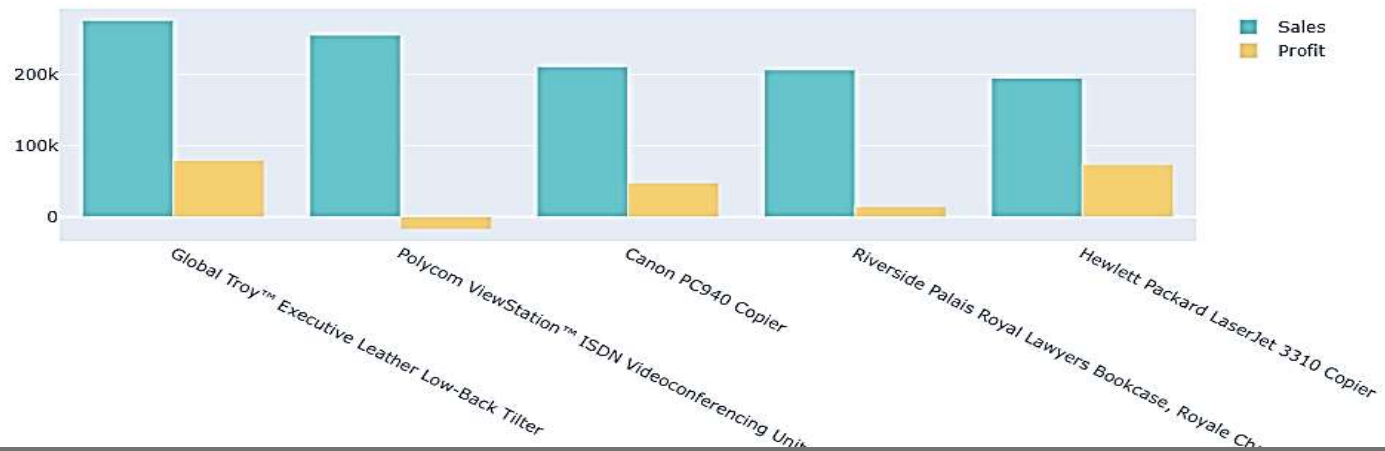
## Top Products

- **Global Troy™ Executive Leather Low-Back Tilter**  
Sales-\$2,75,941,  
Profit- \$79,285
- **Polycom ViewStation™ ISDN Videoconferencing Unit**  
Sales- \$2,55,304,  
Profit-\$-17,771
- **Canon PC940 Copier**  
Sales-\$ 2,10,910,  
Profit-\$47,705
- **Riverside Palais Royal Lawyers Bookcase, Royal Cherry Finish**  
Sales-\$2,06,494,  
Profit-\$ 14,292
- **Hewlett Packard LaserJet 3310 Copier**  
Sales-\$ 1,94,880,  
Profit-\$73,300

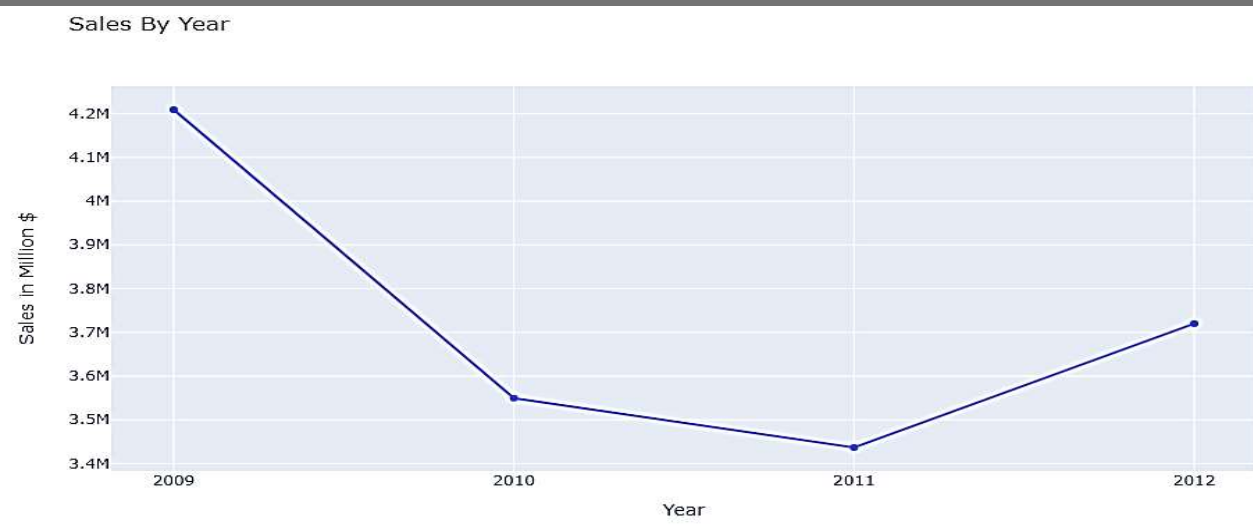
## Top Selling Products

- **Global Troy™ Executive Leather Low-Back Tilter** is the top rating selling Product with the highest profit \$79,285 and sales **\$2,75,941**, with respect to **Polycom ViewStation™ ISDN Videoconferencing Unit** with sales **\$2,55,304** and profit **\$-17,771**, and **Canon PC940 Copier** with a ranking of 3 with sales **\$2,10,910** and profit **\$47,705**.
- The lowest-grossing Product is **Alliance Rubber Bands**, with revenue of \$15. This Product also has the lowest profit i.e., **\$-3**.

Sales and Profit Analysis by Product Name



## Yearly Sales Analysis(2009-2012)



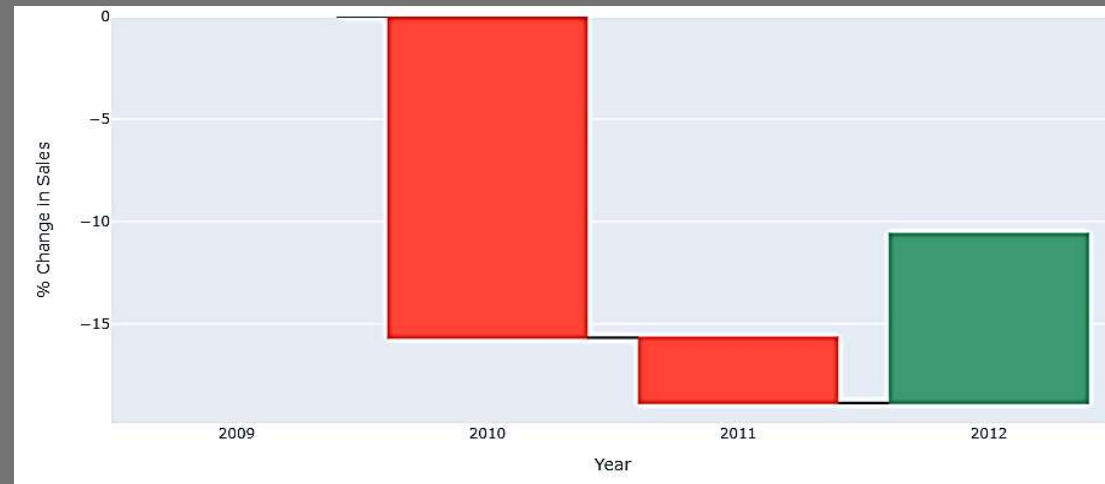
Sales decreased significantly from 2009 to 2010, **dropping from 4.2 Mn \$ to 3.5 Mn \$.**

There was a **slight decline in sales from 2010 to 2011**, with sales **reaching approximately 3.4 Mn \$.**

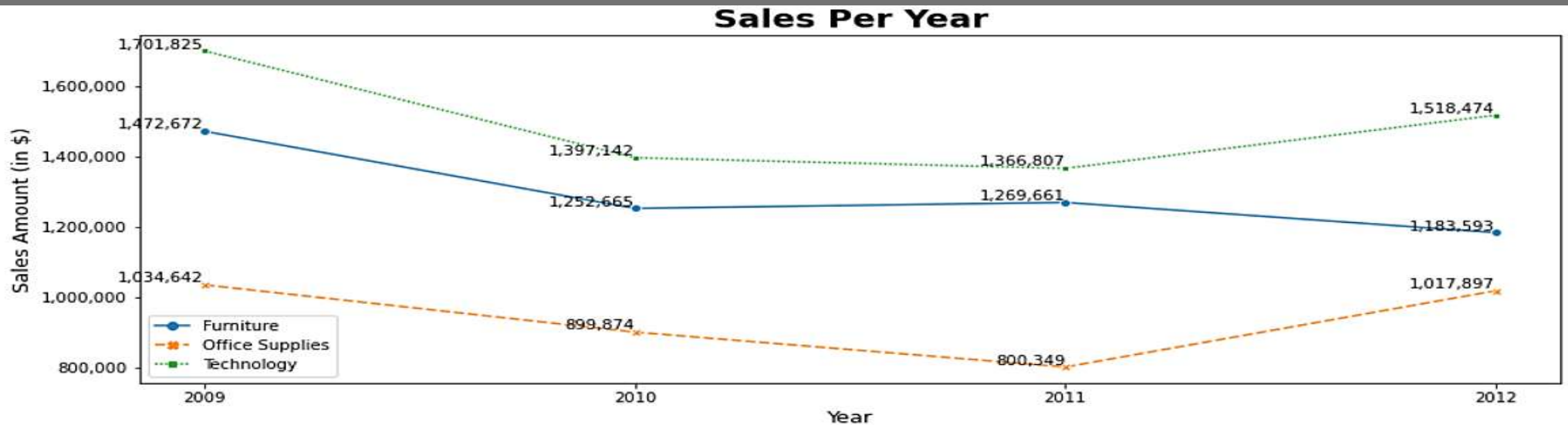
Sales started to **recover from 2011 to 2012**, increasing from 3.4 Mn \$ to **3.7 Mn \$.**

Sales experienced a **significant decline in 2010**, followed by a **smaller decline in 2011**. In 2012, there was a **notable recovery with an increase in sales.**

- In 2010 , Sales decreased by 15.67% compared to 2009.
- In 2011, Sales decreased by 3.18% compared to 2010.
- In 2012, Sales increased by 8.24% compared to 2011.



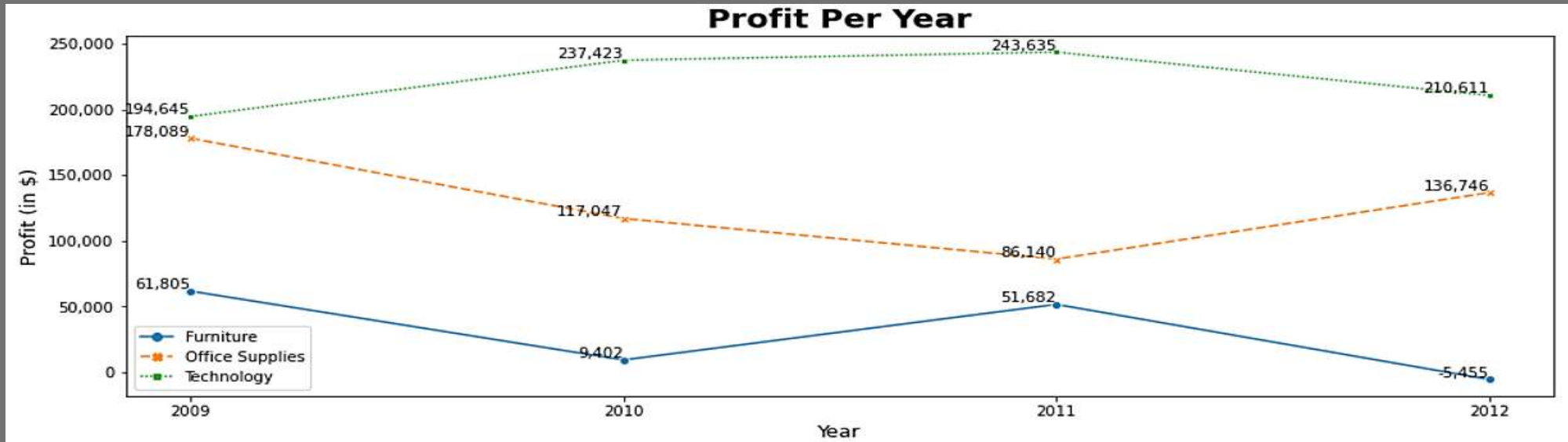
# Sales Analysis Based on Product Category



- **Furniture Sales** saw a **consistent decline** from 2009 to 2012, with a, followed by a recovery in 2012. **slight increase** in 2011.
- **Office Supplies Sales** saw a **decrease** from 2009 to 2011, followed by a **recovery** in 2012.
- **Technology Sales** decreased from 2009 to 2011 and then **increased significantly** in 2012.

	Year	Product Category	Sales
0	2009	Furniture	1,472,672.00
1	2010	Furniture	1,252,665.00
2	2011	Furniture	1,269,661.00
3	2012	Furniture	1,183,593.00
4	2009	Office Supplies	1,034,642.00
5	2010	Office Supplies	899,874.00
6	2011	Office Supplies	800,349.00
7	2012	Office Supplies	1,017,897.00
8	2009	Technology	1,701,825.00
9	2010	Technology	1,397,142.00
10	2011	Technology	1,366,807.00
11	2012	Technology	1,518,474.00

# Profit Analysis Based on Product Category



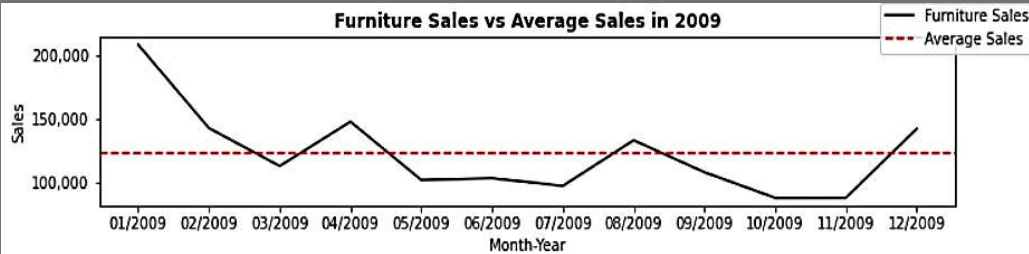
	Year	Product Category	Profit
0	2009	Furniture	61,805.00
1	2010	Furniture	9,402.00
2	2011	Furniture	51,682.00
3	2012	Furniture	-5,455.00
4	2009	Office Supplies	178,089.00
5	2010	Office Supplies	117,047.00
6	2011	Office Supplies	86,140.00
7	2012	Office Supplies	136,746.00
8	2009	Technology	194,645.00
9	2010	Technology	237,423.00
10	2011	Technology	243,635.00
11	2012	Technology	210,611.00

- Furniture Profits dropped significantly from 2009 to 2012, turning negative in 2012.
- Office Supplies Profits followed a similar trend, decreasing until 2011 and then increasing in 2012.
- Technology Profits increased from 2009 to 2011, with a slight decrease in 2012 but remaining high overall.

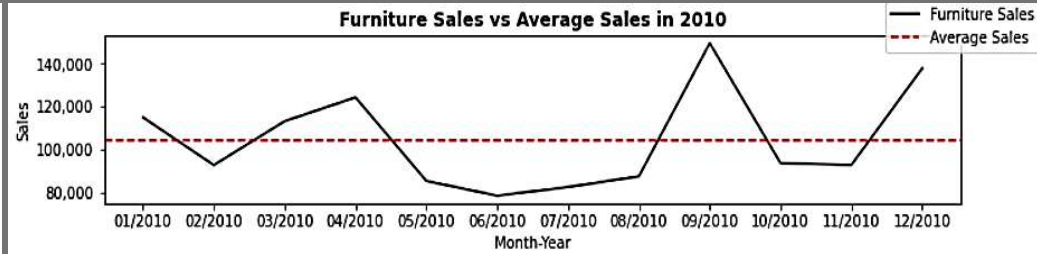


# Furniture Sales Performance From 2009-2012

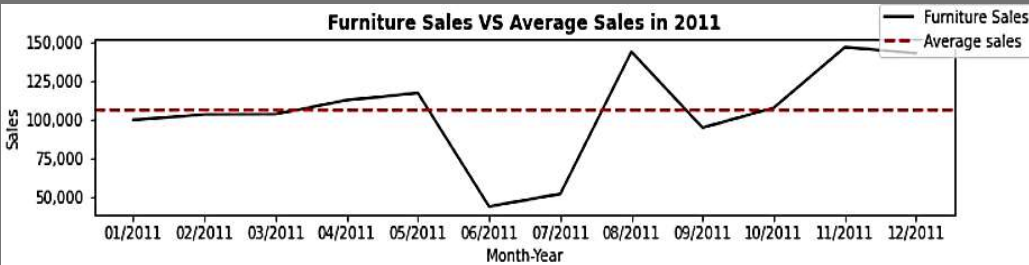
Furniture Sales vs Average Sales in 2009



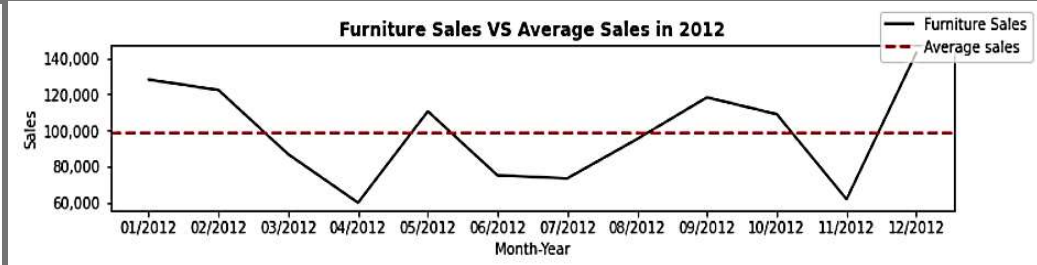
Furniture Sales vs Average Sales in 2010



Furniture Sales VS Average Sales in 2011



Furniture Sales VS Average Sales in 2012



## Overall Sales

- **2009 to 2010:**  
Average sales **dropped by 19.83%** (from \$131,305.97 to \$105,276.26).
- **2010 to 2011:**  
Average sales **decreased by 1.24%** (from \$105,276.26 to \$103,971.66).
- **2011 to 2012:**  
Average sales **increased by 2.80%** (from \$103,971.66 to \$106,884.55).

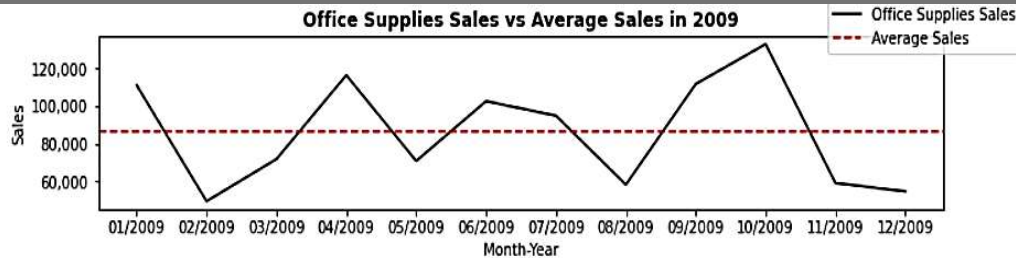
## Top Performers Months

- **Most Revenue Generated Month:**  
**January 2009:** Sales of \$208,507
- **Least Revenue Generated Month:**  
**November 2011:** Sales of \$43,782
- **Most Increase in Sales (Month-over-Month):**  
**Aug 2011:** 229% increase from July 2011 (from \$51,937 to \$144,097)
- **Most Decrease in Sales (Month-over-Month):**  
**Jun 2011:** 63% decrease from May 2011 (from \$117,321 to \$43,782)

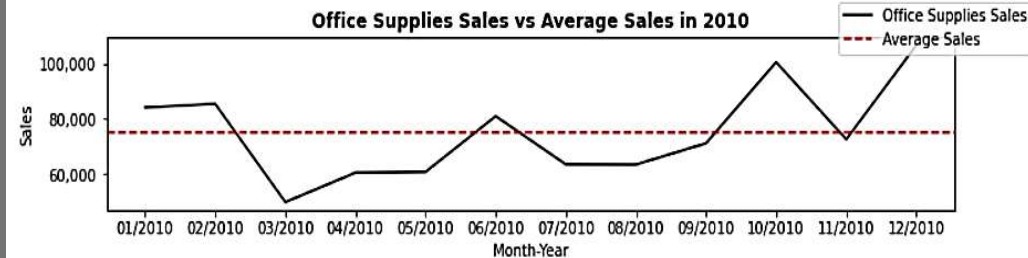


# Office Supplies Sales Performance From 2009-2012

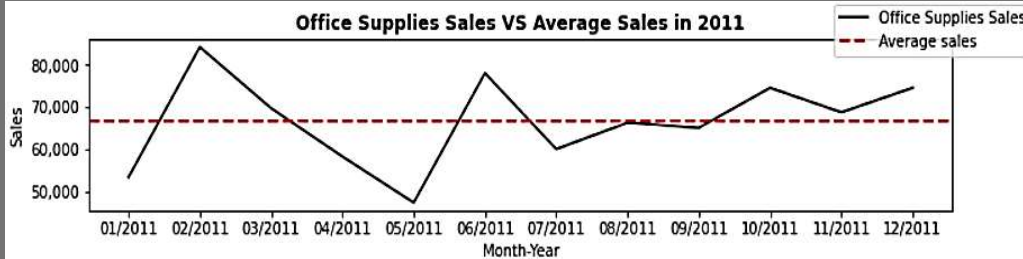
Office Supplies Sales vs Average Sales in 2009



Office Supplies Sales vs Average Sales in 2010



Office Supplies Sales VS Average Sales in 2011



Office Supplies Sales VS Average Sales in 2012



## Overall Sales

- **2009 to 2010:**  
Average sales **dropped by 15.98%** (from \$88,219 to \$74,117).
- **2010 to 2011:**  
Average sales **decreased by 4.83%** (from \$74,117 to \$70,557).
- **2011 to 2012:**  
Average sales **increased by 24.55%** (from \$70,557 to \$87,874).

## Top Performers Months

- **Most Revenue Generated Month:**  
**June 2012:** Sales of \$112,316
- **Least Revenue Generated Month:**  
**February 2012:** Sales of \$41,862
- **Most Increase in Sales (Month-over-Month):**  
**Mar 2012:** 151% increase from Feb 2012 (from \$41,862 to \$105,018)
- **Most Decrease in Sales (Month-over-Month):**  
**Feb 2012:** 56% decrease from Jan 2012 (from \$94,400 to \$41,862)

# Technology Sales Performance From 2009-2012

Technology Sales vs Average Sales in 2009



Technology Sales vs Average Sales in 2010



Technology Sales VS Average Sales in 2011



Technology Sales VS Average Sales in 2012



## Overall Sales

- **2009 to 2010:**  
Average sales **dropped by 23.49%** (from \$148,097 to \$113,795).
- **2010 to 2011:**  
Average sales **increased by 7.27%** (from \$113,795 to \$122,045).
- **2011 to 2012:**  
Average sales **increased by 3.75%** (from \$122,045 to \$126,223).

## Top Performers Months

- **Most Revenue Generated Month:**  
**March 2009:** Sales of \$226,955
- **Least Revenue Generated Month:**  
**June 2009:** Sales of \$57,440
- **Most Increase in Sales (Month-over-Month):**  
**Dec 2009:** 114% increase from Nov 2009 (from \$101,927 to \$218,851)
- **Most Decrease in Sales (Month-over-Month):**  
**Jun 2009:** 55% decrease from May 2009 (from \$129,020 to \$57,440)

## Peak Sales Days and Trends

- **High Sales Days:**

The top five days with the highest percentage of sales are:

Friday: 16.27%

Saturday: 15.12%

Sunday: 15.00%

Wednesday: 14.54%

Tuesday: 13.51%

These days collectively contribute **74.44%** of the total sales.

- **Lower Sales Days:**

The two days with the lowest percentage of sales are:

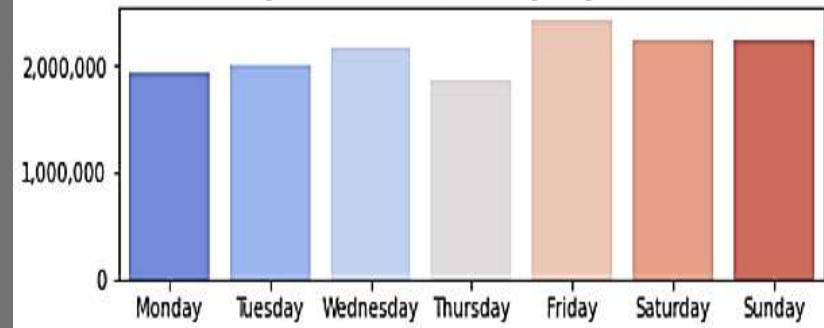
Monday: 13.07%

Thursday: 12.49%

These days collectively contribute **25.56%** of the total sales.

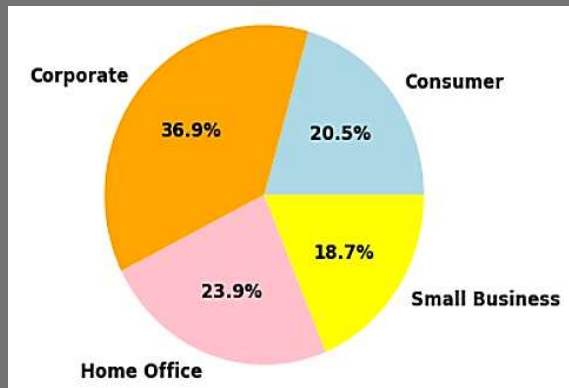
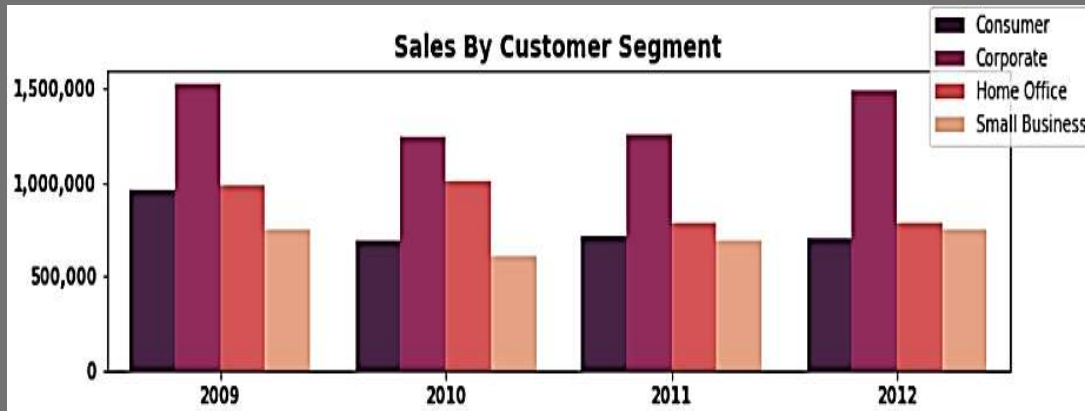
- **75% of sales occur from Friday to Tuesday, with Friday being the highest.**
- **The middle of the week (Wednesday and Thursday) sees a moderate level of sales.**
- **The beginning of the week (Monday) has the lowest sales percentage.**

Weekly Sales Distribution by Day of the Week



Weekday_Name	Sales	% Sales
Monday	1,949,717.00	13.07%
Tuesday	2,015,387.00	13.51%
Wednesday	2,168,291.00	14.54%
Thursday	1,863,484.00	12.49%
Friday	2,426,249.00	16.27%
Saturday	2,255,134.00	15.12%
Sunday	2,237,338.00	15.00%

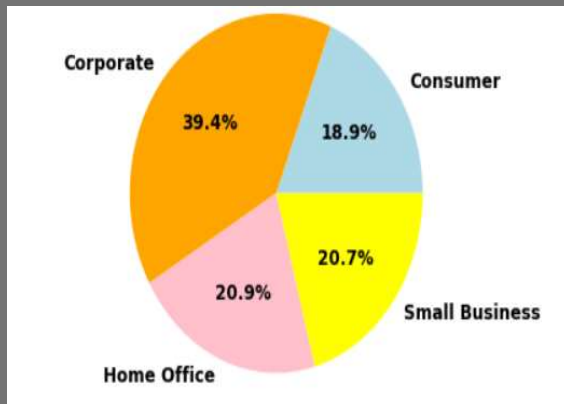
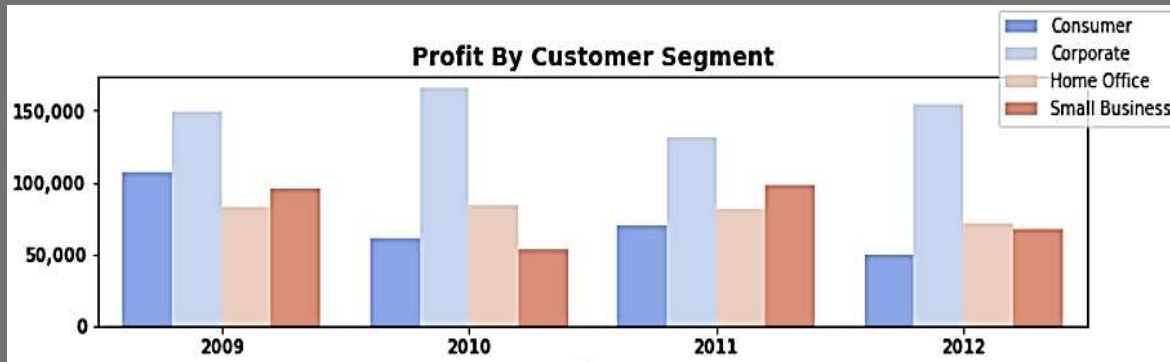
## Customer Segment Sales Trends and Distribution (2009-2012)



Year	Customer Segment	Sales
2009	Consumer	962,822.00
2009	Corporate	1,518,516.00
2009	Home Office	980,315.00
2009	Small Business	747,487.00
2010	Consumer	688,080.00
2010	Corporate	1,241,392.00
2010	Home Office	1,012,356.00
2010	Small Business	607,853.00
2011	Consumer	715,319.00
2011	Corporate	1,249,661.00
2011	Home Office	787,786.00
2011	Small Business	684,050.00
2012	Consumer	697,390.00
2012	Corporate	1,489,335.00
2012	Home Office	784,308.00
2012	Small Business	748,930.00

- **Consumer Segment:** Sales peaked in 2009 and showed a declining trend from 2010 to 2012.
  - **Corporate Segment:** Highest sales were recorded in 2009, followed by a dip in 2010 and 2011, with a resurgence in 2012.
  - **Home Office Segment:** Consistently strong sales, with the highest in 2010, followed by a slight decline in the subsequent years.
  - **Small Business Segment:** Sales were the lowest in all years compared to other segments, with the highest in 2009 and lowest in 2010.
- 1) **2009:** Corporate segment leads with the highest sales, followed by Home Office, Consumer, and Small Business.
  - 2) **2010:** Corporate segment again leads, but the gap between Corporate and Home Office is narrower.
  - 3) **2011:** Corporate segment maintains the lead; however, there is a noticeable dip in Home Office sales.
  - 4) **2012:** Corporate segment shows a strong comeback with the highest sales, while other segments remain relatively stable.

## Customer Segment Profit Trends and Distribution (2009-2012)



Year	Customer Segment	Profit
0 2009	Consumer	107,205.00
1 2009	Corporate	148,976.00
2 2009	Home Office	82,303.00
3 2009	Small Business	96,054.00
4 2010	Consumer	61,177.00
5 2010	Corporate	165,459.00
6 2010	Home Office	83,667.00
7 2010	Small Business	53,568.00
8 2011	Consumer	69,897.00
9 2011	Corporate	131,450.00
10 2011	Home Office	81,475.00
11 2011	Small Business	98,634.00
12 2012	Consumer	49,680.00
13 2012	Corporate	153,861.00
14 2012	Home Office	70,909.00
15 2012	Small Business	67,452.00

- **Consumer Segment:** Profit peaked in 2009 and showed a declining trend from 2010 to 2012.
  - **Corporate Segment:** Consistently high profits, with a peak in 2010 and a slight dip in 2011, followed by a strong performance in 2012.
  - **Home Office Segment:** Profits remained relatively stable, with the highest profit in 2010 and a slight decrease in the subsequent years.
  - **Small Business Segment:** Profits fluctuated, with the highest in 2011 and lowest in 2010.
- 1) **2009:** Corporate segment leads with the highest profit, followed by Consumer, Home Office, and Small Business.
  - 2) **2010:** Corporate segment again leads, showing the highest profit among all segments.
  - 3) **2011:** Corporate segment maintains the lead, but the Small Business segment shows a noticeable increase in profit.
  - 4) **2012:** Corporate segment remains the most profitable, while other segments show relatively stable profits.

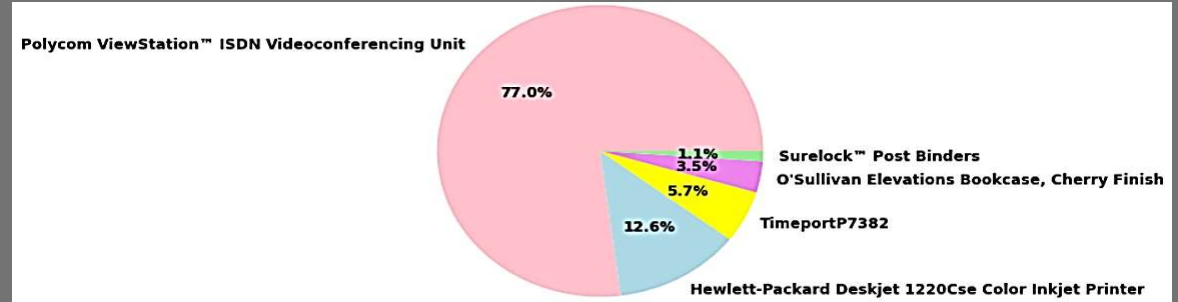
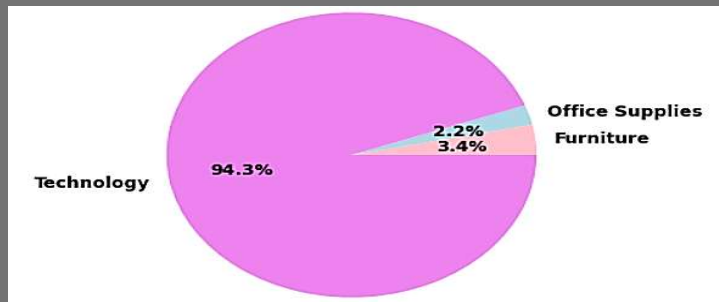


## Top Revenue-Generating Customer Analysis

	Customer Name	Sales
0	Emily Phan	117,124.00
1	Deborah Brumfield	97,433.00
2	Roy Skaria	92,542.00
3	Sylvia Foulston	88,876.00
4	Grant Carroll	88,417.00

- **Top Customer:** Emily Phan, contributing ₹117,124.00.
- **Total Sales Contribution:** ₹482,392.00 by the top 5 customers.
- **Percentage Contribution to Total Revenue (₹14,915,600.824):**
  - Emily Phan : 0.79%
  - Deborah Brumfield : 0.65%
  - Roy Skaria : 0.62%
  - Sylvia Foulston : 0.60%
  - Grant Carroll : 0.59%
- **Observation:** The top 5 customers collectively contribute about 3.24% of the total sales revenue, with Emily Phan being the highest individual contributor.

## Revenue Breakdown of Top Customer

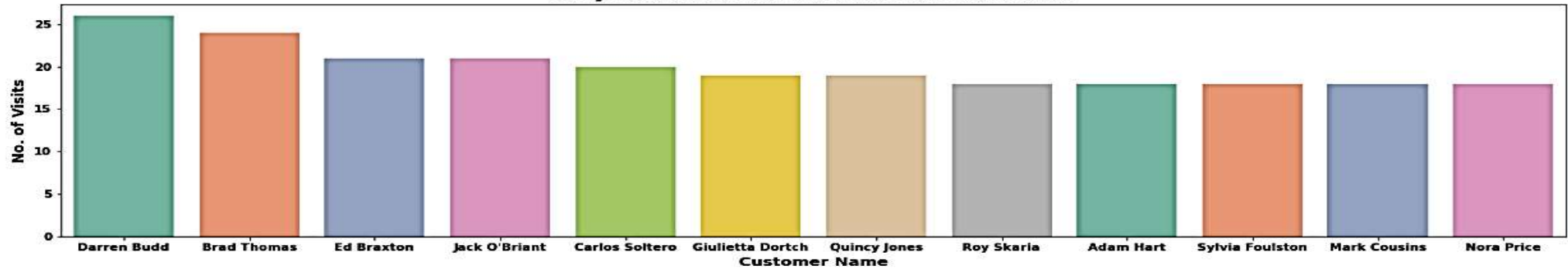


### Emily Phan spent:

- **94.3% on Technology**, including the Polycom ViewStation™ ISDN Videoconferencing Unit (77%) and the Hewlett-Packard Deskjet 1220Cse Color Inkjet Printer (12.6%).
- **3.4% on Furniture**, such as the O'Sullivan Elevations Bookcase, Cherry Finish.
- **2.2% on Office Supplies**, which includes the Timeport P7382 and Surelock™ Post Binders.

# Customer Visit Frequency Analysis (2009-2012)

Daily Customers with No. Visits from 2009-2012



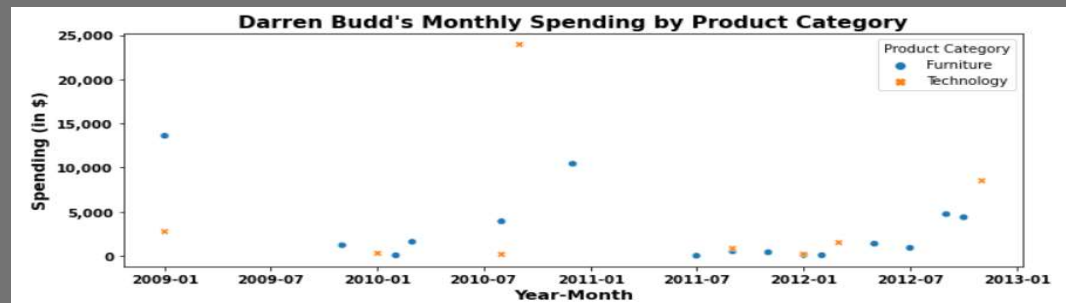
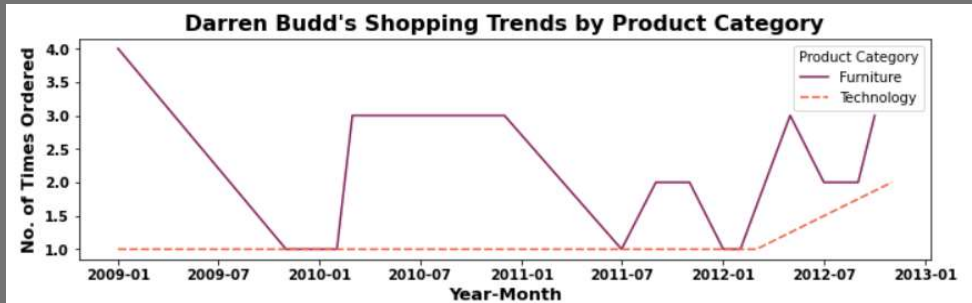
Customer Name No. of Visits on Site from 2009-2012

0	Darren Budd	26
1	Brad Thomas	24
2	Ed Braxton	21
3	Jack O'Briant	21
4	Carlos Soltero	20
...	...	...
790	Craig Carreira	1
791	Tiffany House	1
792	Maria Etezadi	1
793	Toby Braunhardt	1
794	Maureen Grace	1

- High Engagement:** Darren Budd and Brad Thomas are the most engaged customers, with visit counts significantly higher than others.
  - Darren Budd** leads with 26 visits.
  - Brad Thomas** is the second most frequent visitor with 24 visits.
- Moderate Engagement:** Customers like Ed Braxton, Jack O'Briant, and Carlos Soltero show a moderate level of engagement.
- Low Engagement:** Many customers, including Craig Carreira, Tiffany House, and others at the bottom of the table, visited the site only once, indicating very low engagement.
  - Craig Carreira, Tiffany House, Maria Etezadi, Toby Braunhardt, and Maureen Grace** each have only 1 visit, indicating minimal interaction with the site during the period.

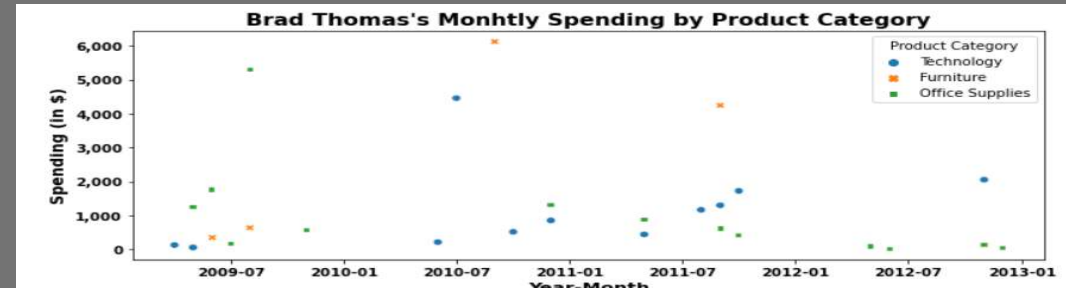
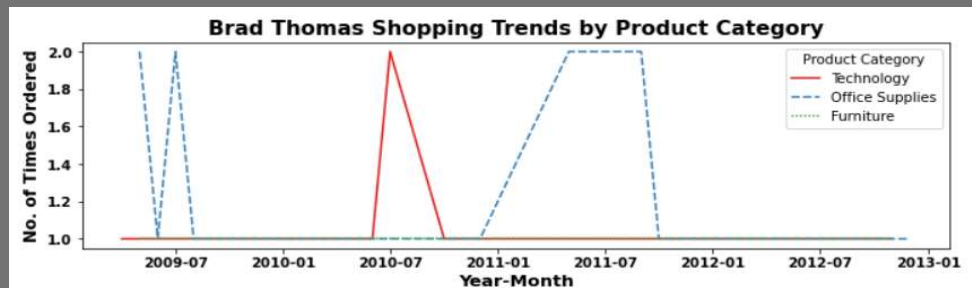


## Top 2 Customer's Shopping Preferences (2009-2012)



**Darren's Shopping Trends:** Furniture was the dominant category throughout 2009-2012, with Technology orders increasing slightly towards the end.

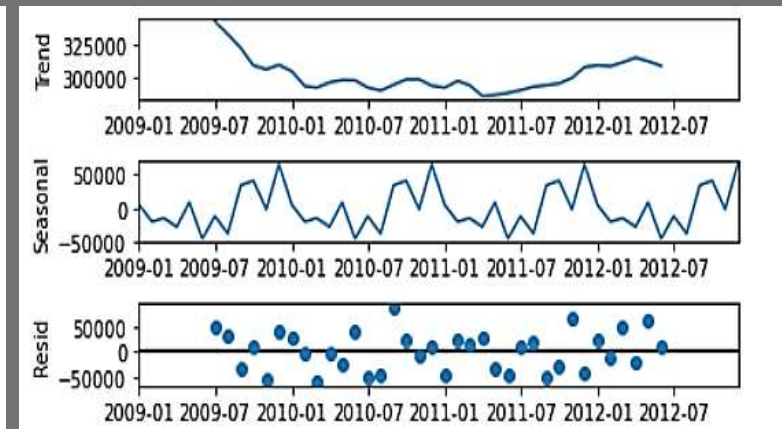
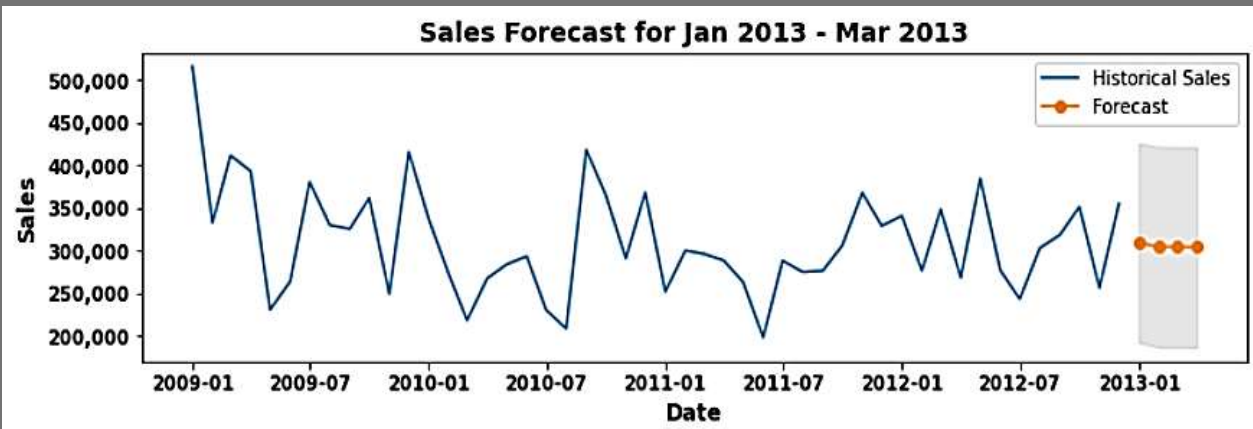
**Darren's Monthly Spending:** He spent high on both categories, with significant peaks in Technology in late 2010 and 2012, and steady high spending on Furniture in early years.



**Brad's Ordering Trends:** Office Supplies was the most ordered category in 2009 and 2010, with Technology orders remaining consistent. Furniture orders were minimal and sporadic.

**Brad's Monthly Spending:** Brad spent highest on Office Supplies in early 2009 and mid-2010, with consistent spending on Technology. On furniture, spending was sporadic, with peaks in mid-2009 and early 2012.

# Sales Forecasting for Next 3 Months (Jan 2013 – Mar 2013)



- **Historical Sales:**

Represented by the blue line, showing sales data from January 2009 to December 2012.

Sales fluctuated between approximately \$200,000 and \$500,000 during this period.

- **Forecast:**

Represented by the orange dots, predicting sales for January to March 2013.

The grey shaded area indicates the confidence interval, which is the range within which the actual sales are expected to fall.

The forecasted sales are around \$300,000 with the grey shaded area indicating a confidence interval of approximately \$275,000 to \$325,000.

**Forecast:**

The forecast suggests that sales will stabilize in the early months of 2013, with a predicted range provided by the confidence interval.

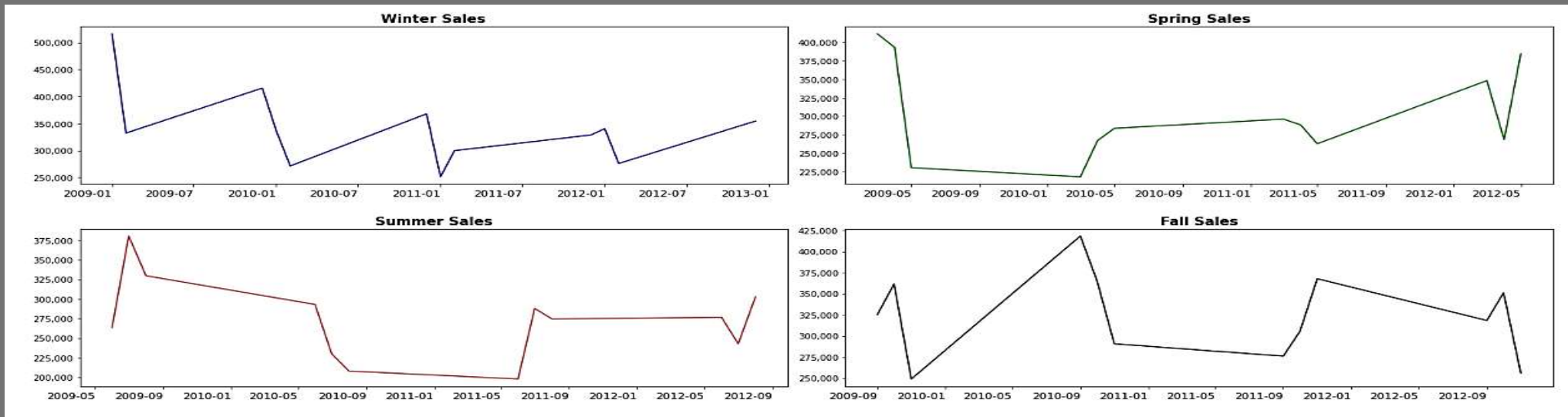
**Trend:**

The trend component indicates a downward trend initially, which then stabilizes with slight fluctuations.

**Seasonality:**

The seasonal component shows regular patterns, suggesting periodic fluctuations in sales.

# Seasonal Sales Analysis



## Seasonal Sales Insights

- **Winter Sales:** Highest fluctuation, peaks in early 2009 and 2013.
- **Spring Sales:** Relatively stable with a significant rise in mid-2012.
- **Summer Sales:** Decline from 2009, stable low sales through 2011-2012.
- **Fall Sales:** Consistent, but with notable peak in early 2010.

## Sales Distribution ( Pie –Chart )

Winter accounts for the largest share (27.4%) of total sales, followed by Spring (24.5%), Fall (26.0%), and Summer (22.0%).

