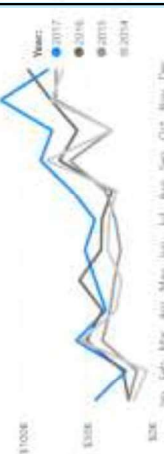# Executive Overview

1. What is the overall trend in sales and profit from 2014 to 2017?

A: Total Sales steadily increased across the 4 years, with especially strong Q4 spikes every year, likely driven by the holidays. Total Profit grew as well but showed more volatility, suggesting discount-heavy promotions or margin pressures in certain categories. Profit Margins overall remained about the same while Total Quantity saw an increase, indicating the business grew in a sustainable way.

2. Are we growing more through volume (quantity) or price (margin)?

A: Sales per Product and Profit per Product each saw a slight increase each year, while Quantity Ordered increased significantly, indicating that most of the growth came from the quantity sold. Total Sales and Quantity Ordered follow a similar growth trend their it's peaks in Q4, however Total Profit doesn't see the same level of growth in Q4, indicating that there were likely heavy promotions in Q4.

YoY Total Sales

YoY Total Profit

YoY Profit Margin

YoY Quantity Ordered

KPI's by Year

Year	Total Sales	Sales per Customer	Sales per Product	Total Profit	Profit per Customer	Profit per Product	Profit Margin	Quantity Ordered	Total Customers	Total Products
2017	$724,994.51	$1,050.72	$502.07	$92,775.45	$134.46	$64.25	12.8%	12051	690	1444
2016	$601,265.55	$946.87	$460.39	$80,130.74	$126.19	$61.36	13.3%	9507	635	1306
2015	$464,426.18	$817.65	$389.62	$60,907.79	$107.23	$51.10	13.1%	7777	568	1192
2014	$481,763.83	$816.55	$411.76	$49,044.48	$83.13	$41.92	10.2%	7414	590	1170
Total	**$2,272,450.07**	**$2,865.64**	**$1,285.32**	**$282,858.46**	**$356.69**	**$159.99**	**12.4%**	**36749**	**793**	**1768**

Customer Insights

3. Which customer segment contributes the most to profitability?

A: From 2014 to 2017, the Consumer segment has the highest Total Profit, while the Home Office segment has the lowest Total Profit. However this is due to the Consumer segment having the largest Quantity Ordered, when we look at Profit Margin, we can see that Home Office is actually the largest, meaning it is the most efficient segment. When we look at 2017 alone (the most recent year), we can see that the Consumer segment now has the largest Profit Margin, indicating that it is both the most profitable and the most efficient.

4. Do customers tend to be one-time buyers or repeat customers?

A: When looking at Total Customers and Total Profit grouped by the Number of Months the customer returned, we can see that these two metrics follow a similar trend, with both of them peaking at around 5 to 8 months of retention, suggesting that the customers generating the most profit tend to be repeat customers. In 2017 alone (the most recent year), Total Customers and Total Profit both peak at customers with 2 months of retention, indicating that even in the last year, the customers generating the most profit were repeat customers.

Total Sales by Segment

2017 Profit by Segment

Total Profit Margin by Segment

2017 Profit Margin by Segment

Total Customer Retention Retention by Months Ordered

2017 Customer Retention by Months Ordered

Product & Profitability

5. Which products drive the most sales vs the most profit?

A: We can see that the two items the bring in the most Total Sales and the two items that bring in the most Total Profit are actually the same, and both are in the technology category. In fact almost all the items in the Top 10 for Total Sales and Total Profit belong in the Technology category, indicating that it is the most profitable category. We can also see the Top 10 products with the largest Profit Margin and Total Profit greater than $1,000, indicating these are the most efficient items to sell.

Top 10 Products by Total Sales

Product Name	Total Sales	Sales/Month	Order Quantity	Quantity/Month	Total Profit	Profit/Month	Profit Margin	Total Months	Count of Order ID
Canon imageCLASS 2200...	$61,599.83	12,319.97	20	4.00	$25,199.94	5,039.99	40.9%	5	5
Fellowes PB500 Electric Pu...	$27,453.38	2,745.34	31	3.10	$7,753.06	775.31	28.2%	10	10
Cisco TelePresence Syste...	$22,638.48	22,638.48	6	6.00	($11,811.08)	-1,811.08	-8.0%	1	1
HON 5400 Series Task Ch...	$21,870.57	2,733.82	39	4.88	$0.00	0.00	0.0%	8	8
GBC DocuBind TL300 Elec...	$19,823.48	2,202.61	37	4.11	$2,233.50	248.17	11.3%	9	11
GBC Ibimaster 500 Manua...	$19,024.50	2,113.83	48	5.33	$760.90	84.55	4.0%	9	9
Hewlett Packard LaserJet...	$18,839.66	2,691.38	38	5.43	$6,951.80	993.70	37.1%	7	8
HP Designjet T520 Inkjet L...	$18,374.90	6,124.97	12	4.00	$4,094.98	1,364.99	22.3%	3	3
GBC DocuBind P400 Electr...	$17,965.07	2,994.18	27	4.50	($1,878.17)	-313.03	-10.5%	6	6
High Speed Automatic Ele...	$17,030.31	8,515.16	11	5.50	($662.00)	-331.00	-3.9%	2	2

Top 10 Products by Profit Margin (Total Profit > $1,000)

Product Name	Total Sales	Sales/Month	Order Quantity	Quantity/Month	Total Profit	Profit/Month	Profit Margin	Total Months	Count of Order ID
Canon imageCLASS MF74...	$3,991.98	3,991.98	2	2.00	$1,995.99	1,995.99	50.0%	1	1
Hewlett Packard Deskjet...	$3,404.50	3,404.50	5	5.00	$1,668.21	1,668.21	49.0%	1	1
Ativa V4110MDD Micro-C...	$7,699.89	1,849.95	11	5.50	$3,772.95	1,895.48	49.0%	2	2
Hewlett Packard Deskjet 1...	$3,040.00	3,040.00	8	8.00	$1,459.20	1,459.20	48.0%	1	1
Zebra ZM400 Thermal Lab...	$6,965.70	6,965.70	6	6.00	$3,343.53	3,343.53	48.0%	1	2
Xerox 1881	$2,907.35	144.49	70	4.67	$1,306.42	67.09	45.4%	15	18
Dot Matrix Printer Tape Re...	$1,322.87	415.38	36	4.50	$1,517.91	183.74	45.7%	8	8
Xerox 1915	$2,780.01	398.41	28	4.00	$1,262.40	180.34	45.3%	7	9
Easy-staple paper	$2,504.18	78.26	150	4.69	$1,096.00	34.25	43.6%	32	46
Maxell IWDK EX 500GB Cap...	$2,755.40	1,377.70	10	5.00	$1,184.83	592.42	43.0%	2	2

6. Do we have any products with duplicated SKUs or inconsistent IDs?

A: Yes, there were multiple cases of one product ID being linked to several product names, and vice versa. After cleaning, we standardized all Product IDs and all Product Names to the most common one, and aggregated duplicates rows. This ensures accurate reporting and prevents under or over counting errors when creating calculated columns in Power BI. We also found that there were multiple Segments mapped to the same Product, but this didn't affect our calculations so we left it as is.

Top 10 Products by Total Profit

Product Name	Total Sales	Sales/Month	Order Quantity	Quantity/Month	Total Profit	Profit/Month	Profit Margin	Total Months	Count of Order ID
Canon imageCLASS 2200...	$61,599.83	12,319.97	20	4.00	$25,199.94	5,039.99	40.9%	5	5
Fellowes PB500 Electric Pu...	$27,453.38	2,745.34	31	3.10	$7,753.06	775.31	28.2%	10	10
Hewlett Packard LaserJet...	$18,839.66	2,691.38	38	5.43	$6,951.80	993.70	37.1%	7	8
Canon PC1060 Personal L...	$11,619.83	2,904.96	19	4.75	$4,570.94	1,142.74	39.3%	4	4
Logitech G19 Programma...	$13,756.54	7,146.58	60	5.00	$4,425.52	368.78	32.2%	15	15
HP Designjet T520 Inkjet L...	$18,374.90	6,124.97	12	4.00	$4,094.98	1,364.99	22.3%	3	3
Ativa V4110MDD Micro-C...	$7,699.89	3,849.95	11	5.50	$3,772.95	1,886.48	49.0%	2	2
3D Systems Cube Printer...	$14,269.89	7,146.95	11	5.50	$3,717.97	1,858.99	26.0%	2	2
Ibico EPK 21 Electric Bindi...	$15,875.92	5,291.97	13	4.33	$3,345.29	1,115.10	21.1%	3	3
Zebra ZM400 Thermal Lab...	$6,965.70	6,965.70	6	6.00	$3,343.53	3,343.53	48.0%	1	2

Regional Performance

7. Which regions are the strongest and weakest performers?

A: The West Region has the largest Total Sales and Total Profit, with the East Region close behind it. The South and Central Regions had significantly lower Total Sales, Total Profit, and Quantity Ordered. The East Region benefits the most from the holidays in Q4 with the largest spike out of any region. The South has high potential for growth with a large Profit per Customer and low Quantity.

8. Were there geographic data quality issues?

A: Yes, there were about 400 postal codes that were only 4 digits long, while the rest were 5 digits long, which would have distorted geographic reporting. These were cleaned and standardized into proper 5-digit codes, improving regional mapping accuracy. We also checked that the mapping for state, region, and zip codes were unique and we didn't find any issues.

West Total Sales vs. Total Profit (2017)

East Total Sales vs. Total Profit (2017)

Central Total Sales vs. Total Profit (2017)

South Total Sales vs. Total Profit (2017)

Sales and Profit by Region

Region	Total Sales	Sales/Customer/Month	Sales/Product/Month	Total Profit	Profit/Customer/Month	Profit/Product/Month	Sum of Quantity
West	$713,471.45	$457.13	238.56	$106,021.47	$66.51	34.22	11845
East	$672,194.15	$453.32	227.70	$90,672.04	$56.02	29.81	10281
South	$388,983.59	$494.07	247.81	$46,036.00	$64.13	30.86	6077
Central	$497,800.88	$438.09	217.72	$40,128.95	$28.85	14.75	8546
Total	**$2,272,450.07**	**$490.81**	**247.87**	**$282,858.46**	**$59.67**	**30.40**	**36749**

Order Efficiency

9. What is the average sales per order, and how has this changed over time?

A: Sales per order grew slightly year over year, but inconsistently across categories. Technology orders are much higher in value, while Office Supplies orders are frequent but smaller. This points to cross-selling opportunities, encouraging low-value customers to bundle technology items.

10. How do the different trends throughout the year per order compare?

A: Sales per Order and Profit per Order follow a similar trend, while Profit per Order stays more constant over time. This suggests that Sales per Order is more heavily affected by changes in Quantity per Order, while Profit per Order is balanced out by discounts and promotions.

Sales per Order per Month

Profit per Order per Month

Quantity per Order per Month

Margin per Order per Month

Averages per Month

$460.85	$57.36	7.45	4931
Average Sales per Order	Average Profit per Order	Average Quantity per Order	Total Orders