

The Amazon logo, featuring the word "amazon" in a bold, black, sans-serif font. Below the text is a curved orange arrow that starts under the letter 'a' and points towards the letter 'n', resembling a smile.

AMAZON BRANCH SALES ANALYTICS

BUSINESS PROBLEM

- Amazon, a global e-commerce giant, operates numerous branches across various geographical regions. Currently the sales and customer satisfaction is not up to the mark in Amazon's branches across Mandalay, Yangon, and Naypyitaw, Myanmar.

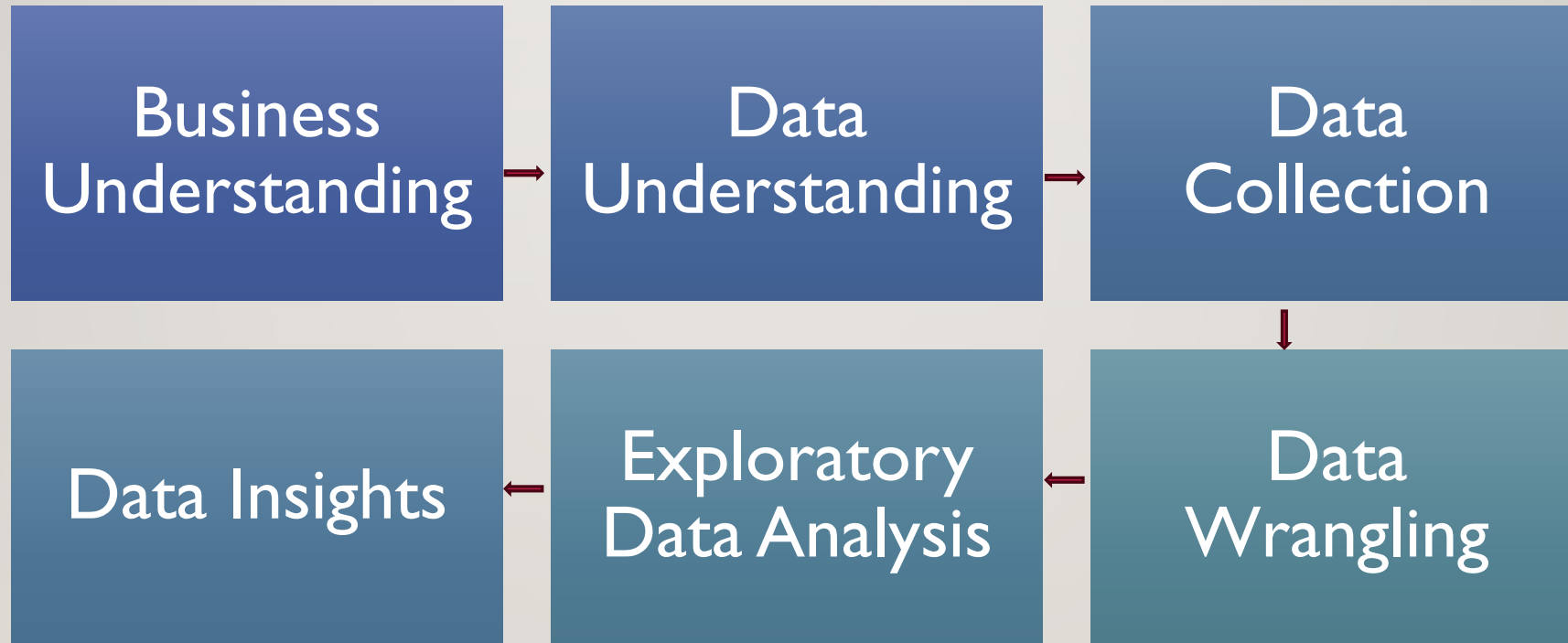
BUSINESS OBJECTIVE

- The business objective is to identify key drivers and regional market dynamics and optimize sales performance and customer satisfaction across Amazon's branches in Myanmar

PROJECT OBJECTIVE

- The objective of this project is to analyze the sales data of Amazon's branches to gain insights into branch sales trends, customer behavior, and factors influencing sales performance and provide actionable recommendations for optimizing sales and customer satisfaction.

PROJECT ARCHITECTURE



DATA UNDERSTANDING

- The list of columns present in the dataset are: 'Invoice ID', 'Branch', 'City', 'Customer type', 'Gender', 'Product line', 'Unit price', 'Quantity', 'Tax 5%', 'Total', 'Date', 'Time', 'Payment', 'cogs', 'gross margin percentage', 'gross income', 'Rating' .
- Shape of the dataset is 1000 rows and 17 columns.

```
9 • SELECT count(*) as Total_no_of_columns
10 FROM information_schema.columns
11 WHERE table_name = 'amazon' AND table_schema = 'amazon_sales';
12
```

Total_no_of_columns
17

```
13 • select count(*) as Total_records from amazon;
```

Total_records
1000

DATA UNDERSTANDING

- The list of categorical columns present in the dataset are:
 - Branch : A,B,C
 - City : Mandalay, Yangon, and Naypyitaw
 - Customer type : Normal, Member
 - Gender : Female, Male
 - Product line : Health and beauty, Electronic accessories, Home and lifestyle, Sports and travel, Food and beverages, Fashion accessories
 - Payment : E-wallet, Cash, Credit Card
 - Rating : 1-10

FEATURE ENGINEERING

- Created three extra columns from Time and Date
 - Timeofday ----- Morning, Afternoon and Evening
 - MonthName— Jan, Feb, March etc.
 - DayName ----- Mon, Tue, wed etc.
- Need to add One more column named Product_line_Quality to check product line is Good or Bad based on Average of cogs.

PRODUCT ANALYSIS

- **Order Frequency:** *Fashion accessories(178)* have the highest order frequency, indicating strong demand for these products as compared to other product lines. The least selling product and the least Quantity ordered for *Health and beauty*.
- **Sales Volume:** *Electronic Accessories(971)* products have the highest sales volume, suggesting potentially higher-priced items or larger quantities being sold in this category.

	Product line	order_frequency	sales_volume	Avg_Quantity_per_Purchase	Avg_ratings
▶	Health and beauty	152	854	6	7
	Electronic accessories	170	971	6	6.92
	Home and lifestyle	160	911	6	6.84
	Sports and travel	166	920	6	6.92
	Food and beverages	174	952	5	7.11
	Fashion accessories	178	902	5	7.03

Product Analysis:

Sales Volume, Order Count, Revenue, Avg_Ratings

1. Profit and Total Revenue : Food and beverages have highest Total_sales(\$56144.84) and profitability(2673.56) followed by sports and travel, and electronic accessories are the most profitable product lines, generating the highest profits compared to others.
2. Cost of Goods Sold (COGS): Although food and beverages have the highest total sales followed by sports and travel and electronic accessories have higher COGS also, indicating potentially higher production or acquisition costs in these categories.

	Product line	COGS	Total_sales	Profit
▶	Food and beverages	53471.28	56144.84	2673.56
	Sports and travel	52497.93	55122.83	2624.9
	Electronic accessories	51750.03	54337.53	2587.5
	Fashion accessories	51719.9	54305.9	2586
	Home and lifestyle	51297.06	53861.91	2564.85
	Health and beauty	46851.18	49193.74	2342.56

PRODUCT ANALYSIS

Product Line	Purchase Frequency	Quantity Sold	Total COGS	Total Revenue	Profit	Avg Rating
Health and beauty	152	854	46851.18	49194	2342.56	7
Home and lifestyle	160	911	51297.06	53862	2564.85	6.84
Sports and travel	166	920	52497.93	55123	2624.9	6.92
Electronic accessories	170	971	51750.03	54338	2587.5	6.92
Food and beverages	174	952	53471.28	56145	2673.56	7.11
Fashion accessories	178	902	51719.9	54306	2586	7.03

PRODUCT ANALYSIS PER BRANCH

- Naypyitaw's Branch C showcasing highest sales(110569) despite of having lowest Purchase_frequency(328).
- Yangon's Branch A sold maximum number of items.
- Mandalay's Branch lowest total sales(106198).

	City	Branch	Purchase_Frequency	Total_Quantity_sold	Total_sales
▶	Naypyitaw	C	328	1831	110569
	Yangon	A	340	1859	106200
	Mandalay	B	332	1820	106198

City	Branch	Product Line	PurchaseFreq.	Total_COGS	Quantity	Revenue	Profit	Avg_Rating
		Health and beauty	47	11997.86	257	12598	599.89	6.9
		Fashion accessories	51	15554.77	263	16333	777.74	6.88
Yangon	A	Food and beverages	58	16345.81	313	17163	817.29	7.25
		Sports and travel	59	18450.19	333	19373	922.51	7.26
		Electronic accessories	60	17444.87	322	18317	872.24	6.91
		Home and lifestyle	65	21349.71	371	22417	1067.49	6.93
		Home and lifestyle	50	16713.49	295	17549	835.67	6.52
		Food and beverages	50	14490.37	270	15215	724.52	6.99
Mandalay	B	Health and beauty	53	19029.2	320	19981	951.46	7.1
		Electronic accessories	55	16239.47	316	17051	811.97	7.12
		Sports and travel	62	19036.38	322	19988	951.82	6.51
		Fashion accessories	62	15631.73	297	16413	781.59	6.72
		Sports and travel	45	15011.36	265	15762	750.57	7.03
		Home and lifestyle	45	13233.86	245	13896	661.69	7.06
Naypyitaw	C	Health and beauty	52	15824.12	277	16615	791.21	7
		Electronic accessories	55	18065.69	333	18969	903.28	6.75
		Fashion accessories	65	20533.4	342	21560	1026.67	7.44
		Food and beverages	66	22635.1	369	23767	1131.75	7.08

City	Branch	Product Line	Rank_Purchase_frequency	Rank_Total_COGS	Rank_Total_Quantity	Rank_Total_Revenue	Rank_profit	Rank_Avg_ratings
Yangon	A	Sports and travel	3	2	2	2	2	1
Yangon	A	Food and beverages	4	4	4	4	4	2
Yangon	A	Home and lifestyle	1	1	1	1	1	3
Yangon	A	Electronic accessories	2	3	3	3	3	4
Yangon	A	Health and beauty	6	6	6	6	6	5
Yangon	A	Fashion accessories	5	5	5	5	5	6
Mandalay	B	Electronic accessories	3	4	3	4	4	1
Mandalay	B	Health and beauty	4	2	2	2	2	2
Mandalay	B	Food and beverages	5	6	6	6	6	3
Mandalay	B	Fashion accessories	1	5	4	5	5	4
Mandalay	B	Home and lifestyle	5	3	5	3	3	5
Mandalay	B	Sports and travel	1	1	1	1	1	6
Naypyitaw	C	Fashion accessories	2	2	2	2	2	1
Naypyitaw	C	Food and beverages	1	1	1	1	1	2
Naypyitaw	C	Home and lifestyle	5	6	6	6	6	3
Naypyitaw	C	Sports and travel	5	5	5	5	5	4
Naypyitaw	C	Health and beauty	4	4	4	4	4	5
Naypyitaw	C	Electronic accessories	3	3	3	3	3	6

INSIGHTS FROM PRODUCT ANALYSIS

1. **Consistent Leaders:** "Home and lifestyle" in Yangon, "Sports and travel" in Mandalay, and "Food and beverages" in Naypyitaw are the most consistently high-performing product lines in their respective branches.
2. **Opportunities for Improvement:**
 1. Branch A could focus on improving the performance of "Health and beauty" and "Fashion accessories".
 2. Branch B could work on boosting "Food and beverages" and improving the Avg_ratings for "Sports and travel".
 3. Branch C might benefit from strategies to enhance the performance of "Home and lifestyle" and "Sports and travel".
3. **Avg_ratings Influence:** Despite some product lines performing well across other parameters, their lower Avg_ratings could indicate a need for quality improvements or better customer satisfaction efforts (e.g., "Sports and travel" in Mandalay).
4. **Potential Growth Areas:** Product lines that show high potential but have room for improvement in certain areas, such as "Electronic accessories" in all branches and "Health and beauty" in Yangon and Naypyitaw, should be targeted for strategic growth initiatives.

SALES TREND

- The highest sales happened in the month of January.

	monthname	count('product line')	Sales_By_Month	Profit_By_Month
►	January	352	116291.87	5537.71
	March	345	109455.51	5212.17
	February	303	97219.37	4629.49

- In January , Naypyitaw contributing the highest amount,
- in February Mandalay is on top
- Yangon is leading in March.

	City	Branch	monthname	Count Product Line	Sales By Month	Profit By Month
►	Mandalay	B	February	109	34424.27	1639.25
	Naypyitaw	C	February	100	32934.98	1568.33
	Yangon	A	February	94	29860.12	1421.91
	Naypyitaw	C	January	122	40434.68	1925.46
	Yangon	A	January	119	38681.13	1841.96
	Mandalay	B	January	111	37176.06	1770.29
	Yangon	A	March	127	37659.12	1793.29
	Naypyitaw	C	March	106	37199.04	1771.38
	Mandalay	B	March	112	34597.34	1647.49

	Month	Product Line	Purchase_frequency	Total_COGS	Total_Quantity	Total_Revenue	profit	Avg_ratings
	January	Electronic accessories	54	17934.56	333	18831	896.73	7.14
	January	Fashion accessories	64	18423.92	336	19345	921.2	7.06
	January	Food and beverages	56	18638.6	325	19571	931.93	7.41
	January	Health and beauty	49	15603.02	254	16383	780.15	7.13
	January	Home and lifestyle	59	19518.8	342	20495	975.94	6.67
	January	Sports and travel	70	20635.26	375	21667	1031.76	6.78
	February	Electronic accessories	54	16536.1	313	17363	826.8	6.96
	February	Fashion accessories	60	18104.63	295	19010	905.23	7.08
	February	Food and beverages	62	19047.96	349	20000	952.4	7.01
	February	Health and beauty	46	13906.91	266	14602	695.35	7.21
	February	Home and lifestyle	38	11842.27	205	12434	592.11	7.07
	February	Sports and travel	43	13152.01	226	13810	657.6	7.13
	March	Electronic accessories	62	17279.37	325	18143	863.97	6.7
	March	Fashion accessories	54	15191.35	271	15951	759.57	6.93
	March	Food and beverages	56	15784.72	278	16574	789.24	6.93
	March	Health and beauty	57	17341.25	334	18208	867.06	6.73
	March	Home and lifestyle	63	19935.99	364	20933	996.8	6.85
	March	Sports and travel	53	18710.66	319	19646	935.53	6.92

	Branch	Product Line	Rank_Purchase_frequency	Rank_Total_COGS	Rank_Total_Quantity	Rank_Total_Revenue	Rank_profit	Rank_Avg_ratings
	January	Electronic accessories	5	5	4	5	5	2
	January	Fashion accessories	2	4	3	4	4	4
	January	Food and beverages	4	3	5	3	3	1
	January	Health and beauty	6	6	6	6	6	3
	January	Home and lifestyle	3	2	2	2	2	6
	January	Sports and travel	1	1	1	1	1	5
	February	Electronic accessories	3	3	2	3	3	6
	February	Fashion accessories	2	2	3	2	2	3
	February	Food and beverages	1	1	1	1	1	5
	February	Health and beauty	4	4	4	4	4	1
	February	Home and lifestyle	6	6	6	6	6	4
	February	Sports and travel	5	5	5	5	5	2
	March	Electronic accessories	2	4	3	4	4	6
	March	Fashion accessories	5	6	6	6	6	1
	March	Food and beverages	4	5	5	5	5	2
	March	Health and beauty	3	3	2	3	3	5
	March	Home and lifestyle	1	1	1	1	1	4
	March	Sports and travel	6	2	4	2	2	3

INSIGHTS

- In January Sports and Travel Generating the highest Revenue.
- In February “Food and Beverages” Generating the highest Revenue.
- In March “Home and Lifestyle” Generating the highest sales.
- “Health and Beauty” performing least in January but showing consistent improvements in total sales.
- Home and lifestyle generating highest sales in February and performing least in March.

SALES ANALYSIS BY PRODUCT LINE, BRANCH AND DAY_NAME

- The highest sales happened on Saturday's.

	DayName	count('product line')	Sales_By_WeekDay	Profit_By_Weekday
▶	Saturday	164	56120.81	2672.42
	Friday	139	43926.34	2091.73
	Sunday	133	44457.89	2117.04
	Monday	125	37899.08	1804.72
	Thursday	138	45349.25	2159.49
	Wednesday	143	43731.14	2082.44
	Tuesday	158	51482.25	2451.54

SALES ANALYSIS BY PRODUCT LINE, BRANCH AND DAY_NAME

Branch	product Line	Max_Sales_By_Product_Line	DayName
A	Home and lifestyle	5699.32	Sunday
A	Electronic accessories	4560.99	Tuesday
A	Food and beverages	4300.71	Wednesday
A	Sports and travel	4198.61	Saturday
A	Fashion accessories	3116.74	Monday
A	Health and beauty	2710.77	Monday

Branch	product Line	Min_Sales_By_Product_Line	DayName
A	Home and lifestyle	1963.44	Wednesday
A	Sports and travel	1814.81	Wednesday
A	Food and beverages	1193.26	Monday
A	Fashion accessories	1110.21	Wednesday
A	Health and beauty	1098.71	Tuesday
A	Electronic accessories	950.75	Sunday

- Branch A
 - “Home and Life style” are leading on Sunday.
 - “Electronic Accessories” are least performing on Sunday.

Branch	product Line	Max_Sales_By_Product_Line	DayName
B	Electronic accessories	5211.8	Saturday
B	Home and lifestyle	4710.28	Saturday
B	Health and beauty	4260.2	Tuesday
B	Fashion accessories	4144.13	Saturday
B	Sports and travel	3840.48	Wednesday
B	Food and beverages	3661.08	Tuesday

Branch	product Line	Min_Sales_By_Product_Line	DayName
B	Health and beauty	1599.43	Sunday
B	Sports and travel	1383.81	Monday
B	Electronic accessories	1148.62	Sunday
B	Food and beverages	1139.31	Thursday
B	Home and lifestyle	940.35	Friday
B	Fashion accessories	728.22	Sunday

- Branch B
 - “Electronic Accessories” And “Home and beauty” leading on Saturdays.
 - “Fashion Accessories” are least performing on Sunday.

Branch	product Line	Max_Sales_By_Product_Line	DayName
C	Food and beverages	4811.66	Tuesday
C	Electronic accessories	4312.51	Sunday
C	Fashion accessories	4183.42	Friday
C	Health and beauty	3440.41	Saturday
C	Home and lifestyle	3353.88	Wednesday
C	Sports and travel	2839.11	Wednesday

Branch	product Line	Min_Sales_By_Product_Line	DayName
C	Fashion accessories	1613.86	Monday
C	Health and beauty	1436.61	Thursday
C	Food and beverages	1330.29	Friday
C	Electronic accessories	1164.99	Wednesday
C	Home and lifestyle	1047.12	Thursday
C	Sports and travel	1005.69	Monday

- Branch C
 - “Food and Beverages” are leading on Tuesday.
 - “Sport and Travel” are least performing on Monday.

SALES ANALYSIS BY DAY_TIME

- Highest sales happened during Afternoon times.

	timeofday	count(`product line`)	Sales_By_WeekDay	Profit_By_Weekday
▶	Afternoon	528	172468.56	8212.79
	Morning	191	61798.81	2942.8
	Evening	281	88699.38	4223.78

SALES ANALYSIS BY PRODUCT LINE AND DAY TIME

- All products highest sales happened in Afternoon.

Product Line	Day Time	Count	Sales	Profit
Electronic accessories	Afternoon	83	26348.53	1254.69
Electronic accessories	Evening	52	17821.05	848.62
Electronic accessories	Morning	35	10167.95	484.19
Fashion accessories	Afternoon	96	30925.92	1472.66
Fashion accessories	Evening	54	12908.83	614.71
Fashion accessories	Morning	28	10471.15	498.63
Food and beverages	Afternoon	80	25724.14	1224.96
Food and beverages	Evening	63	19160.16	912.39
Food and beverages	Morning	31	11260.55	536.22
Health and beauty	Afternoon	83	27796.24	1323.63
Health and beauty	Evening	42	13073.82	622.56
Health and beauty	Morning	27	8323.68	396.37
Home and lifestyle	Afternoon	87	29651.76	1411.99
Home and lifestyle	Evening	34	11822.1	562.96
Home and lifestyle	Morning	39	12388.06	589.91
Sports and travel	Afternoon	99	32021.97	1524.86
Sports and travel	Evening	36	13913.42	662.54
Sports and travel	Morning	31	9187.44	437.5

CUSTOMER ANALYSIS

- There are 501 females and 499 males. Females are generating more sales i.e. 167882.92500000002.

	Gender	predominant_gender	Total_Revenue
▶	Female	501	167882.92500000002
	Male	499	155083.82400000014

- There are 501 customers are 'members' and 499 are 'normal'. Members are generating more sales i.e. 164223.44400000002

	Customer Type	Count_customer_type	Total_Revenue
▶	Member	501	164223.44400000002
	Normal	499	158743.30500000005

- There are more female customers who are members and generating more sales than Males.

	Gender	customer type	count(*)	Sum(Total)
▶	Female	Member	261	88146.943499999996
	Male	Normal	259	79007.3235
	Female	Normal	240	79735.981499999998
	Male	Member	240	76076.500499999995

CUSTOMER ANALYSIS

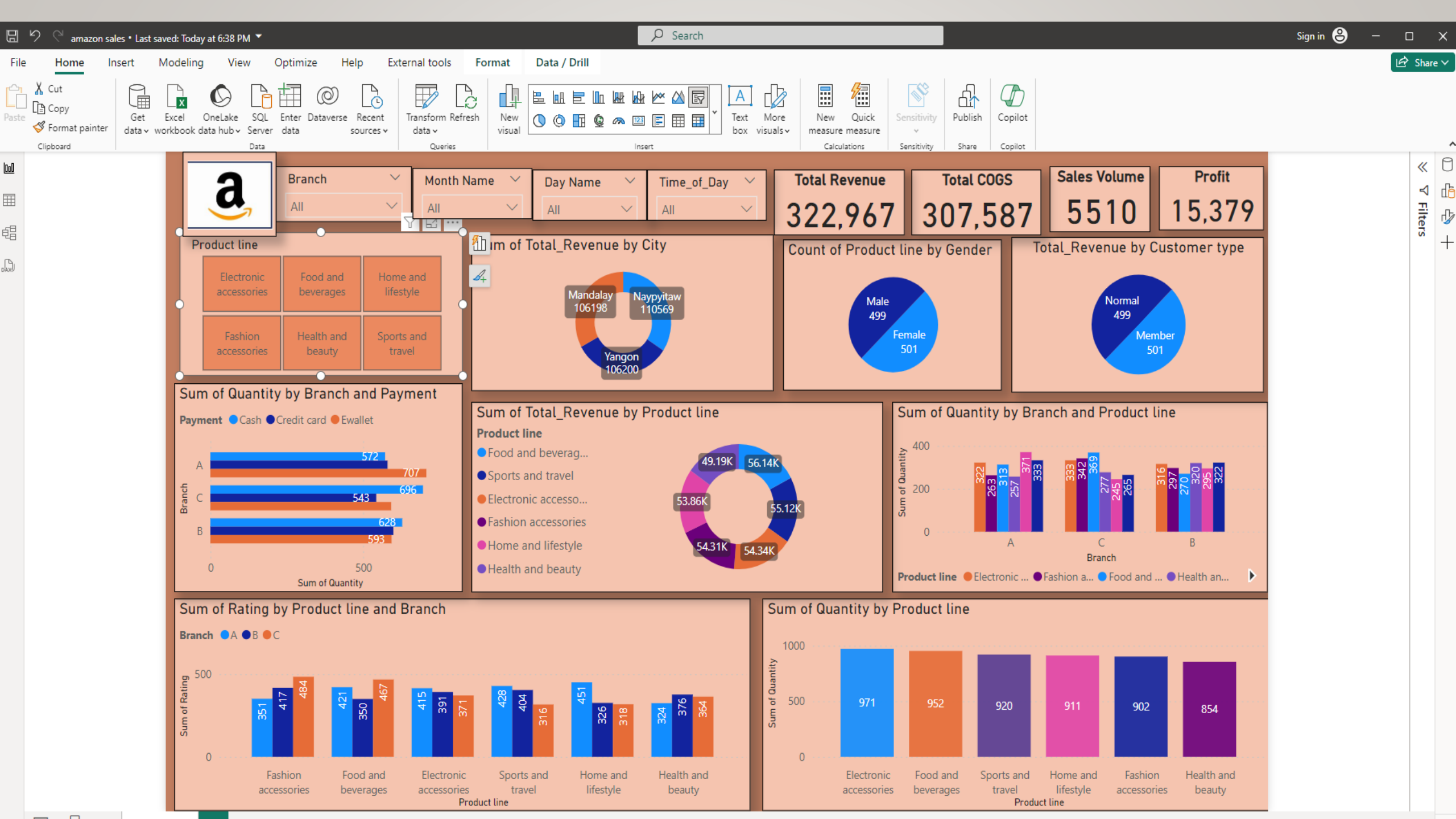
- The Females are spending more on “Food And Beverages” followed by “Fashion And Accessories”, “Home and LifeStyle” and “Sports and Travel”.
- The males are spending more on “Health and Beauty”.
- The females are least spending on “Health and Beauty”.

	Gender	Product Line	Total_Revenue
►	Female	Food and beverages	33170.917499999996
	Male	Health and beauty	30632.752499999995
	Female	Fashion accessories	30437.400000000001
	Female	Home and lifestyle	30036.877500000006
	Female	Sports and travel	28574.720999999999
	Male	Electronic accessories	27235.509
	Female	Electronic accessories	27102.0225
	Male	Sports and travel	26548.1055
	Male	Fashion accessories	23868.495
	Male	Home and lifestyle	23825.035499999998
	Male	Food and beverages	22973.926499999999
	Female	Health and beauty	18560.986499999995

CUSTOMER ANALYSIS WRT BRANCHES

- Except Naypyitaw, in all the cities members are making more sales than normal customers.

	City	Branch	Gender	customer type	Purchase_Frequency	Total_sales	Top_purchaser
▶	Naypyitaw	C	Female	Member	96	34653	1
	Naypyitaw	C	Female	Normal	82	27032	2
	Mandalay	B	Female	Member	85	26850	3
	Yangon	A	Female	Member	80	26643	4
	Yangon	A	Female	Normal	81	26626	5
	Mandalay	B	Female	Normal	77	26078	6
	Yangon	A	Male	Member	87	26994	1
	Mandalay	B	Male	Member	80	26854	2
	Naypyitaw	C	Male	Normal	77	26655	3
	Mandalay	B	Male	Normal	90	26415	4
	Yangon	A	Male	Normal	92	25937	5
	Naypyitaw	C	Male	Member	73	22228	6



RECOMMENDATIONS:

- To optimize sales performance, focus on promoting Fashion Accessories and Electronic Accessories through targeted marketing campaigns.
- Introduce a "Home and Lifestyle Essentials" bundle offering curated products at a discounted price to encourage cross-selling and boost sales.
- Launch a "Beauty Bonanza" campaign offering exclusive discounts on Health and Beauty products to attract more customers and increase sales in this category.
- Additionally, explore cost optimization strategies in high-selling categories like Food and Beverages to increase profitability. For example: Negotiate bulk purchase deals with suppliers for high-selling products and reduce procurement costs and improve profitability.
- Implement customer engagement initiatives such as loyalty programs to drive repeat purchases and enhance overall satisfaction.
- Tailor marketing tactics to specific branch dynamics and leverage data analytics for informed decision-making.

Thank You