

CUSTOMER BEHAVIOR ANALYSIS

INSIGHTS & STRATEGIES FOR
OPTIMIZED SALES AND ENGAGEMENT

BY MICROSOFT POWER BI



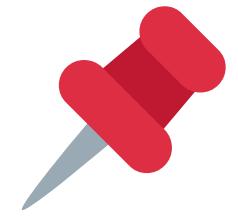
PRESENTED BY: NOUR WALIED IBRAHIM



CUSTOMER BEHAVIOR

This project analyzes customer behavior based on purchasing patterns, gender preferences, payment methods, shipping choices, and seasonal trends. The goal is to identify key insights and provide strategic recommendations to optimize sales, enhance customer engagement, and improve satisfaction.





PROJECT OVERVIEW

The analysis focuses on:

- Purchase Trends (Item sizes, frequency, first & last purchases)
- Payment Preferences (Most used payment methods)
- Shipping Behavior (Preferred delivery options)
- Demographics (Gender-based buying patterns and age influences)
- Seasonal Buying Trends (Peak seasons for different products)
- Customer Satisfaction (Review ratings and areas for improvement)

By understanding these factors, the business can tailor marketing strategies, improve inventory management, and increase overall profitability.

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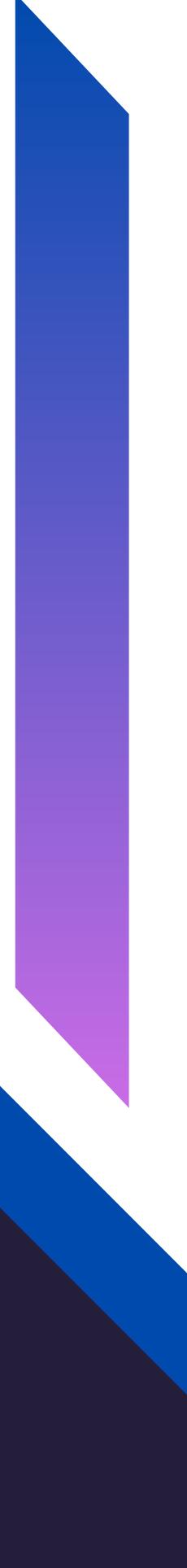
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DATA SET



The data cleaning process in this dataset involves Power Query (M Language) for preprocessing and DAX for structuring and calculations.

- M Language cleans raw data, removes duplicates, handles missing values, and standardizes data.
- DAX creates meaningful categories, fills missing values, corrects inconsistencies, and calculates necessary measures.

This ensures accurate insights and better decision-making in Power BI

FACT TABLE

Customer ID	Purchase Amount (USD)	Season	Previous Purchases	Item ID	Frequency of Purchases
1687	75	Fall	25	GlovesAccessoriesLRed	Annually
1758	94	Fall	48	DressClothingLYellow	Annually
1772	82	Fall	9	ShirtClothingXLTurquoise	Annually
1807	67	Fall	24	HandbagAccessoriesMGreen	Annually
1878	62	Fall	3	GlovesAccessoriesLPink	Annually
1922	36	Fall	13	ShirtClothingMGreen	Annually
1968	81	Fall	4	DressClothingLYellow	Annually
2007	97	Fall	2	ScarfAccessoriesSPink	Annually
2050	24	Fall	15	BootsFootwearLBlue	Annually
2078	34	Fall	26	ScarfAccessoriesLOrange	Annually
2154	94	Fall	31	ShirtClothingMViolet	Annually
2160	58	Fall	34	ShirtClothingMPeach	Annually
2208	38	Fall	11	HandbagAccessoriesMGray	Annually
2221	62	Fall	47	BeltAccessoriesXLBeige	Annually
2222	88	Fall	34	ShortsClothingXLWhite	Annually
2258	32	Fall	6	SkirtClothingLOlive	Annually
2270	38	Fall	27	SkirtClothingMYellow	Annually
2283	97	Fall	8	SneakersFootwearSRed	Annually
2285	63	Fall	20	BlouseClothingXLBlack	Annually
2308	96	Fall	30	SkirtClothingLGreen	Annually
2338	76	Fall	5	BootsFootwearSViolet	Annually
2378	94	Fall	22	BlouseClothingLMagenta	Annually
2389	68	Fall	10	DressClothingMPeach	Annually
2470	92	Fall	27	SandalsFootwearMYellow	Annually
2519	51	Fall	31	BootsFootwearXLBlue	Annually
2574	86	Fall	0	ShirtClothingMLBlue	Annually

Fact (3,900 rows)

CUSTOMER DIMENSION



Customer ID	Age	Gender	Location	Review Rating	Shipping Type	Payment Method	Frequency of Purchases
34	54	Male	Colorado	3.3	Store Pickup	Cash	Quarterly
47	57	Male	California	2.9	Store Pickup	Cash	Quarterly
49	42	Male	Nevada	2.7	Store Pickup	Cash	Monthly
98	21	Male	Virginia	4.8	Store Pickup	Cash	Annually
115	70	Male	Massachusetts	3.7	Store Pickup	Cash	Weekly
127	43	Male	Mississippi	3.9	Store Pickup	Cash	Every 3 Months
135	43	Male	Texas	4.9	Store Pickup	Cash	Monthly
166	42	Male	Kentucky	2.8	Store Pickup	Cash	Monthly
167	46	Male	Delaware	4	Store Pickup	Cash	Monthly
205	24	Male	Arizona	4	Store Pickup	Cash	Bi-Weekly
210	55	Male	Minnesota	3.2	Store Pickup	Cash	Every 3 Months
265	36	Male	Colorado	3.9	Store Pickup	Cash	Annually
269	68	Male	Georgia	2.6	Store Pickup	Cash	Monthly
432	43	Male	New Hampshire	3.4	Store Pickup	Cash	Fortnightly
494	28	Male	Nevada	4.7	Store Pickup	Cash	Bi-Weekly
523	65	Male	Minnesota	2.5	Store Pickup	Cash	Quarterly
557	40	Male	Montana	5	Store Pickup	Cash	Fortnightly
602	32	Male	West Virginia	4.7	Store Pickup	Cash	Fortnightly
612	43	Male	California	4.7	Store Pickup	Cash	Monthly
632	55	Male	Washington	4.1	Store Pickup	Cash	Fortnightly
703	18	Male	Montana	3.4	Store Pickup	Cash	Weekly
709	37	Male	Kentucky	3.4	Store Pickup	Cash	Fortnightly
723	27	Male	Wyoming	4.3	Store Pickup	Cash	Bi-Weekly
766	54	Male	Alaska	3	Store Pickup	Cash	Quarterly
825	61	Male	Georgia	3	Store Pickup	Cash	Quarterly
827	22	Male	Michigan	2.0	Store Pickup	Cash	Bi-Weekly

Table: CustomerDimension (3,900 rows)

ITEM DIMENSION



Item Purchased	Category	Size	Color	Item ID
Shirt	Clothing	M	Gray	ShirtClothingMGray
Shirt	Clothing	M	Orange	ShirtClothingMOrange
Shirt	Clothing	M	Maroon	ShirtClothingMMaroon
Shirt	Clothing	M	Silver	ShirtClothingMSilver
Shirt	Clothing	M	Green	ShirtClothingMGreen
Shirt	Clothing	M	Olive	ShirtClothingMOlive
Shirt	Clothing	M	Maroon	ShirtClothingMMaroon
Shirt	Clothing	M	Violet	ShirtClothingMViolet
Shirt	Clothing	M	Brown	ShirtClothingMBrown
Shirt	Clothing	M	Silver	ShirtClothingMSilver
Shirt	Clothing	M	Black	ShirtClothingMBlack
Shirt	Clothing	M	Teal	ShirtClothingMTeal
Shirt	Clothing	M	Gold	ShirtClothingMGold
Shirt	Clothing	M	White	ShirtClothingMWhite
Shirt	Clothing	M	Orange	ShirtClothingMOrange
Shirt	Clothing	M	Indigo	ShirtClothingMIndigo
Shirt	Clothing	M	White	ShirtClothingMWhite
Shirt	Clothing	M	Peach	ShirtClothingMPeach
Shirt	Clothing	M	Maroon	ShirtClothingMMaroon
Shirt	Clothing	M	Pink	ShirtClothingMPink
Shirt	Clothing	M	Peach	ShirtClothingMPeach
Shirt	Clothing	M	Violet	ShirtClothingMViolet
Shirt	Clothing	M	Gold	ShirtClothingMGold
Shirt	Clothing	M	Gray	ShirtClothingMGray
Shirt	Clothing	M	Silver	ShirtClothingMSilver

Table: Item Dimension (3,900 rows)



ITEM

- DASHBOARD
- ANALYSIS
- RECOMMENDATIONS



3.75

Average of Review Rating

Backpack

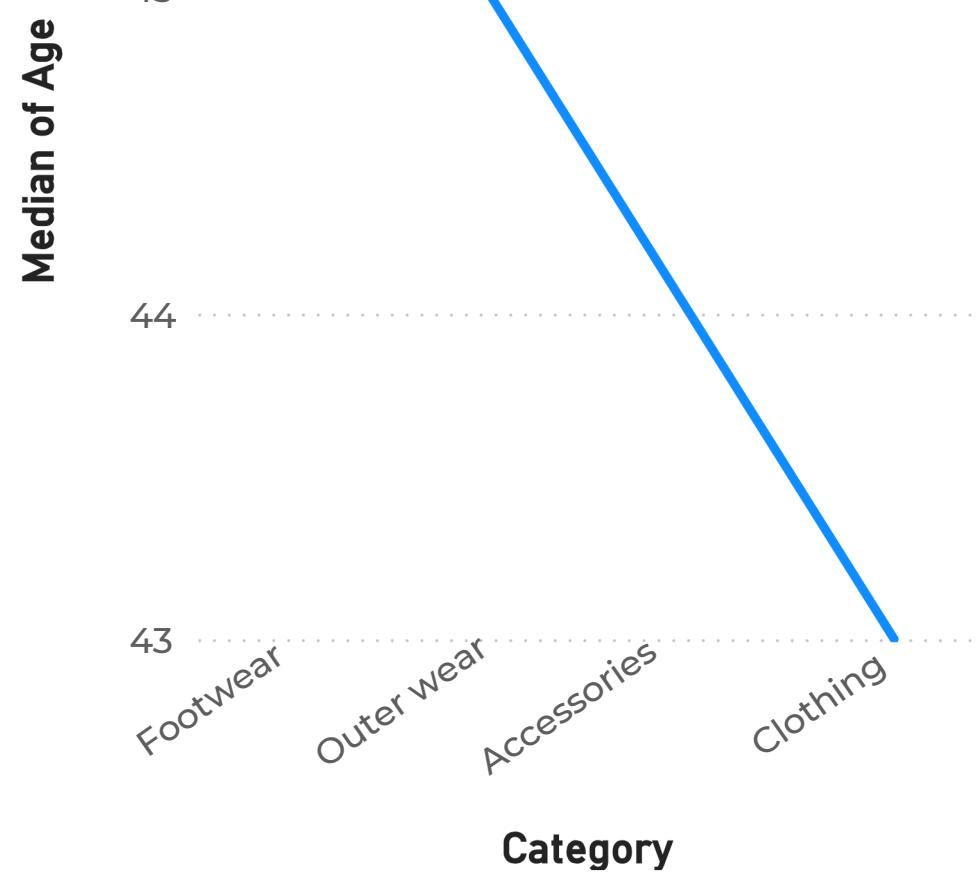
First Item Purchased

T-shirt

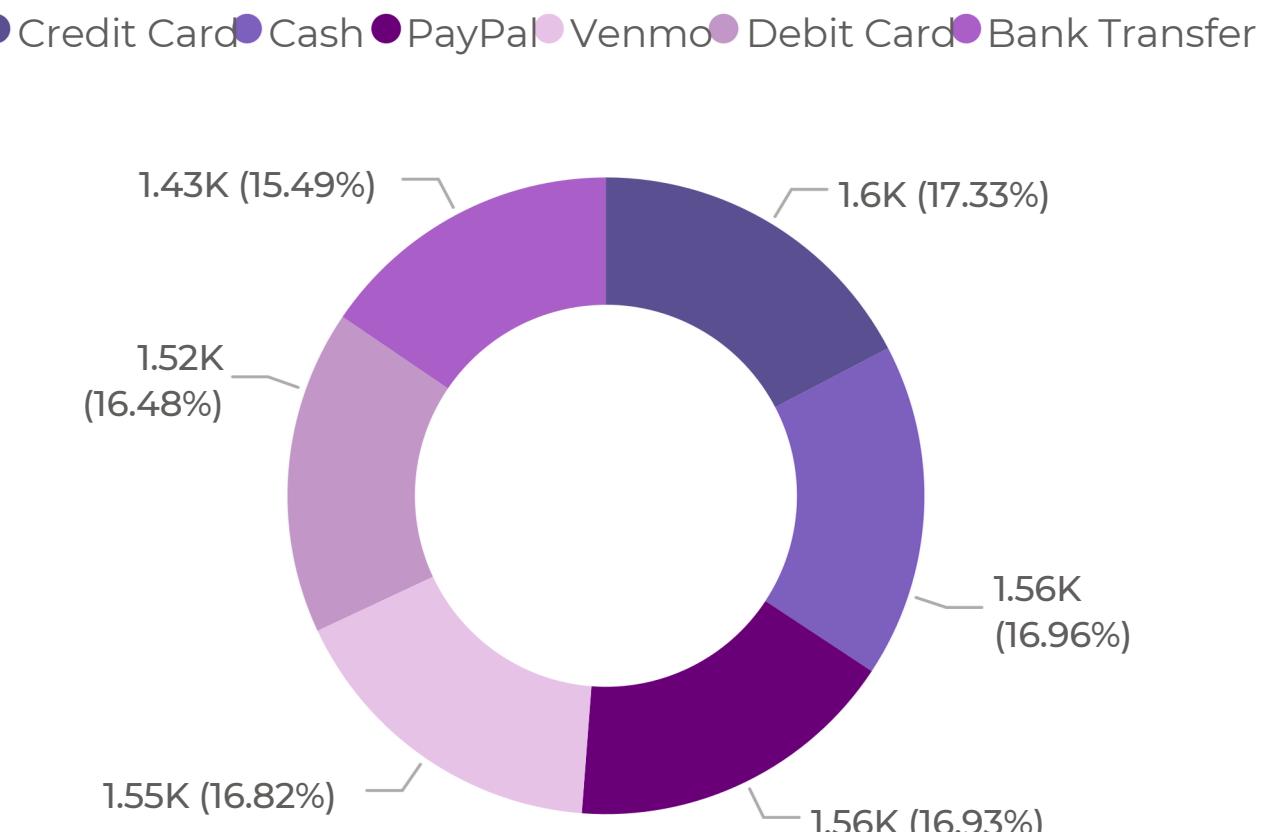
Last Item Purchased

Median of Age by Category

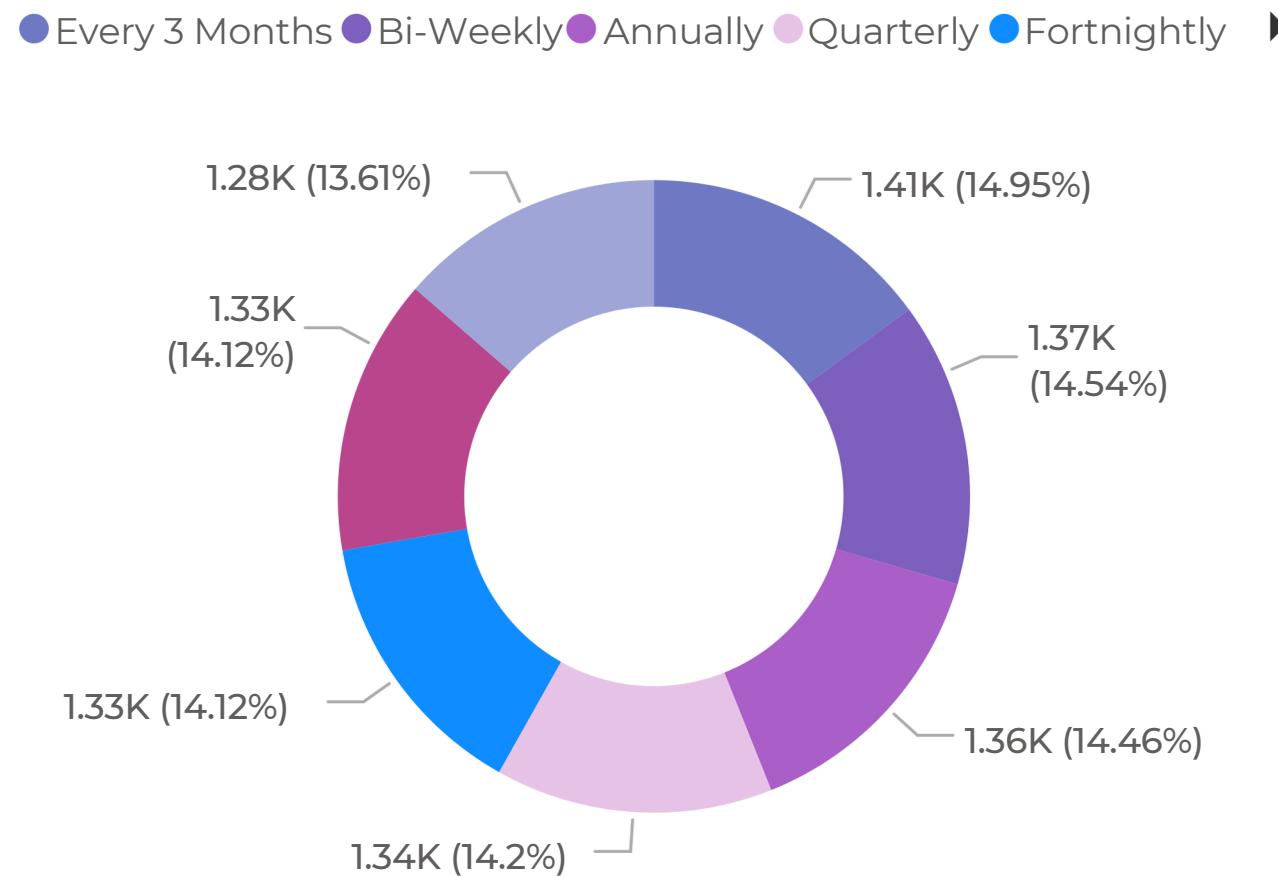
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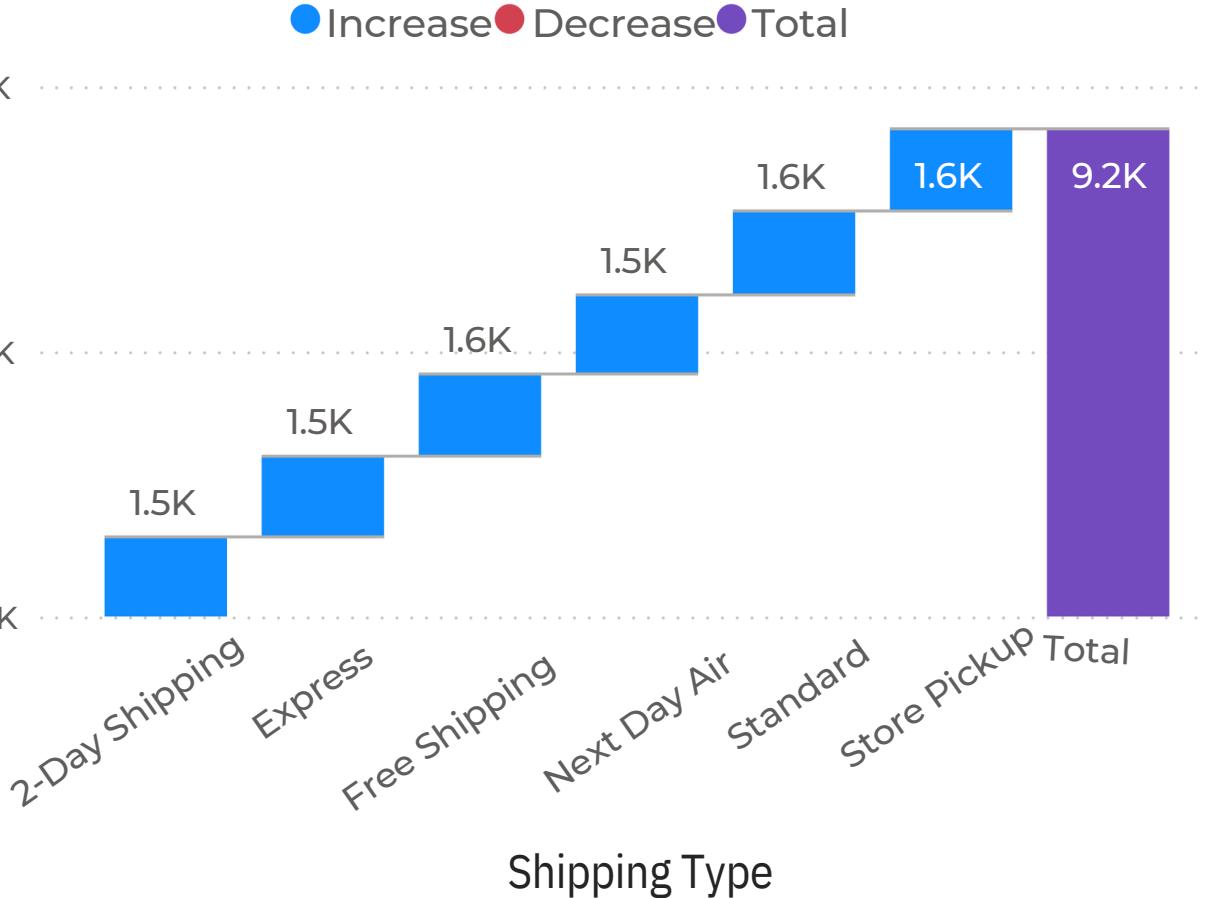
Count of Item Purchased by Payment Method



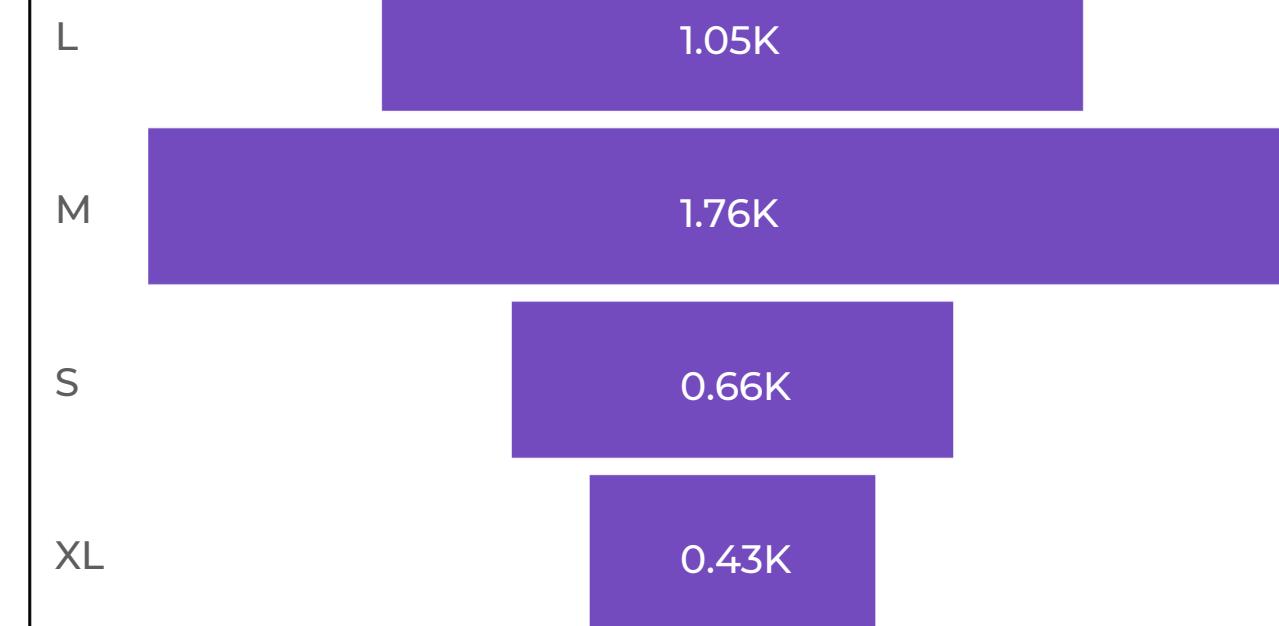
Count of Item Purchased by Frequency of Purchases



Count of Category by Shipping Type



Count of Item Purchased by Size



PURCHASE PATTERNS

Findings:

- Medium-sized items are the most purchased (1.76K), followed by Large (1.05K), Small (0.66K), and XL (0.43K).
- Purchases occur most frequently every 3 months (1.41K).
- Backpacks are commonly the first purchased item, while T-shirts are the last purchased item.

Reasons:

- Medium-sized items likely offer a balance of comfort and fit, making them a default choice for most buyers.
- The 3-month purchase cycle suggests customers buy seasonally or replace items at regular intervals.
- Backpacks might be a practical initial purchase, while T-shirts could be an easy last-minute or repeat purchase



PURCHASE PATTERNS RECOMMENDATIONS:

- Stock Optimization: Maintain higher inventory levels for Medium and Large sizes. Offer discounts on Small and XL sizes to move stock.
- Subscription/Membership Models: Encourage more frequent purchases by offering incentives for monthly or bi-weekly buying patterns.
- Bundle Deals: Promote backpack and T-shirt combo offers to increase upselling opportunities.

PAYMENT METHODS

Findings:

- Credit Cards (1.6K) are the most used payment method, followed by Cash (1.56K), PayPal (1.55K), and Venmo (1.52K).
- Debit Card (1.43K) and Bank Transfer (1.56K) are slightly less popular.

Reasons:

- Credit cards offer convenience and rewards, making them a preferred option.
- Cash usage suggests customers may shop in physical stores or avoid digital payments.
- The popularity of digital wallets like PayPal and Venmo indicates a shift towards online transactions.

PAYMENT METHODS RECOMMENDATIONS

- Promote Digital Payments: Offer extra discounts or cashback for online payment methods to encourage adoption.
- Installment Plans: Provide interest-free installment options for credit/debit card users to boost high-ticket purchases.
- Enhanced Security & Payment Flexibility: Optimize checkout processes with multiple payment gateways and ensure security to increase trust

SHIPPING PREFERENCES

Findings:

- Standard shipping (9.2K) is the most preferred option.
- Free shipping, express delivery, and store pickup each have around 1.5K users.

Reasons:

- Customers prefer free or affordable shipping options over speed.
- Express shipping might not justify the additional cost unless urgent.
- Store pickup remains relevant but is not a top choice, likely due to convenience factors.

SHIPPING PREFERENCES RECOMMENDATIONS

- Free Shipping Incentives: Offer free shipping on orders above a specific amount to increase cart value.
- Faster Shipping Options: Introduce loyalty programs with faster delivery perks for frequent customers.
- Enhance Store Pickup Experience: Improve in-store pickup efficiency and offer discounts for local customers choosing this method.

CUSTOMER DEMOGRAPHICS

Findings:

- Males (3.5K purchases) buy more than females (2.4K).
- Clothing is the most popular category.
- Customers purchasing clothing have a median age of 46.

Reasons:

- Males may shop in bulk or purchase more expensive items, increasing overall order counts.
- Clothing has universal demand, while niche categories like accessories or outerwear cater to specific needs.
- The age group suggests mid-aged consumers have higher spending power or brand loyalty.

CUSTOMER DEMOGRAPHICS RECOMMENDATIONS

- Targeted Marketing: Design promotional campaigns for men with bulk-buying discounts and loyalty rewards.
- Expand Female Customer Base: Introduce styles, influencer collaborations, and discounts to attract more female shoppers.
- Segmented Campaigns: Use age-based targeting for ads (e.g., premium clothing for older demographics, trend-driven items for younger audiences).

SEASONAL AND PRODUCT TRENDS

Findings:

- Winter: Coats, sweaters, scarves sell well.
- Summer: Sunglasses, skirts, and sandals dominate.
- Fall & Spring: Shirts, jackets, and belts show steady demand.

Reasons:

- Seasonal weather dictates clothing and accessory preferences.
- Customers tend to buy ahead of season changes (e.g., winter coats before peak winter months).
- Some items (e.g., shirts) remain relevant year-round.

SEASONAL AND PRODUCT TRENDS RECOMMENDATIONS

- Seasonal Promotions: Offer early-bird discounts before each season to capture demand.
- Data-Driven Stocking: Optimize inventory to match expected seasonal trends.
- Personalized Suggestions: Use AI-driven recommendations to suggest seasonal products based on past purchases.

CUSTOMER REVIEWS & SATISFACTION

Findings:

The average customer review rating is 3.75, indicating moderate satisfaction.

Reasons:

- Possible issues with product quality, delivery speed, or customer service.
- Some customers may have high expectations that aren't met.
- Lack of proactive review management or follow-ups.

CUSTOMER REVIEWS & SATISFACTION RECOMMENDATIONS

- Improve Product Quality: Address common complaints by gathering feedback on quality issues.
- Enhance Post-Purchase Engagement: Send automated follow-ups asking for reviews and offering assistance if needed.
- Loyalty Rewards for Positive Reviews: Provide small incentives (discounts, points) for customers leaving detailed reviews.



CUSTOMER GENDER

- DASHBOARD**
- ANALYSIS**
- RECOMMENDATIONS**



Male

Last Gender

T-shirt

Last Item Purchased

Winter

Last Season

Count of Item Purchased by Gender

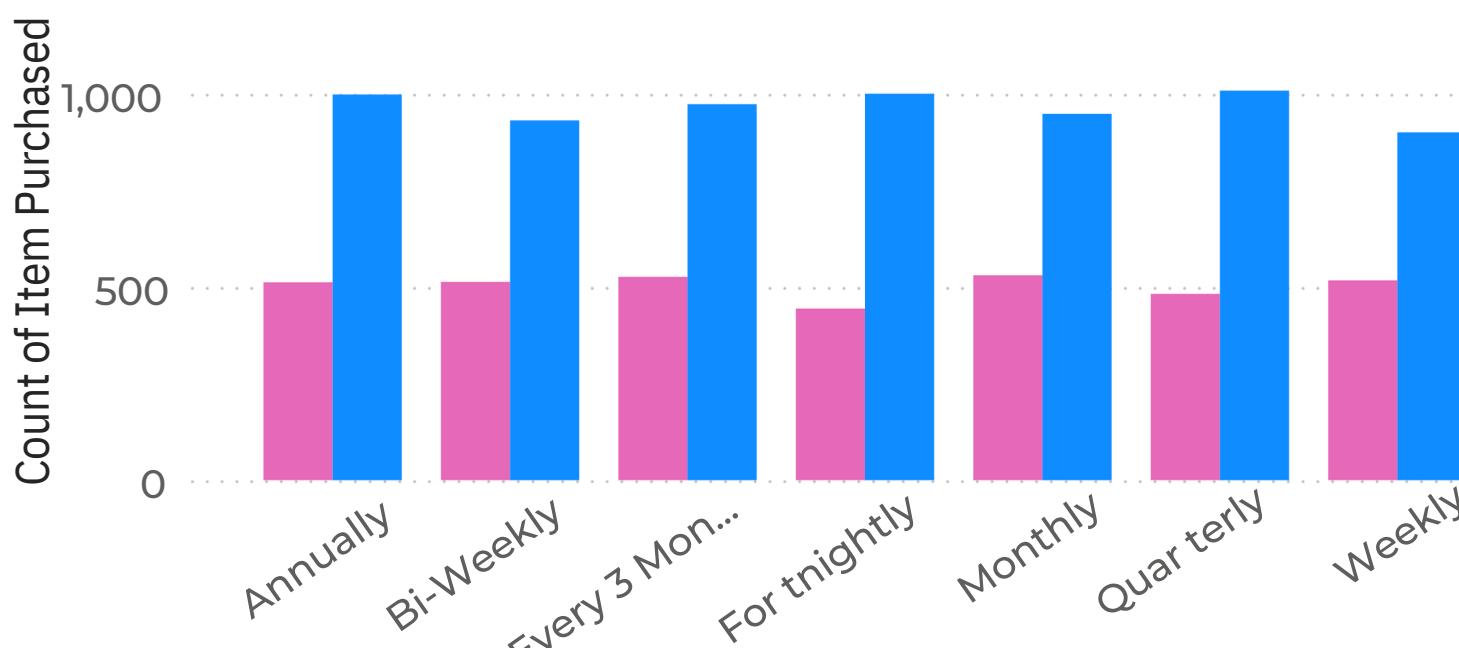
3.5K

2.4K

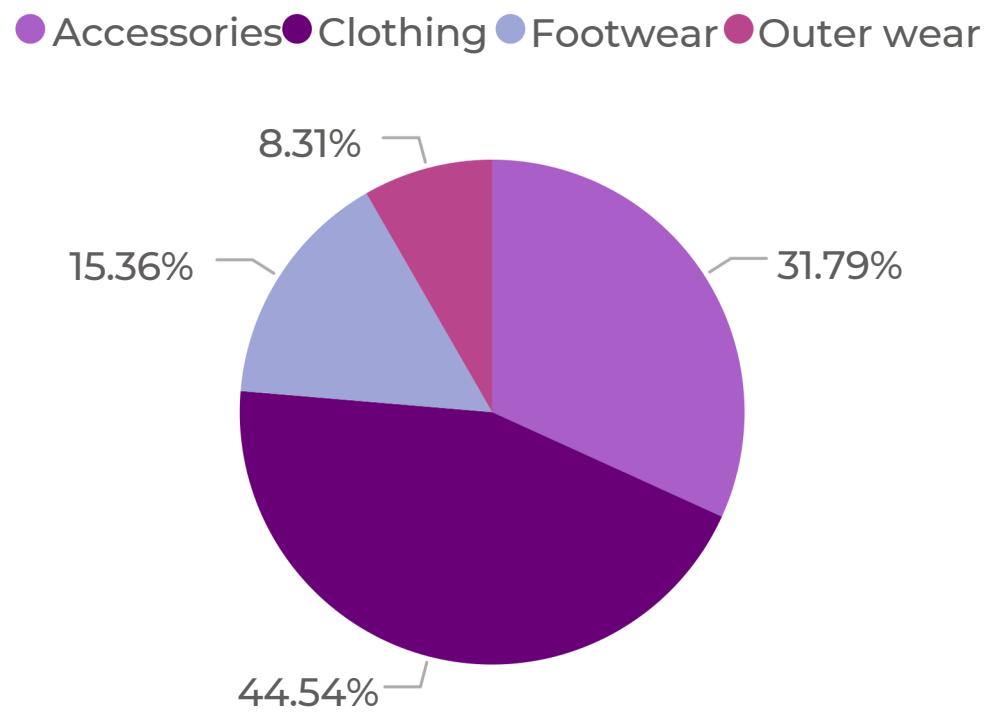
Male

Female

Count of Item Purchased by Frequency of Purchases and Gender

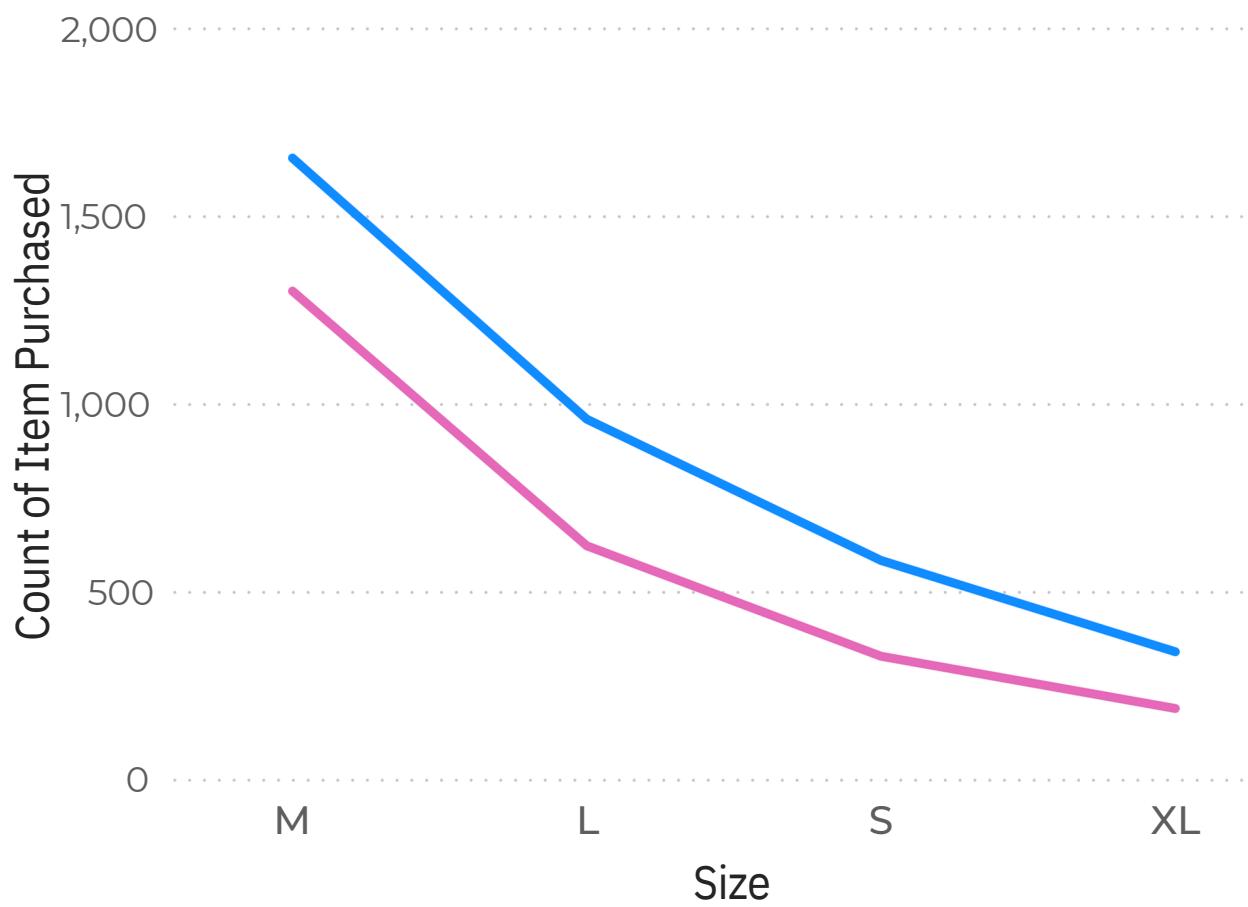


Color and Gender by Category



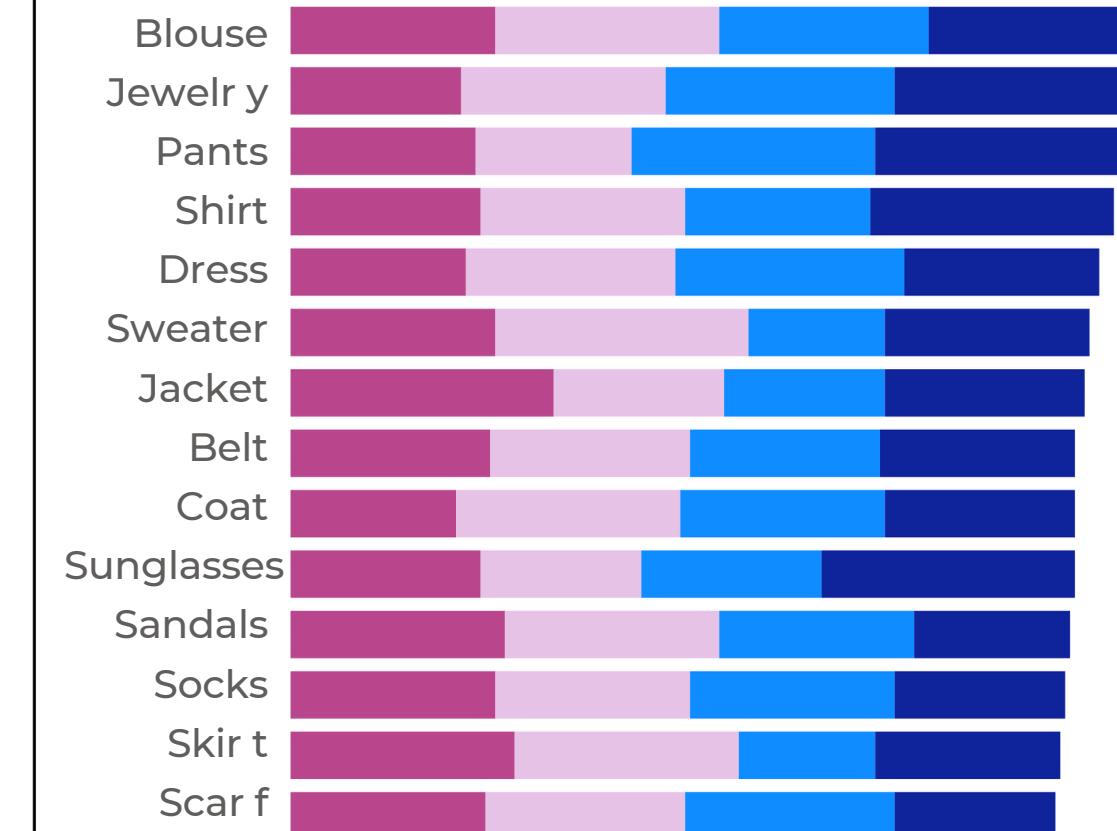
Count of Item Purchased by Size and Gender

Female Male



Frequency of Purchases by Item Purchased and Season

Fall Spring Summer Winter



GENDER-BASED PURCHASING TRENDS

Findings:

- Male customers (3.5K purchases) buy more than female customers (2.4K purchases).
- Clothing (44.54%) is the most purchased category, followed by Accessories (31.79%), Footwear (15.36%), and Outerwear (8.31%).
- Medium and Large sizes are the most commonly purchased by both genders.

Reasons:

- Males might purchase in bulk or prioritize necessity-based shopping.
- Clothing dominates because it is a frequently replaced essential item.
- Footwear and Outerwear have lower purchase volumes due to longer product lifespans.

GENDER-BASED PURCHASING TRENDS RECOMMENDATIONS

- **Personalized Marketing:** Create gender-targeted promotions (e.g., discounts on men's bulk purchases and trend-based collections for women).
- **Female Customer Growth:** Introduce women-focused product lines, influencer collaborations, and exclusive discounts to increase female engagement.
- **Expand Footwear & Outerwear Sales:** Offer limited-time deals or bundle these categories with clothing to increase sales.

PURCHASE FREQUENCY BY GENDER

Findings:

- Most purchases occur every 3 months, with a nearly even split between male and female customers.
- Other purchase intervals (weekly, monthly, quarterly, etc.) are relatively balanced.

Reasons:

- Customers likely buy seasonally or replace essential items periodically.
- The steady distribution suggests different shopping habits (bulk buyers vs. frequent buyers).

PURCHASE FREQUENCY BY GENDER RECOMMENDATIONS

- **Loyalty Incentives:** Offer discounts or cashback for frequent buyers to encourage more regular purchases.
- **Subscription Model:** Introduce monthly or quarterly subscription boxes for clothing and accessories.
- **Automated Reminders:** Send personalized reminders or promotions based on past purchase cycles (e.g., "Time to refresh your wardrobe!").

SEASONAL PURCHASE TRENDS

Findings:

- Winter: Customers purchase more coats, sweaters, scarves.
- Summer: Higher demand for sunglasses, sandals, skirts.
- Fall & Spring: Balanced sales of shirts, jackets, belts, and pants.

Reasons:

- Customers shop based on weather changes and seasonal trends.
- Certain categories (e.g., jackets, coats) have high seasonal demand but low frequency due to durability.

SEASONAL PURCHASE TRENDS RECOMMENDATIONS

- **Seasonal Promotions:** Offer early-bird discounts before each season (e.g., pre-winter sales on coats).
- **Targeted Advertising:** Run season-specific digital ads and email campaigns to drive sales.
- **Limited-Time Collections:** Introduce seasonal product drops to create urgency and exclusivity.

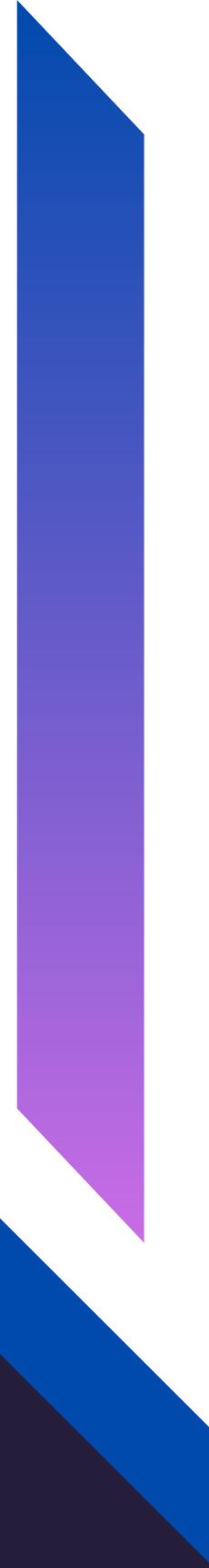
LAST PURCHASED ITEMS & SEASONAL CORRELATION

Findings:

- T-shirts are the most commonly last purchased item.
- Winter purchases are the most recent for many customers.

Reasons:

- T-shirts are likely repeat purchases, whereas seasonal items are once-a-season buys.
- Customers may be buying in preparation for cold weather.



LAST PURCHASED ITEMS & SEASONAL CORRELATION RECOMMENDATIONS

- **Upsell After T-shirt Purchases:** Suggest matching accessories or discounted add-ons at checkout.
- **Winter Prep Promotions:** Offer pre-season discounts on jackets, sweaters, and cold-weather gear.
- **AI-Driven Recommendations:** Implement a "Complete Your Outfit" feature suggesting complementary products based on past purchases.



SUMMARY OF KEY FINDINGS

PURCHASE TRENDS

- Medium-sized items are the most purchased.
- Purchases are most frequent every 3 months (suggesting seasonal or replacement shopping).
- Customers commonly buy backpacks first and T-shirts last.

PAYMENT PREFERENCES

- Credit cards are the most used payment method, followed by cash and digital wallets (PayPal, Venmo).
- Debit cards and bank transfers are less preferred.

SHIPPING BEHAVIOR

- Standard shipping (9.2K orders) is the most preferred due to cost savings.
- Other methods like free shipping, express, and store pickup have lower adoption.



SUMMARY OF KEY FINDINGS

CUSTOMER DEMOGRAPHICS

- Male customers purchase more than females (3.5K vs. 2.4K).
- Clothing is the most popular category across all demographics.
- Customers purchasing clothing have a median age of 46 (suggesting brand loyalty or higher spending power).

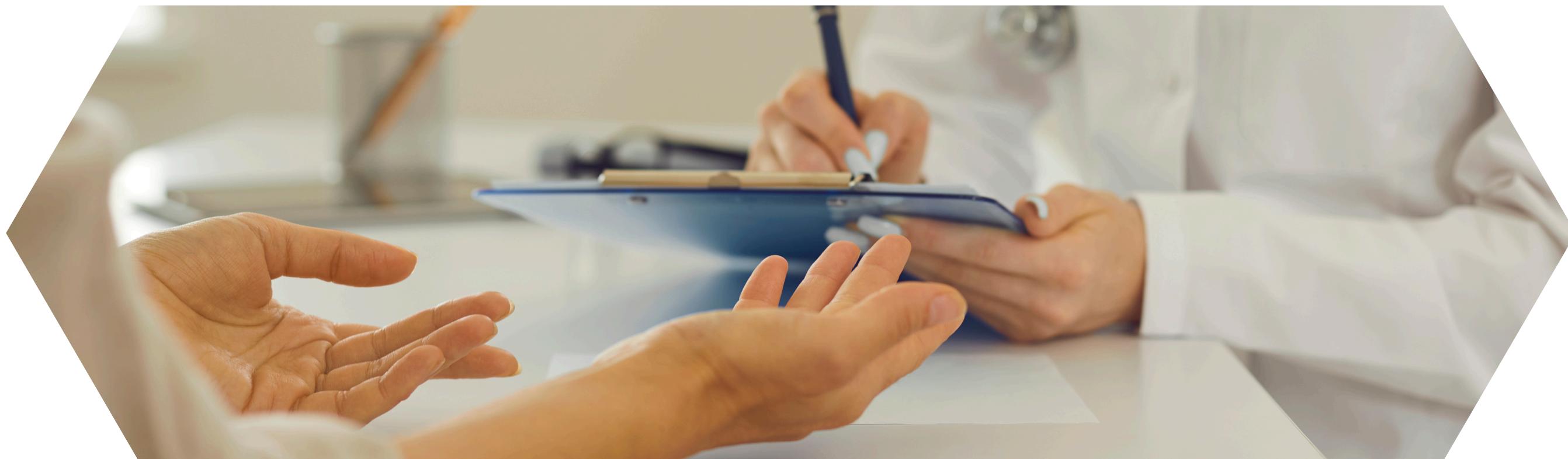
SEASONAL BUYING TRENDS

- Winter purchases dominate, with high sales of coats, sweaters, and scarves.
- Summer sales increase for sunglasses, skirts, and sandals.
- Fall & Spring see steady demand for jackets, shirts, and belts.

CUSTOMER SATISFACTION

- The average customer review rating is 3.75 (indicating moderate satisfaction).
- Possible concerns around product quality, delivery, or customer service.

CONCLUSION & RECOMMENDATIONS



CONCLUSION & RECOMMENDATIONS

ENHANCE SHIPPING & PAYMENT FLEXIBILITY

- Offer free shipping incentives for orders above a certain value to increase cart size.
- Promote faster shipping options as a loyalty perk.
- Optimize checkout experience with faster digital payment options (Apple Pay, Google Pay).

BOOST CUSTOMER SATISFACTION

- Address product quality & service issues through detailed customer feedback analysis.
- Incentivize reviews with discounts or loyalty points for high engagement.
- Implement AI-driven product recommendations to suggest personalized items.

CONCLUSION & RECOMMENDATIONS

OPTIMIZE INVENTORY & PRICING

- Maintain higher stock levels for Medium & Large sizes, while offering discounts on Small & XL sizes to clear slow-moving stock.
- Use seasonal forecasting to adjust inventory based on demand trends.

IMPROVE CUSTOMER ENGAGEMENT & LOYALTY

- Introduce subscription models for frequent buyers (monthly/quarterly clothing refresh).
- Use targeted email campaigns to remind customers about seasonal products & offers.
- Implement a “Buy More, Save More” strategy to encourage bulk purchases.



FINAL THOUGHT

By leveraging these insights and recommendations, the business can:

- Increase revenue through optimized sales & promotions.
- Improve customer retention with loyalty programs.
- Enhance customer experience by addressing key concerns.





THANK YOU



[Nour Walied Ibrahim](#)



[GitHub Repo](#)