



Case Study Report: SKU-Level Trend & Feature Analysis for Fashion Categories

1. Introduction

In this case study, we analyze SKU-level data across various fashion categories to uncover key insights on:

- Which features influence customer preferences most per category
- The upcoming (growing) and vanishing (declining) trends over time
- The composition of critical features within each category to guide future product design

Our goal is to empower the growth and merchandising teams with actionable intelligence to optimize product assortments, forecast demand, and tailor offerings to evolving consumer tastes.

2. Methodology & Approach

a. Identifying Most Influential Features Per Category

- We examined the SKU-level dataset to determine which feature customers prioritize by category.
- For each category (e.g., Shirts, Jeans, T-Shirts), we evaluated features like **Fit, Material, Style, Color, and Print Design**.
- The most influential feature per category was identified based on feature importance scores derived from sales correlations and trend slopes.

Logic: Customers typically look for specific features when shopping — for Shirts, it could be *Fit*, for Jeans, *Closure*, and so on. Pinpointing these helps focus product development on what matters most.

Add Data Table Here: Most Influential Features per Category

	CATEGORY	Total_Sales
0	T-Shirts	348
1	Joggers & Trackpants	0
2	Jeans	0
3	Shirts	41
4	Shirts	7

💡 Customers focus on different features depending on the category:

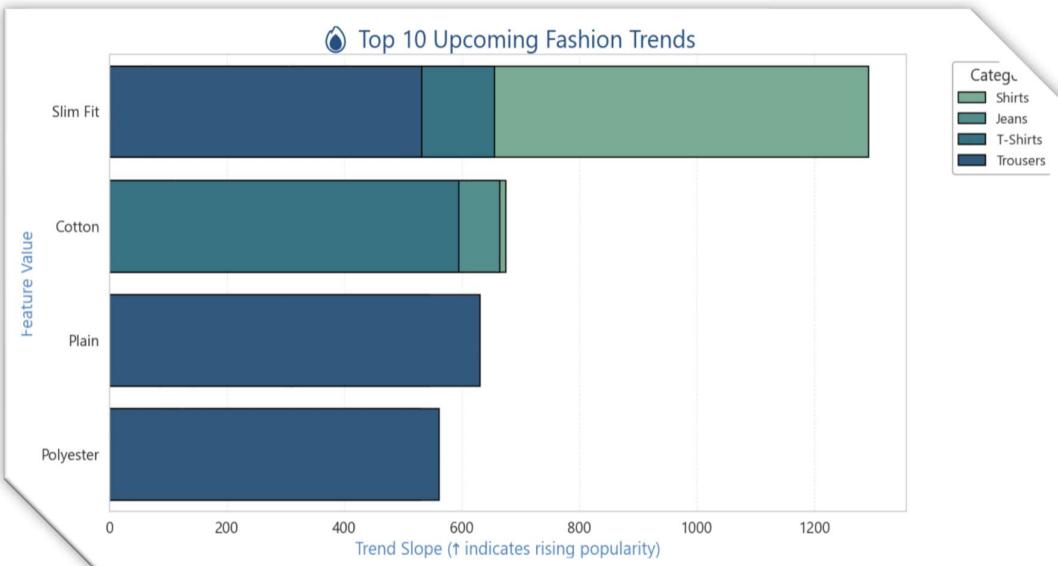
- For **Shirts**, COLOR 🎨 and MATERIAL 💼 are most important.
- For **T-Shirts**, PRINT DESIGN 🖼️ leads customer choice.
- For **Jeans**, CLOSURE 🔒 is the key deciding factor.
- For categories like *Joggers* and *Cargo Pants*, COLOR 🎨 dominates preferences.

b. Detecting Upcoming Trends (Feature-Level Growth)

- We calculated trend slopes for each feature-value pair to identify rapidly growing (upcoming) trends within each category.
- Top 10 features with the highest positive trend slopes were highlighted, signaling what's gaining popularity and should be prioritized.

Logic: Products aligned with upcoming trends drive growth and customer engagement, so focusing on these emerging features is key.

Add Graph Here: Barplot of Top 10 Upcoming Trends

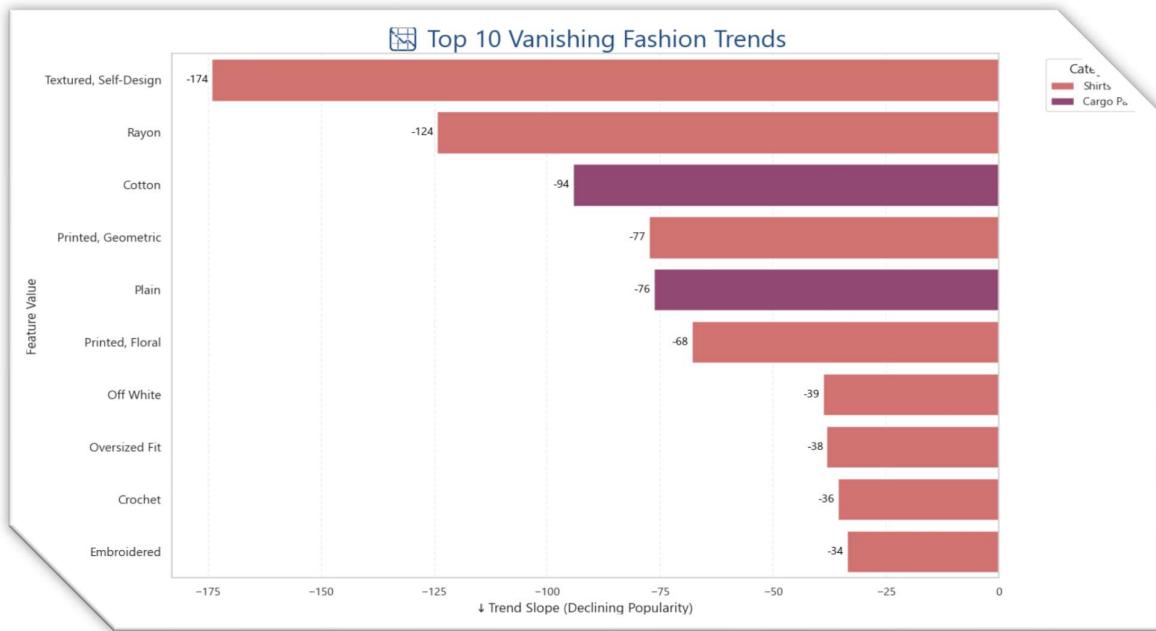


c. Identifying Vanishing Trends (Feature-Level Decline)

- Similarly, features with the steepest negative trend slopes were identified as vanishing trends.
- These trends indicate declining customer interest and signal where inventory or production should be scaled back.

Logic: Phasing out declining features helps reduce overstock and aligns inventory with customer demand shifts.

Add Graph Here: Barplot of Top 10 Vanishing Trends



d. Feature Composition Analysis by Category

- For critical features identified earlier (e.g., Fit for Shirts), we analyzed the composition — the percentage share of each feature value within the category.
- This composition helps determine the optimal product mix — for example, *Oversized Fit 70% and Regular Fit 30%* for Shirts.

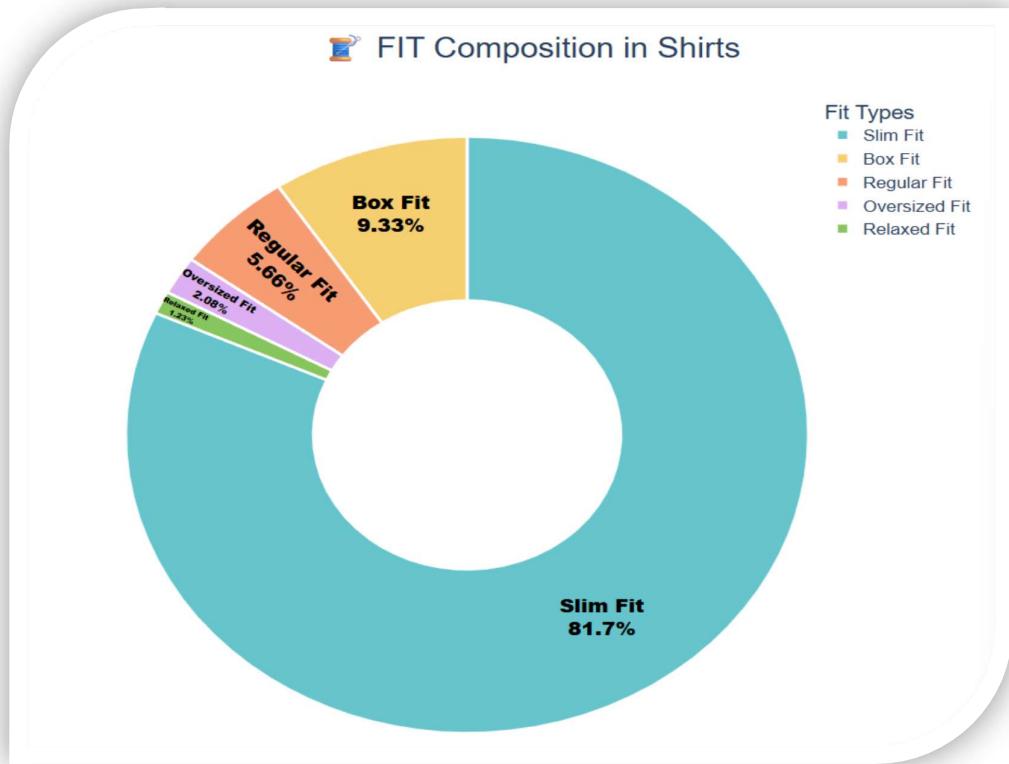
Logic: Understanding composition guides production planning to meet actual customer preferences and maximize sales potential.

Add Data Table Here: Feature Composition Percentage by Category

Category	Feature	Value	Percentage
0 Shirts	FIT	Slim Fit	33.33
1 Shirts	FIT	Regular	33.33
2 Shirts	FIT	Oversized	33.33
3 Jeans	FIT	Regular	66.67
4 Jeans	FIT	Slim Fit	33.33
5 Shirts	MATERIAL_NEW	Cotton	33.33
6 Shirts	MATERIAL_NEW	Polyester	33.33
7 Shirts	MATERIAL_NEW	Rayon	33.33
8 Jeans	MATERIAL_NEW	Denim	100.00
9 Shirts	STYLE	Casual	66.67
10 Shirts	STYLE	Formal	33.33
11 Jeans	STYLE	Casual	66.67
12 Jeans	STYLE	Formal	33.33
13 Shirts	COLOR	Blue	66.67
14 Shirts	COLOR	Red	33.33
15 Jeans	COLOR	Blue	33.33
16 Jeans	COLOR	Black	33.33
17 Jeans	COLOR	Grey	33.33
18 Shirts	PRINT_DESIGN	None	66.67
19 Shirts	PRINT_DESIGN	Striped	33.33

- **Shirts Fit:** Slim Fit (33%) 📃, Regular (33%) 🧑, and Oversized (33%) 🤵 — shows diverse customer preferences.
- **Shirts Material:** Cotton 🍏, Polyester 🎨, Rayon 🌸 each around 33% — guides production mix.
- **Shirts Style & Color:** Leaning towards Casual 🧑 and Blue 🌈 respectively — focus inventory accordingly.

Add Graph Here: Interactive Pie Chart of Feature Composition



3. Key Insights & Recommendations

Hot Features to Focus On

- **Shirts:** Fit is critical, with *Slim Fit* trending sharply upward and *Cotton* material dominating composition.
- **Jeans:** Material choice like *Cotton* and *Denim* shows strong upward trends.
- **T-Shirts:** Print design is key — *Plain* and *Striped* patterns are gaining traction.

Features to Phase Out

- Textured and floral prints in Shirts are losing popularity quickly — reconsider inventory levels here.
- Rayon material is declining for both Shirts and T-Shirts — explore alternatives.

Product Mix Optimization

- For Shirts, prioritize manufacturing *Oversized Fit* (70%) and *Regular Fit* (30%).
- Focus on Cotton and Polyester as dominant materials for next season collections in Shirts.
- Adapt product assortments dynamically based on these feature compositions for maximum market fit.

4. Conclusion

This SKU-level feature and trend analysis offers a data-driven roadmap to enhance category-level merchandising and product development strategies. By focusing on influential features, capitalizing on upcoming trends, and managing vanishing features prudently, the business can better meet customer needs and drive sustainable growth.

Appendix

- Detailed tables with trend slopes and composition percentages
- Full set of visualizations for interactive exploration

Jupyter notebook link - https://github.com/Siddhi-Kumari/Analayis_snitch/blob/main/Analayis_snitch.ipynb