Fast Fashion E-commerce Case Study

Case Study: Denim Category Performance Breakdown: Weeks 24 and 25

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Executive Summary

This report analyzes the denim category's launch performance over a 26-week period, with a special focus on the steep decline observed between Weeks 24 and 25. While early performance (Weeks 1–18) reflected healthy conversion and sell-through, multiple breakdowns emerged in later weeks, including visibility loss, inventory gaps, and assortment dilution.

Key metrics such as success rate, unsellable rate, and revenue per style were examined across price tiers, product categories, and time windows. Despite strong early revenue from select mid-priced styles, overall conversion in the $25–30 segment remained weak. Inventory issues, particularly "Out of Size Days" — and declining UV visibility in Weeks 24–25 further eroded performance.

The analysis identifies patterns in category imbalance (e.g., overconcentration in Women Jeans), underleveraged high-performing styles (e.g., Dresses), and critical misalignments in pricing vs. consumer perception. A targeted outlier analysis also revealed several styles that received high exposure but generated zero sales — suggesting missed opportunities due to positioning or execution flaws.

The report concludes with five strategic recommendations covering visibility optimization, inventory planning, assortment focus, and pricing strategy. These actions aim to restore conversion efficiency and unlock full commercial potential in future launches.

1. Data Preparation & Cleaning

The raw dataset included weekly-level sales, UV exposure, inventory availability, and categorical attributes (e.g., product type, price range). Before analysis, a structured multi-step cleaning process was applied to ensure analytical accuracy:

- **Null Value Check**: Missing values in critical fields (e.g., Style Number, UV, Price, Weekly Revenue) were detected and either corrected or excluded.
- **Data Type Validation**: Key columns were cast into correct data types (e.g., numeric for revenue, categorical for product groups) to enable calculations and segmentation.
- **Blank & Inconsistent Label Cleanup**: Empty or inconsistent labels (e.g., product categories, week indicators) were standardized.
- **Outlier Detection & Handling**: Statistical outlier checks were conducted on numerical fields (e.g., UV exposure, revenue) using percentile thresholds. Outliers were flagged separately for business interpretation and reflected in a dedicated outlier analysis section.

All transformations were performed in Excel initially to audit row-level logic. The cleaned dataset was then imported into Power BI for modeling and advanced metric generation.

2. Key Metrics

2.1.Key Metrics Development

To uncover the drivers of performance, a range of custom KPIs were created across **Excel**, **Power BI**, and **DAX**, designed to be fully dynamic and visualized across multiple dimensions:

- **Success Rate** = Success Rate = # of styles with 2–8D sale volume ≥ 2 / Total Styles
- **Bestseller Rate** = Bestseller Rate = # of styles with 2–8D sale volume ≥ 5 / Total Styles
- **Unsellable Rate** = Unsold Styles / Total Styles
- **2–8D Revenue** & **2–8D UV**: To capture short-term launch effectiveness
- **2–30D Revenue** & **2–30D UV**: For long-term visibility impact
- **Out of Stock Days** and **Out of Size Days**: Aggregated per style per week to measure inventory-driven availability loss
- **Weekly Success Rate Trend**: Generated dynamically to track launch health over time
- **UV vs. Revenue Correlation Scatterplots (2–8D and 2–30D)**: Created in Power BI to assess exposure efficiency
- **Category-Level Revenue Distribution & Style Count**: Used to evaluate assortment balance
- **High UV / No Sales Outlier Flags**: Detected via filters in Power BI based on thresholds (e.g., UV > 50K, Revenue = 0)

- **Week 25 KPI Breakdown**: A direct comparison of unsellable rate, success rate, and revenue per style between critical weeks

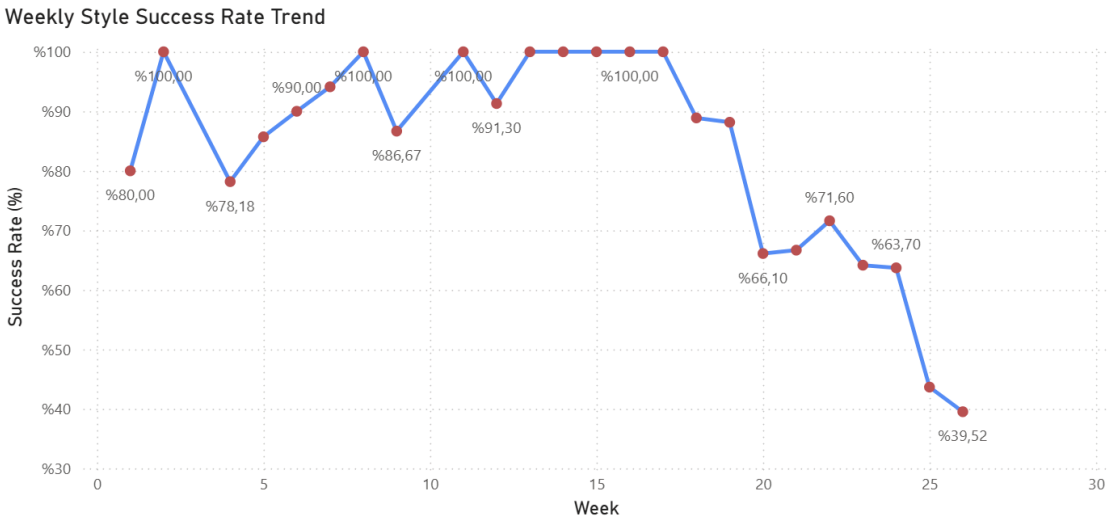
2.2.Key Performance Metrics Comparison

Note: Success and Bestseller metrics were calculated based on company's definition of unit/day thresholds.

Metric	Week 24	Week 25	Benchmark (Weeks 1–23 & 26+)	Insight
Total Styles	146	268	1021	Week 25 saw sharp assortment expansion
Success Rate (%)	63.7%	34.7%	71.1%	Week 25 significantly underperforms
Bestseller_Rate (%)	35.6%	21.6%	48%	Poor conversions into top sellers
Unsellable Rate (%)	18.49%	38.43%	16.7%	Elevated failure risk, especially in Week 25.
Avg. Revenue per Style ($)	$304.83	$122.46	$886.44	Revenue dropped by over 85% in Week 25.
Avg. Exposed UV	87,584K	51,175K	150,42K	Week 25 visibility crash.
Avg. Out of Size Days	0.57	0.66	0.87	Size availability slightly declined.
Avg. Out of Stock Days	0.00	0.01	0.032	Stock-out management remained effective.

3. Visual Analysis & Business Insights

3.1.Success Rate Decline After Week 19:



Observation: Until Week 19, success rates were consistently above 80%, reflecting stable conversion performance. However, a steep decline initiated in Week 19, and by Week 26, the success rate had dropped below 40%.

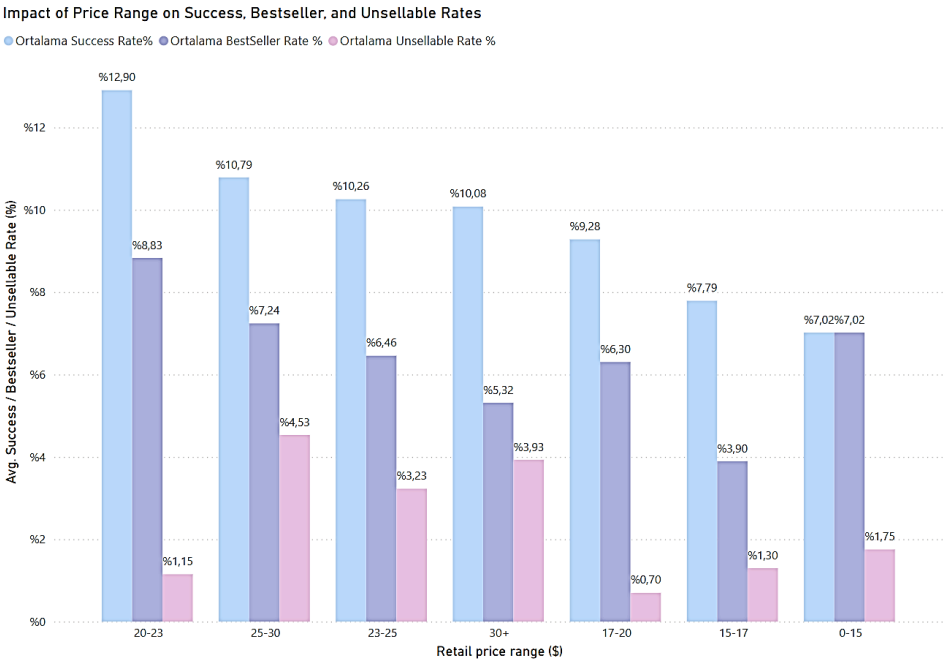
Analytical Insight: This performance deterioration coincides precisely with three key issues detected in parallel charts:

- **Reduced visibility:** Exposed UV dropped significantly after Week 18, especially in Weeks 24 and 25, indicating that fewer users were seeing the products. (Displayed more detail on *3.4 Exposure Gaps'*)
- **Inventory issues:** Out of stock and out-of-size spikes were observed in Weeks 21 and 25, likely leading to broken conversion paths. *(Displayed more detail on '3.3 Inventory Issues'*)
- **Assortment expansion mismatch:** In Week 25, style count nearly doubled without a corresponding increase in conversions, possibly diluting marketing impact and straining inventory distribution. (*(Displayed more detail on '3.7 Week 25 KPI Breakdown'*

Implication: The success rate collapse is not isolated, it reflects a systemic misalignment across visibility, supply chain, and assortment planning. The Week 19–26 period appears to represent a perfect storm where visibility weakened, inventory ran into pressure points, and assortment expansion outpaced support infrastructure.

Recommendation: Introduce early warning thresholds using rolling success rate averages and out-of-stock indicators. A corrective visibility and inventory plan should be deployed if success drops more than 20% week-over-week.

3.2 Price Range vs. KPI Performance



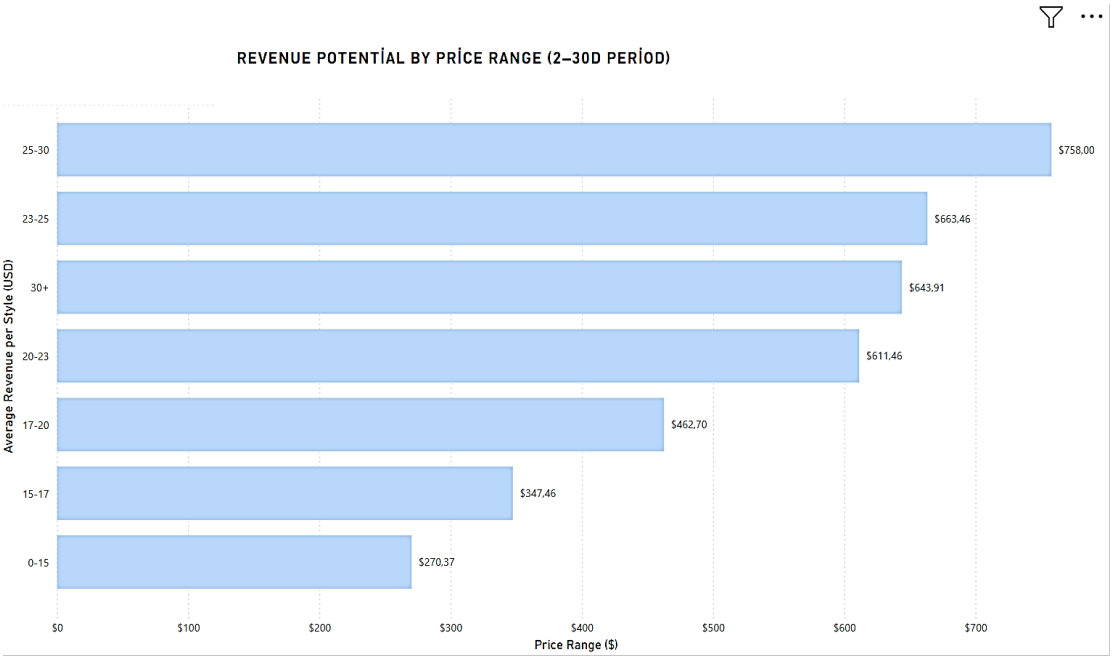
This analysis highlights a distinct relationship between retail price bands and core performance metrics.

- The 20–23 $ segment emerges as the strongest performer across all KPIs—boasting the highest success rate (12.9%), the highest bestseller rate (8.83%), and the lowest unsellable rate (1.15%). This indicates an optimal balance of pricing and perceived product value, suggesting a strong product–market fit and conversion efficiency.

- Conversely, the 30+ $ category, while positioned as premium, underperforms in success rate (10.08%) and shows a relatively high unsellable rate (3.93%), indicating possible consumer price resistance or unmet expectations for premium value.

- The 25–30 $ range—despite having the highest average revenue per style—records only moderate performance on success (10.79%) and bestseller (7.24%) rates, while also suffering from a notably high unsellable rate (4.53%). This gap implies that conversion and inventory efficiency are weaker at this price level and may benefit from bundling, repositioning, or pricing experiments.

- Interestingly, lower price tiers such as 15–17 $ and 0–15 $ exhibit above-average success and bestseller rates (7.79% and 7.02%, respectively), combined with lower unsellable rates. This reinforces the reliability of affordable ranges in driving consistent conversion.



- The 25–30 $ price tier delivers the highest average revenue per style (758 $), but this comes at the cost of weaker success (10.79%) and bestseller (7.24%) rates, and a high unsellable rate (4.53%).

- This paradox suggests that while some individual products in this range can perform well, overall conversion efficiency is weak. The tier appears to suffer from limited consumer value perception, warranting A/B testing in content, pricing, or bundling strategies to boost sell-through.

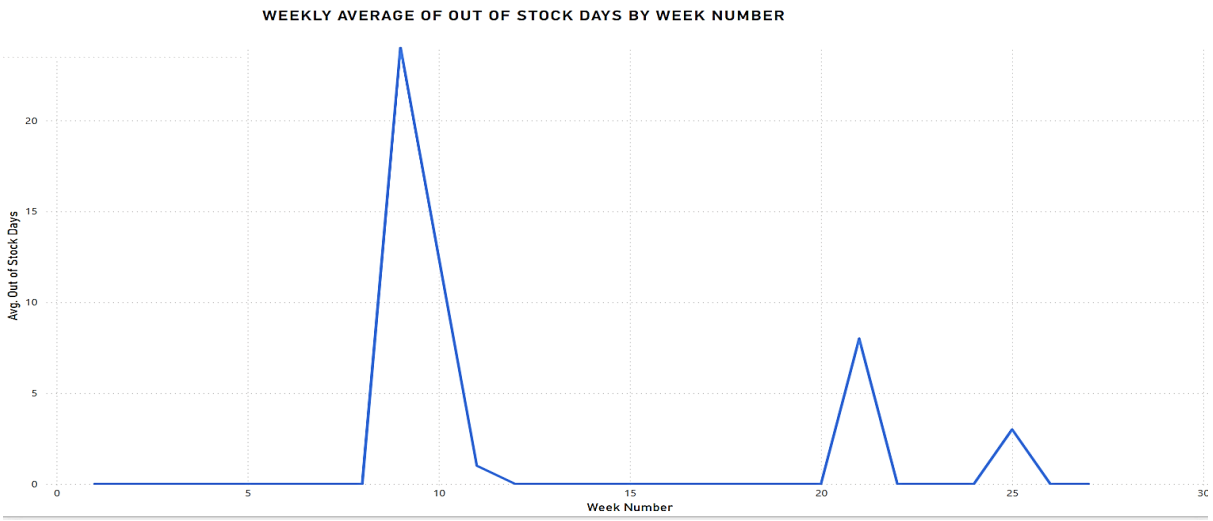
- This revealed a trade-off: low price styles perform better in success KPIs but generate lower revenue.

- The 30+ $ segment generates solid revenue (643.91 $) but underperforms in success and unsellable rates—indicating potential price sensitivity at the premium tier.

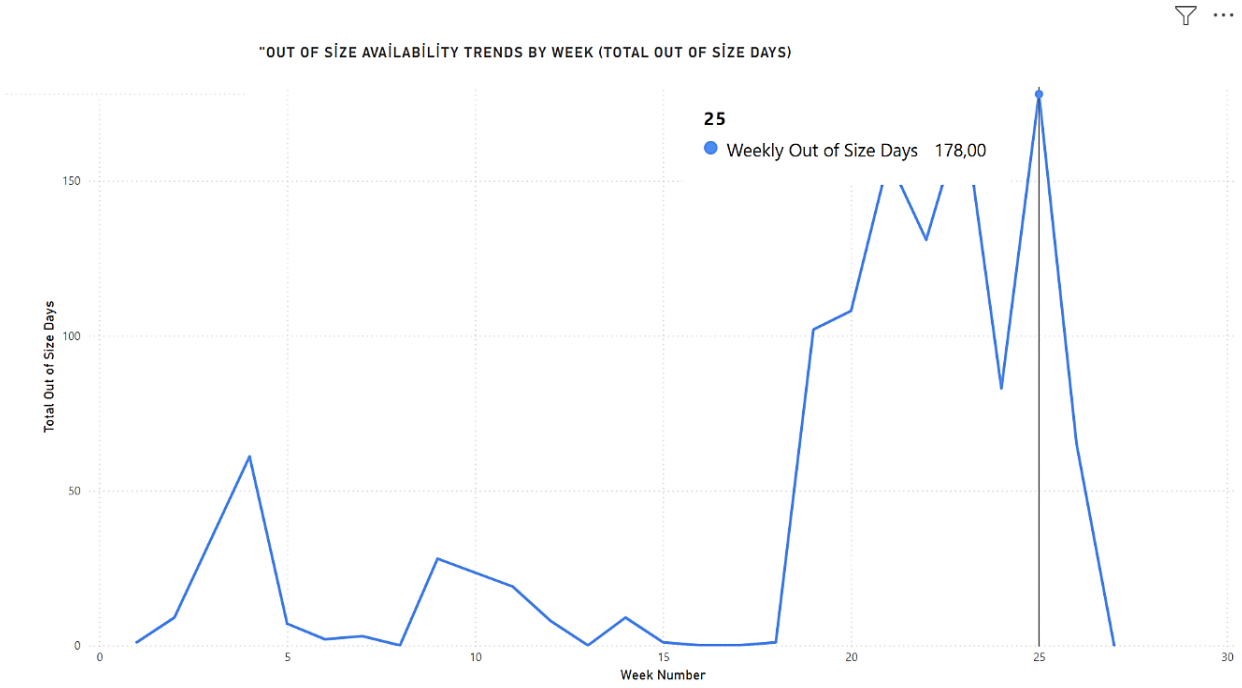
- In contrast, 20–23 $ offers the best of both worlds: top-tier conversion (12.9% success) and high revenue (611.46 $), making it the most efficient and scalable pricing band.

- Lower tiers like 0–15 $ yield lower revenue per style (270.37 $) but maintain high success rates and minimal unsellable inventory—ideal for safe, high-throughput assortment strategies.

3.2.Inventory Issues



- **Out of Stock Days:** A major spike in Week 9, and smaller peaks in Week 21 and Week 25.

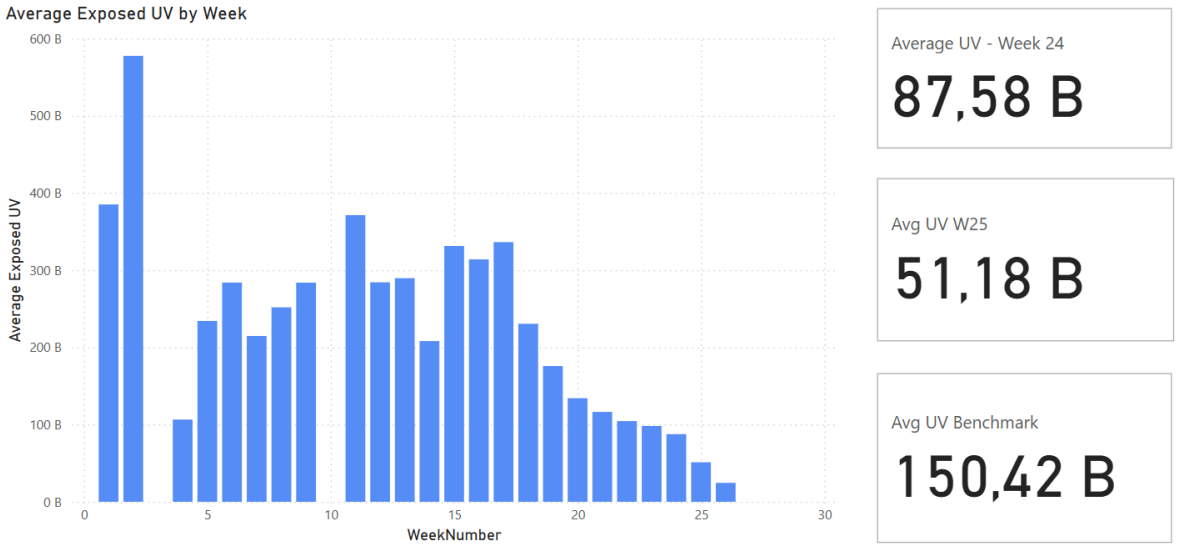


- **Out of Size Days:** The most critical issue. Weeks 23 and 25 recorded the two highest out-of-size totals (172 and 178 days).

These weeks directly correlate with performance drops in Success Rate and rising Unsellable Rates.

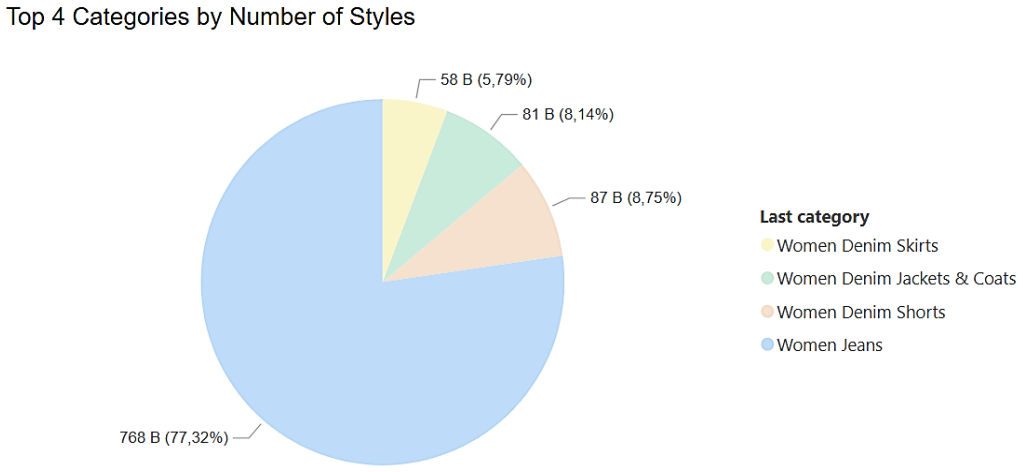
- Size-level replenishment appears misaligned with demand in fast-moving categories. Inventory planning must anticipate demand curve shapes and actively mitigate high-margin style risks.

3.3.Exposure Gaps



- UV (visibility) declines sharply after Week 20, with Week 24 and 25 UV dropping to 87.58K and 51.18K, respectively, far below the benchmark of 150.42K.
- Despite launch activities, these styles suffered from low discoverability.
- The steep drop in exposure suggests a missed opportunity window. Possibly caused by reduced homepage placement, SEO/algorithmic ranking drops, or campaign misalignment.
- A "visibility buffer" should be built in Week 2–8 to prevent such crashes, especially for styles with early high potential.

3.4.Category & Portfolio Imbalance



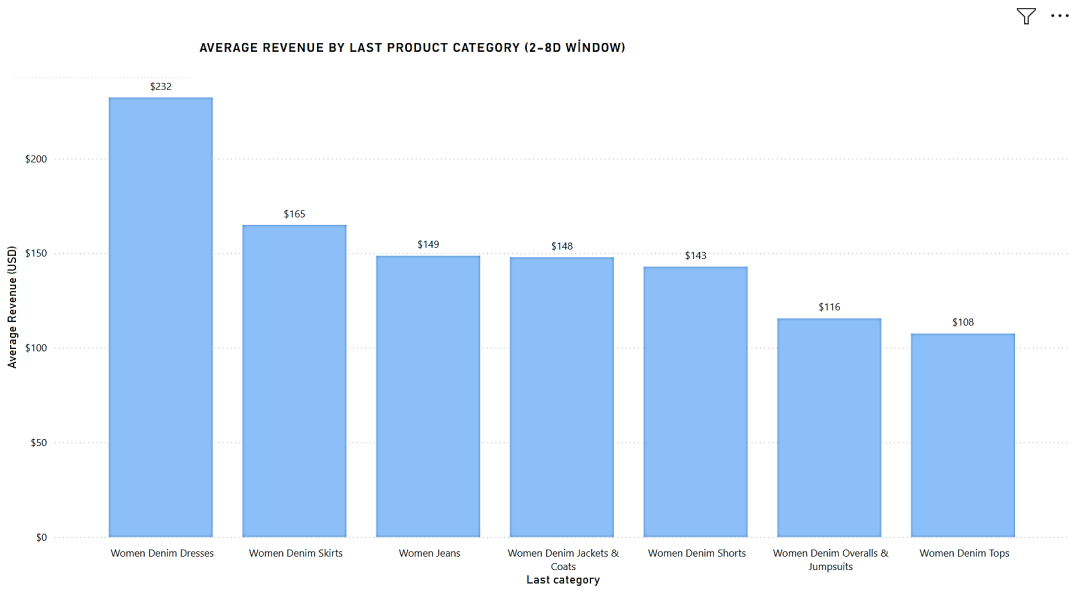
Pie chart and revenue analysis indicate that:

- Women Jeans account for 77.3% of the portfolio but underperform in average revenue. *(Displayed on 3.6 Performing Styles)*

- Dresses outperform in early-stage revenue ($232 vs. $108 for Tops).

Recommendation: Diversify beyond Women Jeans. Reinvest in categories showing higher early conversion like Dresses, Skirts, and Coats.

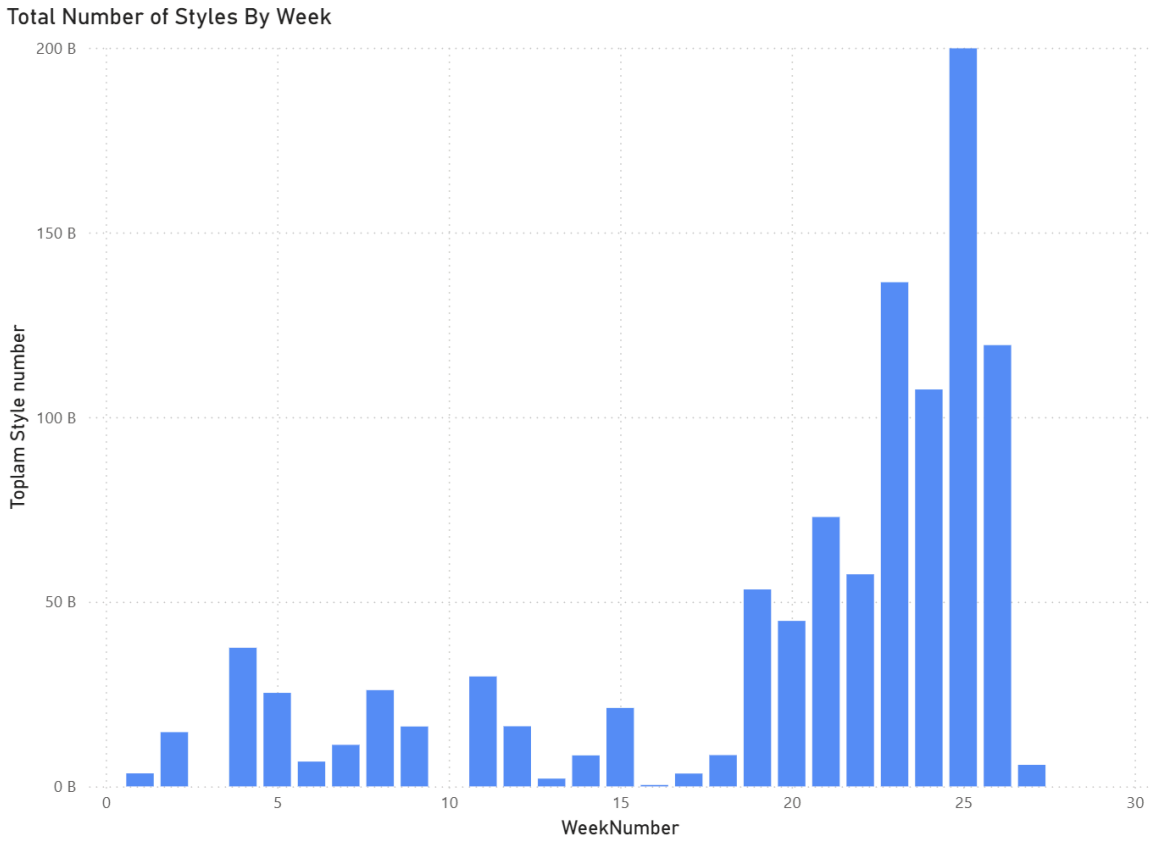
3.5.Top Performing Styles

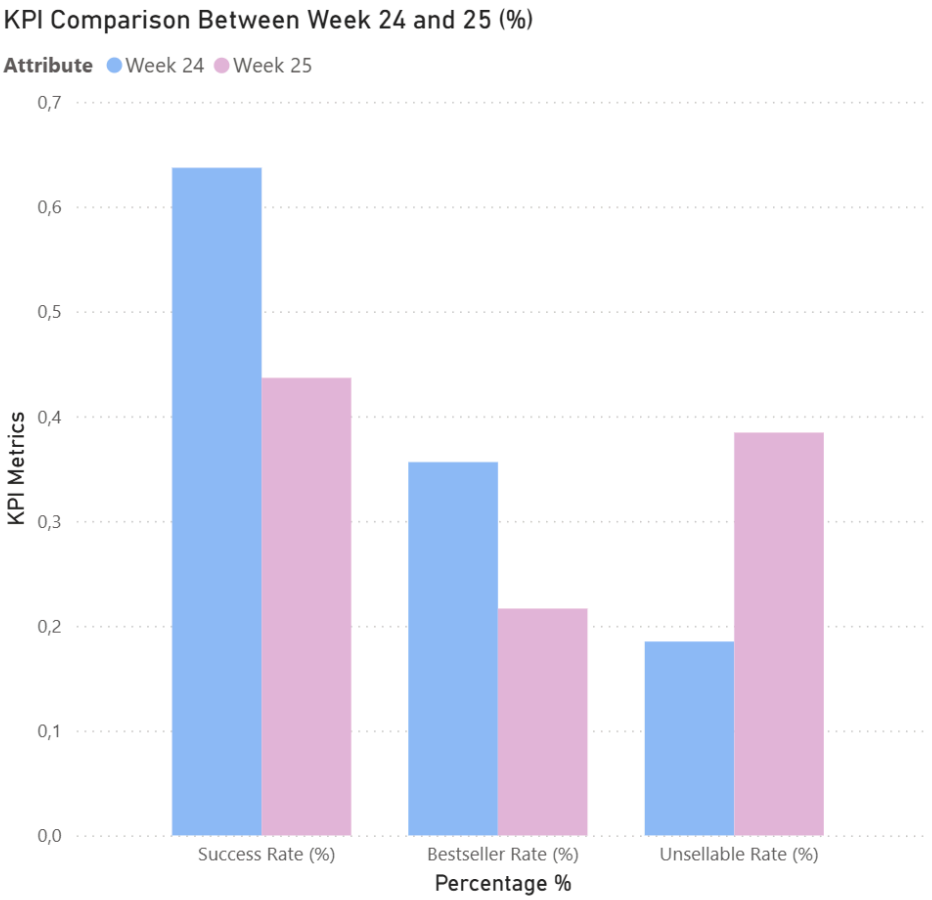


The top two styles (222 and 548) generated >3,000 USD in early revenue. The remaining styles clustered around 1,500–1,800 USD.

- This skew suggests that product-market fit was only achieved by a few designs. Restock and reboosting decisions should prioritize these top 2 styles.

3.6.Week 25 KPI Breakdown


Total Number of Styles By Week
200 B
150 B
100 B
50 B
0 B
Toplam Style number
0
5
10
15
20
25
30
WeekNumber

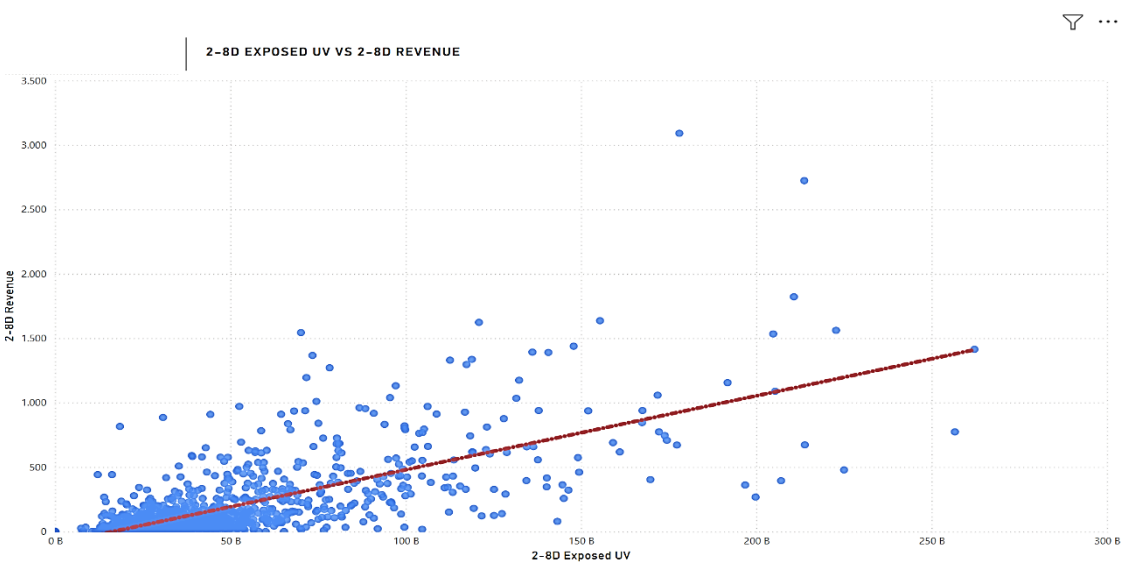


Comparison chart between Week 24 and 25 shows:

- Success Rate dropped from 64% to 44%
- Unsellable Rate jumped from 18.5% to 38.4%
- Revenue per Style fell 85%

Insight: Bigger assortment does not guarantee success. More styles led to traffic fragmentation, missed conversions, and higher failure rates.

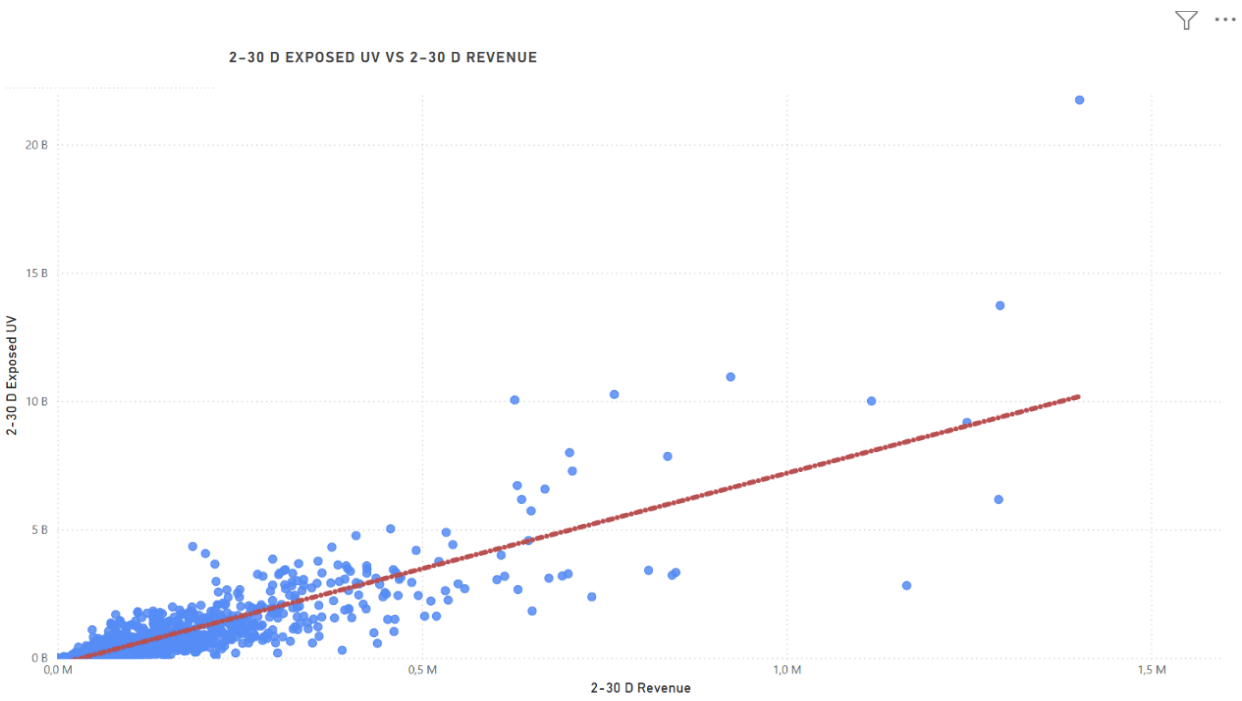
3.7.UV-Revenue Correlation



Clear Short-Term Impact: Higher UV exposure in Days 2–8 strongly correlates with increased short-term revenue.

Most Effective Range: The effect is most pronounced within the 0–150K UV range, where the majority of products cluster.

Impulse-Friendly: Low-priced or fast-moving styles benefit the most from early visibility pushes.



Recommendation: Use Day 2–8 for homepage boosts, push notifications, and ad placements to maximize early momentum—especially for SKUs with high conversion potential.

Strong Positive Correlation: Extended exposure (2–30D UV) is clearly linked to higher long-term revenue.

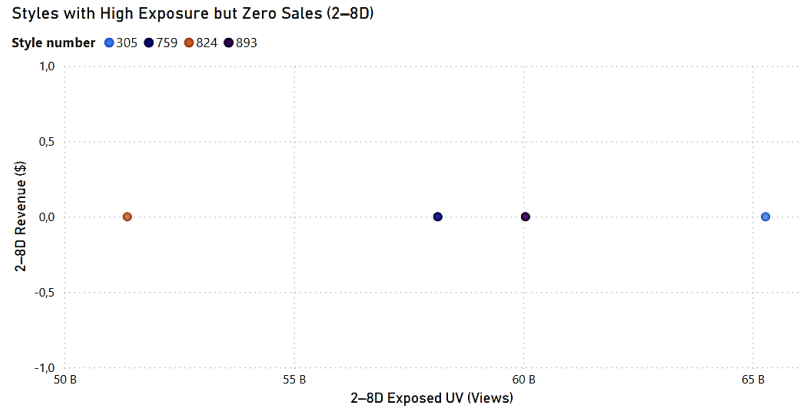
Consistent Growth Pattern: Unlike the 2–8D view, this metric shows a more stable and scalable revenue impact.

Higher Visibility = Higher Revenue: Even at high exposure levels (10K+ UV), revenue continues to rise—confirming strong returns on sustained traffic.

Recommendation: Re-boost promising styles in Weeks 2–4 to maintain visibility, prevent early drop-offs, and maximize high-margin product performance.

4. Outlier Analysis: High Exposure but Zero Sales

A focused outlier analysis was conducted to detect styles that received high exposure (UV) but generated zero revenue in the 2–8-day period. This subset is critical as it highlights potential **misalignments between visibility, pricing, and conversion effectiveness.**



23-25	Style Count 1
25-30	Style Count 2
30+	Style Count 1

WeekNumber	Style Count
19	1
20	1
22	1
23	1
Toplam	**4**

Last category	Style Count
Women Jeans	4
Toplam	**4**

Key Findings:

- Four styles(style # 305, 759, 824, and 893) were identified with exposure levels between 50K–65K UV but with no recorded sales.
- All of these styles belonged to the Women Jeans category and were distributed across retail price ranges of 23–25, 25–30, and 30+.
- These styles were launched between Weeks 19–23, coinciding with a broader visibility and success rate decline observed in previous analyses.

Interpretation: Despite substantial visibility, these styles failed to convert views into sales, suggesting a mismatch in either:

- Conversion failure likely stems from:
    - Price-value mismatch
    - Styling irrelevance
    - Weak content or imagery

Recommendation:

- Conduct price sensitivity testing within the 25–30 range.
- Re-evaluate product detail pages, media content, and CTA effectiveness for Women Jeans.

- Prioritize A/B testing for pricing, bundling, or promotion visibility in the affected weeks to convert high UV into sales.

5. Key Findings

4.1.Significant Performance Drop in Weeks 24–25

Week 25 experienced a severe collapse across all metrics (Success: 33.6%, Revenue: $122), clearly deviating from the benchmark.

However, while week 24 also showed a drop in UV and revenue, retained relatively strong conversion metrics (Success: 63.7%), particularly in styles priced below $20.

This contrast highlights that while both weeks suffered reduced exposure, Week 24 managed to preserve efficiency, suggesting different underlying causes for each week's drop.

4.2.Exposure Strongly Correlates with Sales Performance

A strong correlation was observed between 2–8D and 2–30D UV exposure and revenue (r = 0.72 and 0.86, respectively).

Week 24 UV: 87.5K , Week 25 UV: 51.17K, vs. benchmark: 150,418, indicating reduced visibility as a core driver of revenue decline.

4.3. Underperformance Concentrated in Specific Price Segments

Styles priced $25–30 showed high average revenue ($758) but lower conversion (success 10.79%, unsellable 4.53%).

$20–23 emerged as the most balanced range: high success (12.9%), high bestseller (8.8%), and lowest unsellable (1.15%).

4.4. Product Assortment Skewed Toward Underperforming Categories

Women Jeans made up 77% of assortment but underperformed in key KPIs.

Better-performing categories such as **Denim Dresses** and **Denim Skirts** were underrepresented, despite higher average revenue. Moreover, the lack of the new trending styles may also affect customer interest and engagement in a negative way.

4.5.Inventory Gaps Affect Conversion Potential

Even though the Out-of-size days slightly increased in Weeks 24–25, it caused missed sales opportunity due to the fact that the sizes of the popular items were unavailable.

4.6. Reduced Visibility Affects Revenue

A sharp drop in UV exposure—from 150.42K (benchmark) to 87.58K in Week 24 and 51.18K in Week 25—directly coincided with lower success rates and revenue, indicating that reduced visibility was the primary driver of underperformance. Marketing or algorithmic de-prioritization likely limited customer reach, underscoring the need to restore early-stage exposure to recover performance.

5. Strategic Recommendations

5.1. Strengthen Early-Stage Visibility (Day 2–8) for High-Potential SKUs

Products that received high exposure during Days 2–8 consistently generated higher early revenue. The top performing styles (e.g., Style 222, 548) saw >3,000 USD in revenue during this window.

- Prioritize homepage placements, push notifications, and ad campaigns for newly launched styles during Days 2–8.
- Especially emphasize styles priced below $20, which showed the best success and conversion rates with minimal unsellable risk.

5.2. Optimize Positioning of Mid-Priced Styles (25–30 $ Segment)

While the $25–30 range showed the highest revenue per style, the $20–23 band demonstrated stronger conversion performance, making it the most balanced and commercially effective segment.

- Maintain visibility across Weeks 2–8 for selected styles in this segment to improve long-tail sales.
- These underperforming styles are ideal candidates for A/B testing on content, perceived value, or promotional bundles. If positioned at the higher end of the price band, pricing tests may also help validate elasticity and demand sensitivity.

5.3. Optimize Size-Level Inventory Replenishment

Weeks 23 and 25 experienced sharp increases in Out of Size Days (172–178 days), aligning with drops in success rate and a spike in unsellable styles.

- Implement demand-based size pack allocation during launch.
- Prioritize replenishment planning for bestsellers and low-priced, high-turnover categories.

5.4. Rationalize Assortment Growth Based on Conversion Efficiency

In Week 25, the number of styles nearly doubled — yet revenue per style dropped by over 85%, and the success rate declined.

- Limit new assortment additions to SKUs with validated success in similar categories, price ranges, and UV performance.
- Use 2–8D revenue and exposure as benchmarks for pre-launch screening.

5.5. Diversify Category Investment

“Women Jeans” represented 77.3% of the assortment but underperformed in average revenue.

- Reallocate resources to higher-performing categories such as Dresses and Skirts, which showed strong traction in early-stage revenue.
- Use pilot launches in underutilized categories like Jackets & Coats to test scalable alternatives.

6. Conclusion

This case study confirms that sustainable product performance in fast fashion retail is not simply a function of exposure or assortment volume—it depends on aligning visibility timing, inventory availability, and pricing strategy with observed demand signals.

Key findings reveal that:

- **Early visibility (Day 2–8)** is the strongest driver of short-term revenue, especially in lower price brackets.
- **Sustained visibility (2–30D)** consistently drives higher cumulative revenue, particularly for higher-priced styles.
- **Inventory misalignment**, especially size-level stockouts, directly coincides with KPI collapses in Weeks 23–25.
- **Category over-concentration** in Women Jeans limits broader portfolio growth, despite other categories showing stronger performance potential.

By operationalizing these insights, the company can:

- Boost short-term ROI via optimized launch windows.
- Reduce unsellable inventory through targeted replenishment.
- Prevent conversion failures by addressing exposure–pricing mismatches.
- Scale revenue by reallocating investment toward data-backed high-performing styles.