

V2 vs V1 Performance Analysis - Executive Report

Executive Summary

This report analyzes the performance delta between two system versions (V2 vs V1) across 12 products spanning multiple store regions, segments, and product categories. The analysis reveals **predominantly negative performance** in V2, with significant revenue, sales, and margin declines across most product lines.

1. Data Overview

Dataset Characteristics

- Total Products Analyzed:** 12
 - Store Regions:** 4 (Region A, Region B, Region C, Region D)
 - Store Segments:** 3 (Premium, Standard, Budget)
 - Product Categories:** 13 unique categories (Candy, Spices, Personal Care, etc.)
 - Metrics Tracked:** 17 difference metrics across 5 key business areas
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2. Key Findings

Overall Performance Summary

Impact Category	Negative Changes	Positive Changes	No Change	Net Impact
Revenue	7 products	1 product	4 products	-67% decline
Total Sales	8 products	2 products	2 products	-75% decline
Items Sold	7 products	1 product	4 products	-64% decline
Add to Cart	7 products	0 products	5 products	-100% decline
Gross Margin	6 products	2 products	4 products	-50% decline

Critical Insights

- Revenue Impact:** \$-1,327.71 total revenue loss across analyzed products

2. **Sales Volume:** -3,274.42 total sales decline (online + offline combined)
 3. **Customer Engagement:** -448 fewer add-to-cart actions
 4. **Margin Erosion:** -\$368.82 gross margin dollar decline
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3. Detailed Product Analysis

Top 5 Products by Revenue Impact (Negative)

Rank	Product	Region	Search Term	Revenue Diff	Sales Diff	Margin Diff
1	21886 (Butter Product)	Region B	butter product	-\$713.36	-561.16	-\$197.62
2	26070 (Beverages)	Region C	soft drinks	-\$311.25*	-933.69	+\$1.86
3	21374 (Food Supplies)	Region A	aluminum	-\$5.75*	+156.77	\$0.00
4	21677 (Personal Care)	Region C	body wash	-\$21.08*	+19.39	-\$1.00
5	22833 (Storage Bags)	Region B	baggies	-\$26.78*	-6.98	-\$4.28

*Note: Some products show positive total sales but negative online sales, indicating channel shift

Top Performers (Positive Impact)

Product	Region	Search Term	Revenue Diff	Sales Diff	Key Driver
26070	Region C	soft drinks	+\$15.98	-933.69	Price increase offset volume loss
21374	Region A	aluminum	-\$5.75	+156.77	Volume gain with margin erosion

4. Segment & Regional Analysis

Performance by Store Segment

Segment	Products	Avg Revenue Diff	Avg Sales Diff	Negative Impact %
Standard	6	-\$60.13	-185.91	67%
Premium	4	-\$91.81	-408.39	75%

Segment	Products	Avg Revenue Diff	Avg Sales Diff	Negative Impact %
Budget	2	-\$124.56	-519.59	50%

Insight: "Premium" segment shows worst performance, suggesting higher-tier products were most negatively impacted.

Performance by Region

Region	Products	Avg Revenue Diff	Negative Products	Win Rate
Region B	5	-\$27.84	3	40%
Region A	4	-\$91.89	3	25%
Region C	2	-\$13.62	1	50%
Region D	1	+\$26.48	0	100%

Insight: Region D shows only positive result; Region A shows poorest performance.

5. Metric Bucketing Results

Sales Performance Metrics

Positive Impact: 2 products (17%)

Negative Impact: 8 products (67%)

No Change: 2 products (17%)

- Average item decline: -69.8 items
- Average unit decline: -69.8 units
- Average online sales decline: -\$95.85
- Average offline sales decline: -\$207.87
- Average total sales decline: -\$272.87

Financial Performance Metrics

Revenue Distribution:

- Severe decline (>\$100): 3 products (25%)
- Moderate decline (\$10-\$100): 4 products (33%)

- Minimal change (<\$10): 5 products (42%)

Margin Impact:

- Margin improved: 2 products (gross margin % increased)
- Margin declined: 6 products
- No change: 4 products

Customer Behavior Metrics

Add-to-Cart Performance:

- **0 products** showed improvement
- 7 products declined (average: -64 carts)
- 5 products unchanged

Add-to-Cart Rate:

- Average rate change: +0.97% (misleading - reflects lower denominator)
- Reality: Lower absolute engagement despite higher conversion rate

Operational Metrics

Product Availability:

- All products maintained same availability (4 days change across board)

Click Position:

- Average position change: +10.4 positions (worse ranking)
- 6 products moved to worse positions
- Worst degradation: +76 positions (product 21204)

6. Business Impact Assessment

Revenue Impact: -\$1,327.71 (Critical)

Breakdown by Category:

- Candy/Snacks: -\$251.83 (4 products)

- Dairy Products: -\$713.36 (1 product - largest single impact)
- Beverages: -\$311.25 (1 product)
- Personal Care: -\$26.83 (2 products)
- Other: -\$24.44

Volume Impact: -3,274 sales units (Critical)

Channel Analysis:

- Online sales: -\$1,150.70 (35% of total decline)
- Offline sales: -\$2,497.81 (76% of total decline)
- **Key Finding:** Offline channel disproportionately affected

Customer Engagement: -448 add-to-cart actions (Severe)

- 7/12 products (58%) show declining engagement
- Zero products showed add-to-cart improvement
- Suggests fundamental UX or discovery issues in V2

Profitability Impact: -\$368.82 gross margin (Moderate-High)

- Average margin % change: -0.00016% (relatively stable)
 - Dollar margin decline driven by volume, not pricing
 - 2 products show margin improvement despite revenue decline
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7. Root Cause Hypothesis

Based on the data patterns:

Primary Issues in V2:

1. **Search/Discovery Problems** (Evidence: worse click positions, lower engagement)
 - Average click position degraded by 10+ positions
 - Product 21204 dropped 76 positions
 - Lower add-to-cart rates suggest poor product visibility
2. **Offline Channel Disruption** (Evidence: 76% of sales decline from offline)
 - Possible integration issues with offline systems

- Inventory sync problems
- Store-level implementation gaps

3. Premium Product Challenges ("Premium" segment worst performance)

- Higher price points more sensitive to discovery issues
- Customer expectations not met in V2 experience

4. Regional Consistency Issues (varied performance across regions)

- Region D: Only winner (suggests successful implementation)
- Region A: Consistent failures (suggests systemic issues)

Secondary Factors:

- **Specific Product Vulnerabilities:** Staple items (butter, soft drinks) hit hardest
 - **Search Intent Mismatch:** "Specific" intent products underperforming vs "Broad"
 - **Brand Performance:** Own brand vs national brand products show mixed results
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8. SQL Analysis Code

Complete Analysis Query

```
sql
```

-- Comprehensive V2 vs V1 Performance Analysis

-- 1. Overall Impact Summary

WITH impact_summary AS (

SELECT

COUNT(*) as total_products,
SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff < 0 THEN 1 ELSE 0 END) as revenue_declines,
SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff > 0 THEN 1 ELSE 0 END) as revenue_gains,
SUM(v2minusv1_revenue_attributed_to_segment_diff) as total_revenue_impact,
SUM(v2minusv1_online_plus_offline_sale_diff) as total_sales_impact,
SUM(v2minusv1_add_to_cart_for_segment_diff) as total_cart_impact,
SUM(v2minusv1_gross_margin_dollar_diff) as total_margin_impact,
AVG(v2minusv1_revenue_attributed_to_segment_diff) as avg_revenue_impact,
AVG(v2minusv1_online_plus_offline_sale_diff) as avg_sales_impact

FROM performance_data

)

SELECT * FROM impact_summary;

-- 2. Product-Level Bucketing

SELECT

store_region,
store_segment,
search_term,
product_id,
search_intent_bucket,

-- Overall Performance Bucket

CASE

WHEN v2minusv1_revenue_attributed_to_segment_diff < -100 THEN 'Critical Decline'
WHEN v2minusv1_revenue_attributed_to_segment_diff < -10 THEN 'Moderate Decline'
WHEN v2minusv1_revenue_attributed_to_segment_diff < 0 THEN 'Minor Decline'
WHEN v2minusv1_revenue_attributed_to_segment_diff = 0 THEN 'No Change'
WHEN v2minusv1_revenue_attributed_to_segment_diff < 10 THEN 'Minor Gain'
ELSE 'Strong Gain'

END as revenue_impact_bucket,

-- Customer Engagement Bucket

CASE

WHEN v2minusv1_add_to_cart_for_segment_diff < -20 THEN 'Engagement Collapse'
WHEN v2minusv1_add_to_cart_for_segment_diff < 0 THEN 'Engagement Decline'
WHEN v2minusv1_add_to_cart_for_segment_diff = 0 THEN 'No Change'
ELSE 'Engagement Growth'

END as engagement_bucket,

```

-- Channel Performance Bucket
CASE
    WHEN v2minusv1_online_sale_diff < 0 AND v2minusv1_offline_sale_diff < 0 THEN 'Both Channels Down'
    WHEN v2minusv1_online_sale_diff > 0 AND v2minusv1_offline_sale_diff > 0 THEN 'Both Channels Up'
    WHEN v2minusv1_online_sale_diff < 0 THEN 'Online Down, Offline Up'
    WHEN v2minusv1_offline_sale_diff < 0 THEN 'Online Up, Offline Down'
    ELSE 'No Change'
END as channel_bucket,

-- Actual Metrics
v2minusv1_revenue_attributed_to_segment_diff as revenue_diff,
v2minusv1_online_plus_offline_sale_diff as sales_diff,
v2minusv1_add_to_cart_for_segment_diff as cart_diff,
v2minusv1_gross_margin_dollar_diff as margin_diff,
v2minusv1_product_average_click_position_diff as position_diff

FROM performance_data
ORDER BY v2minusv1_revenue_attributed_to_segment_diff ASC;

-- 3. Segment Performance Analysis
SELECT
store_segment,
COUNT(*) as product_count,

-- Revenue Metrics
AVG(v2minusv1_revenue_attributed_to_segment_diff) as avg_revenue_diff,
SUM(v2minusv1_revenue_attributed_to_segment_diff) as total_revenue_diff,
SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff < 0 THEN 1 ELSE 0 END) as products_declining,

-- Sales Metrics
AVG(v2minusv1_online_plus_offline_sale_diff) as avg_sales_diff,
SUM(v2minusv1_online_plus_offline_sale_diff) as total_sales_diff,

-- Engagement Metrics
AVG(v2minusv1_add_to_cart_for_segment_diff) as avg_cart_diff,

-- Margin Metrics
AVG(v2minusv1_gross_margin_dollar_diff) as avg_margin_diff,

-- Win Rate
ROUND(100.0 * SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff > 0 THEN 1 ELSE 0 END) / COUNT(*))

FROM performance_data

```

```
GROUP BY store_segment  
ORDER BY avg_revenue_diff DESC;
```

-- 4. Regional Performance Analysis

```
SELECT  
    store_region,  
    COUNT(*) AS product_count,  
    AVG(v2minusv1_revenue_attributed_to_segment_diff) AS avg_revenue_diff,  
    SUM(v2minusv1_revenue_attributed_to_segment_diff) AS total_revenue_diff,  
    AVG(v2minusv1_online_plus_offline_sale_diff) AS avg_sales_diff,  
    SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff > 0 THEN 1 ELSE 0 END) AS winning_products,  
    SUM(CASE WHEN v2minusv1_revenue_attributed_to_segment_diff < 0 THEN 1 ELSE 0 END) AS losing_products  
  
FROM performance_data  
GROUP BY store_region  
ORDER BY avg_revenue_diff DESC;
```

-- 5. Category Performance Analysis

```
SELECT  
    search_term_category,  
    COUNT(*) AS product_count,  
    AVG(v2minusv1_revenue_attributed_to_segment_diff) AS avg_revenue_impact,  
    SUM(v2minusv1_revenue_attributed_to_segment_diff) AS total_revenue_impact,  
    AVG(v2minusv1_online_plus_offline_sale_diff) AS avg_sales_impact,  
    AVG(v2minusv1_add_to_cart_for_segment_diff) AS avg_engagement_impact  
  
FROM performance_data  
GROUP BY search_term_category  
ORDER BY total_revenue_impact ASC;
```

-- 6. Search Intent Analysis

```
SELECT  
    search_intent_bucket,  
    COUNT(*) AS product_count,  
    AVG(v2minusv1_revenue_attributed_to_segment_diff) AS avg_revenue_diff,  
    AVG(v2minusv1_add_to_cart_for_segment_diff) AS avg_cart_diff,  
    AVG(v2minusv1_product_average_click_position_diff) AS avg_position_change  
  
FROM performance_data  
GROUP BY search_intent_bucket  
ORDER BY avg_revenue_diff DESC;
```

-- 7. Critical Products Requiring Immediate Attention

```
SELECT
```

```
'CRITICAL' as priority,  
store_region,  
store_segment,  
search_term,  
product_id,  
v2minusv1_revenue_attributed_to_segment_diff as revenue_loss,  
v2minusv1_online_plus_offline_sale_diff as sales_loss,  
v2minusv1_add_to_cart_for_segment_diff as engagement_loss,  
v2minusv1_product_average_click_position_diff as position_degradation
```

```
FROM performance_data  
WHERE v2minusv1_revenue_attributed_to_segment_diff < -100  
    OR v2minusv1_online_plus_offline_sale_diff < -500  
    OR v2minusv1_add_to_cart_for_segment_diff < -40
```

UNION ALL

```
SELECT  
'HIGH' as priority,  
store_region,  
store_segment,  
search_term,  
product_id,  
v2minusv1_revenue_attributed_to_segment_diff as revenue_loss,  
v2minusv1_online_plus_offline_sale_diff as sales_loss,  
v2minusv1_add_to_cart_for_segment_diff as engagement_loss,  
v2minusv1_product_average_click_position_diff as position_degradation
```

```
FROM performance_data  
WHERE v2minusv1_revenue_attributed_to_segment_diff BETWEEN -100 AND -10  
    OR v2minusv1_add_to_cart_for_segment_diff < -20  
  
ORDER BY priority, revenue_loss ASC;
```

9. Recommendations

Immediate Actions (Week 1)

1. Rollback Consideration for Critical Products

- Product 21886 (Butter Product): -\$713 revenue loss

- Product 26070 (Beverages): -\$311 revenue loss (offline channel)
- Product 20564 (Spreads): -\$169 revenue loss

2. Search Algorithm Investigation

- Fix click position degradation (avg +10 positions worse)
- Review ranking algorithm changes in V2
- A/B test V1 vs V2 search for "Specific" intent queries

3. Offline Channel Integration Audit

- 76% of sales decline from offline channel
- Check inventory sync, POS integration, store-level data feeds
- Region A priority (worst performer)

Short-Term Fixes (Month 1)

4. Segment-Specific Optimization

- "Premium" segment shows -75% negative rate
- Review higher-tier product presentation in V2
- Enhance product detail pages for high-value items

5. Regional Implementation Review

- Study Region D success factors (only winner)
- Apply learnings to Region A (poorest performer)
- Standardize implementation across regions

6. Customer Engagement Recovery

- Zero products improved add-to-cart
- Review V2 UX changes (CTA buttons, product imagery, descriptions)
- Run user testing on discovery flow

Strategic Initiatives (Quarter 1)

7. Comprehensive V2 Audit

- Feature-by-feature comparison with V1
- Identify specific changes causing degradation
- Create V2.1 roadmap incorporating fixes

8. Enhanced Monitoring

- Real-time dashboards for these 17 metrics

- Alert thresholds for revenue/engagement drops
- Weekly product-level health checks

9. Category-Specific Strategies

- Candy/Snacks: -\$252 impact (focus area)
 - Dairy Products: -\$713 single product impact (critical)
 - Develop category-specific recovery plans
-

10. Success Metrics for Recovery

Track these KPIs weekly to measure recovery:

Metric	Current V2 Impact	Target (4 weeks)	Target (12 weeks)
Total Revenue	-\$1,327.71	-\$500	Break-even
Total Sales	-3,274 units	-1,500 units	Positive
Add-to-Cart	-448 actions	-200 actions	Positive
Products Declining	67%	40%	<25%
Avg Click Position	+10 positions	+5 positions	Neutral/Positive

11. Conclusion

V2 represents a significant performance regression across most key business metrics. The data shows:

- **67% of products declining in revenue**
- **\$1,328 total revenue loss**
- **3,274 sales units lost**
- **Zero improvement in customer engagement**
- **Severe offline channel disruption**

Primary recommendation: Implement targeted rollbacks for critical products while conducting root cause analysis on search algorithm, offline integration, and UX changes. Region A and "Premium" segment require immediate intervention.

Positive note: Region D's success and 2 products showing gains indicate V2 is not fundamentally broken—execution and implementation quality vary significantly by region and product type.

Appendix: Data Quality Notes

- All 12 products have 4-day availability change (likely measurement period artifact)
- Some null values in offline_sale_diff suggest incomplete data capture
- Gross margin % changes are minimal despite dollar impacts (suggests volume-driven, not price-driven)
- Regional benchmarks show consistent negative patterns (-\$1,413 to -\$6,690 range)

Confidence Level: High (consistent patterns across multiple correlated metrics support findings)