

# 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

## 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

1. **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

### 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)
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## **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(v2minusv1\_revenue\_attributed\_to\_segment\_diff), 2) as win\_rate,

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;
```

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## 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

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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

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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.

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## **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)