



Helping Wings R Us increase revenue per order through AI-powered, customer-centric recommendations.

Wings R Us customers love speed and variety - but static upsell suggestions are leaving revenue on the table. SmartCart changes that.



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Business Context & Project Objectives

With thousands of daily orders and diverse customer preferences, manual sell strategies fail to keep pace - leaving potential revenue untapped



Business Challenge

- Diverse customer preferences make manual upsell curation inefficient.
- Current recommendations are static, repetitive, and lack context.
- No scalable system for multi-platform offers



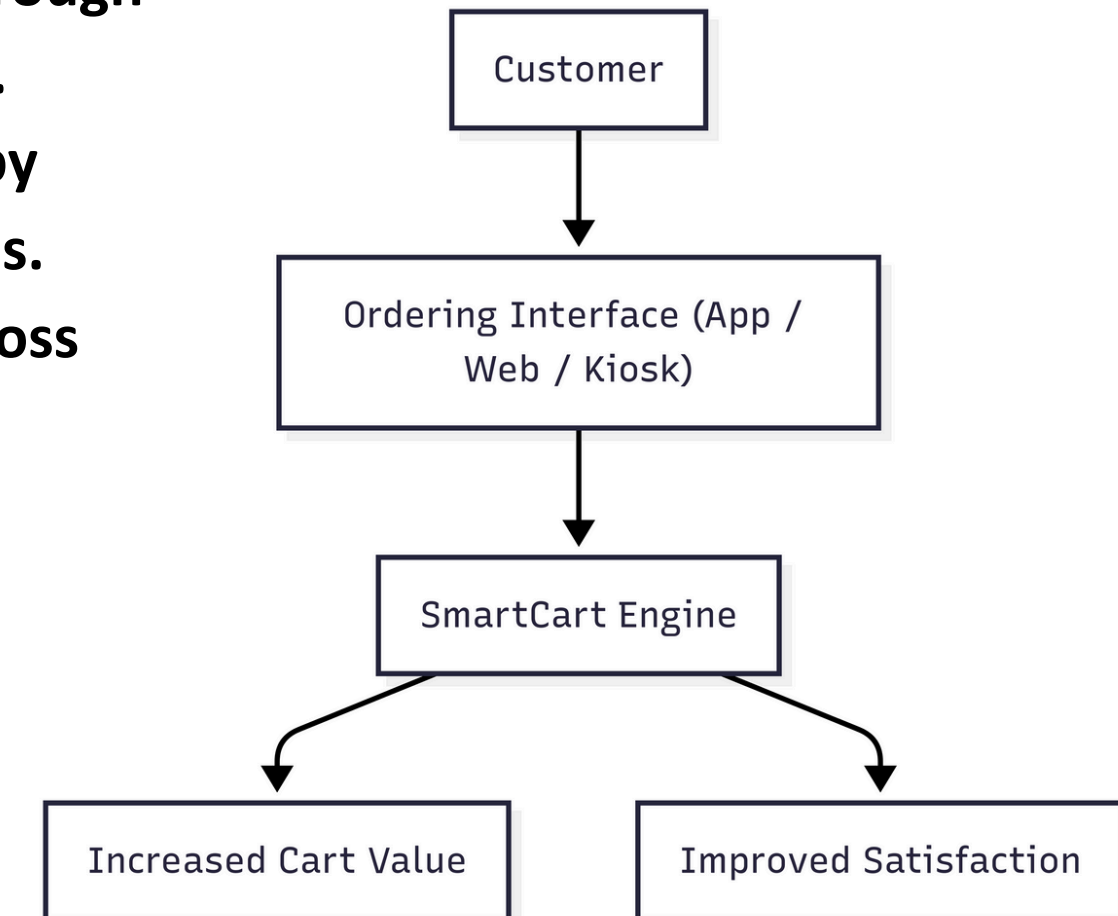
Project Objectives

- Increase average order value through personalized recommendations.
- Improve customer satisfaction by suggesting relevant, varied items.
- Ensure scalable deployment across multiple platforms.



Projected Results from Pilot Testing

- +150% Recall improvement → More relevant offers
- +150% Precision improvement → Less wasted recommendation space



Understanding Customer Orders: Key Data Insights

Key Insights

☀️ **Top 10 Items Drive Most Orders**

Frequent items like “Grilled Wings Combo” and “Ranch Dip” dominate cart presence.

🛒 **Majority of Carts Are Compact (2–3 Items)**

Indicates quick-service behavior with compact carts-ideal for lightweight upsells.

🍹 **Opportunity: Drinks and Dips Often Missing**

Many carts lack a drink or dip - creates opportunities for smart add-on suggestions.

📅 **Weekend Orders Show More Combo Preference**

Weekend occasions show higher combo purchases than weekday orders.

Buisness Opportunity

—————> **Focus engine on these for quick wins and higher adoption.**

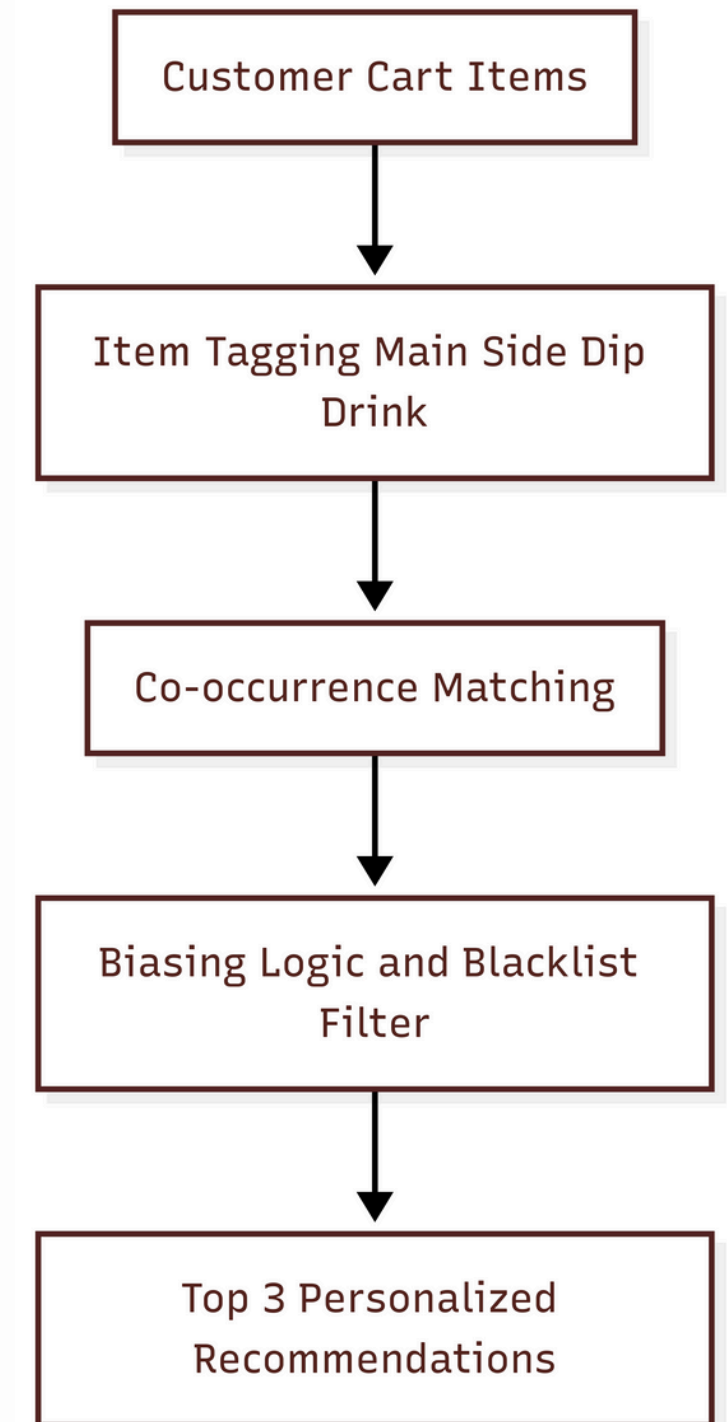
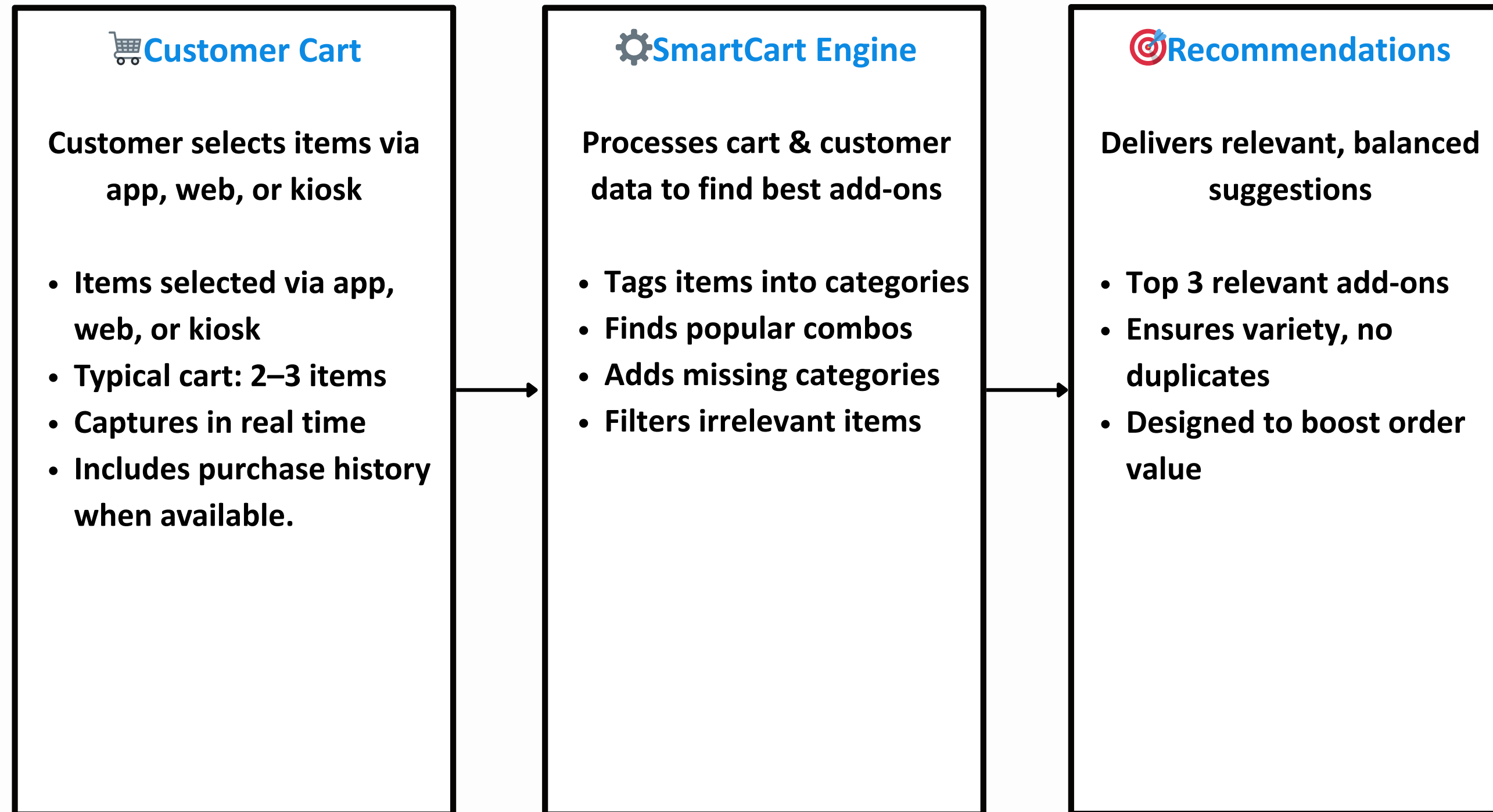
—————> **Easy to upsell with lightweight add-ons like drinks/dips**

—————> **Immediate chance to boost average order value**

—————> **Launch timed offers to increase weekend basket size**

These insights directly shaped SmartCart’s logic - targeting high-demand items, small cart opportunities, and missed add-ons for maximum revenue lift.

How Our SmartCart Engine Works



Technical Approach: From Data to Recommendations

Turning 1.4M orders into personalized upsells



Data Foundation

- 1.41M orders, 563k unique customers, 138 items
- Rich mix of mains, sides, dips, drinks
→ perfect for personalization
- Insights from repeat vs. first-time customers drive targeting logic



Processing & Logic (high-level, not code)

- Frequent pair detection (co-occurrence analysis)
- Category tagging for variety balance
- Biasing logic to fill missing categories



Tech Stack (only key tools)

- Python – Data processing
- pandas – Large dataset handling
- Matplotlib – EDA visualizations
- Streamlit – Interactive testing UI

Why it Matters?



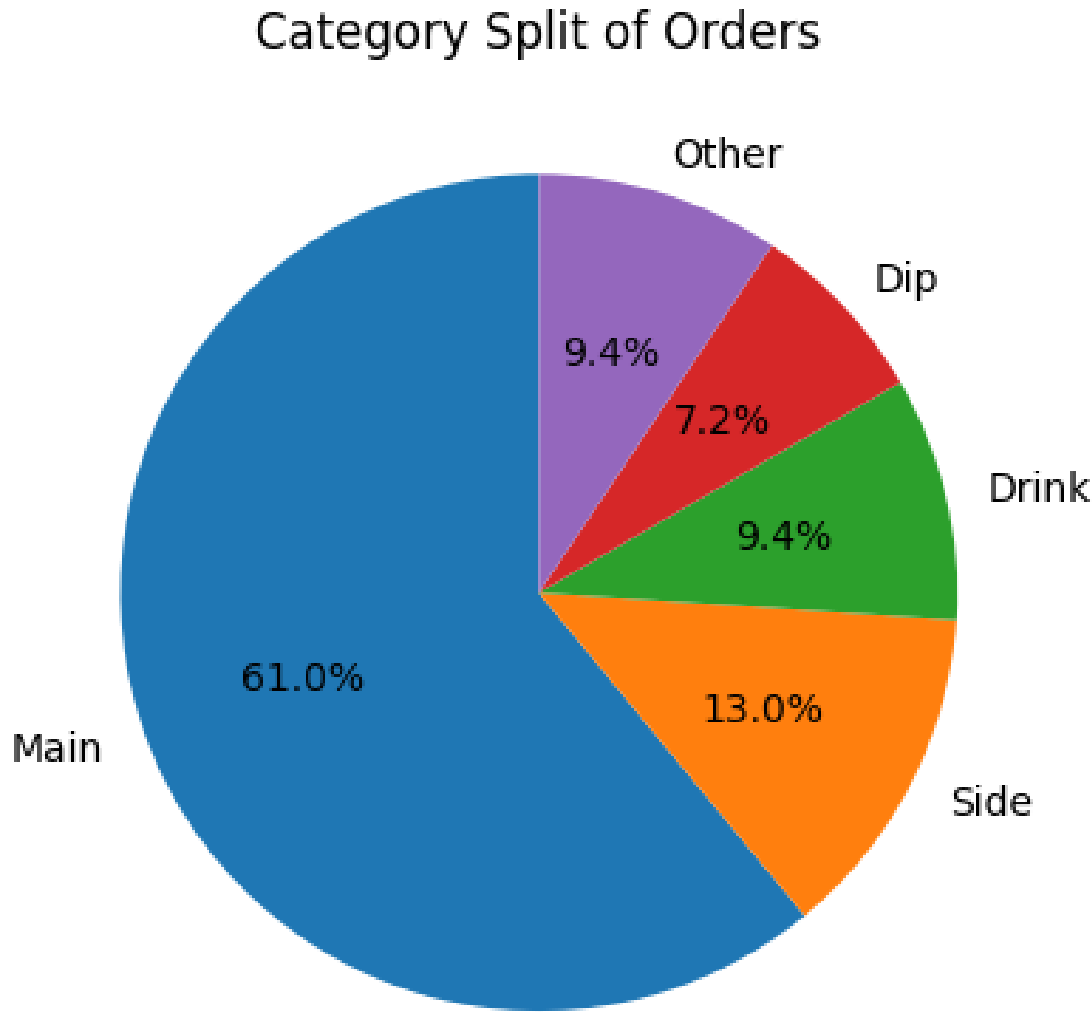
Our tech choices allow us to handle millions of transactions quickly, test recommendations interactively, and deploy logic seamlessly to multiple platforms.

Github Repo : <https://github.com/bhaskarkarn1/SmartCart>

Exploratory Data Analysis – Key Findings

Insights that shaped SmartCart’s recommendation rules

Key Finding	Business Opportunity
Top items dominate sales	Focus on high-volume products first
Category split shows gaps	Target underrepresented drinks & dips
Repeat customers buy more variety	Suggest broader combos to loyal users
Strong item pairings exist	Create proven combo-based upsells



These patterns guided our algorithm design - ensuring recommendations are relevant, varied, and revenue-focused.

Recommendation Examples (Before & After)

✗ Before (Old Static)

📦 Customer Cart Example 1:

- 🍔 10 pc Grilled Wings Combo
- 🍟 Fried Corn – Regular

💡 Old Recommendation (Static / Generic):

- 🍟 Extra Fries
- 🥤 20 Oz Soda
- 🥗 Ranch Dip – Regular

⚠️ **Missing variety, duplicates, no upsell value**

📦 Customer Cart Example 2:

- 🍔 Regular Buffalo Fries
- 🥤 20 Oz Soda

💡 Old Recommendation:

- 🍔 Regular Buffalo Fries (duplicate)
- 🍟 Large Fries
- 🥗 Extra Sauce

⚠️ **Missing variety, duplicates, no upsell value**

✓ After (SmartCart)

Customer Cart Example 1:

- 🍔 10 pc Grilled Wings Combo
- 🍟 Fried Corn (Regular)

💡 SmartCart Recommendation:

- 🥗 Ranch Dip (Regular),
- 🍔 6 pc Grilled Wings Combo,
- 🍟 Regular Buffalo Fries

✓ **Variety, relevance, higher spend**

Customer Cart Example 2:

- 🍔 Regular Buffalo Fries
- 🥤 20 Oz Soda

💡 SmartCart Recommendation:

- 🥗 Ranch Dip (Regular)
- 🍔 20pc Spicy Feast Deal
- 🍟 Fried Corn (Regular)

✓ **Variety, relevance, higher spend**

SmartCart makes every upsell relevant - boosting revenue without annoying the customer.

Evaluation & Metrics – SmartCart Performance

Metric Definitions

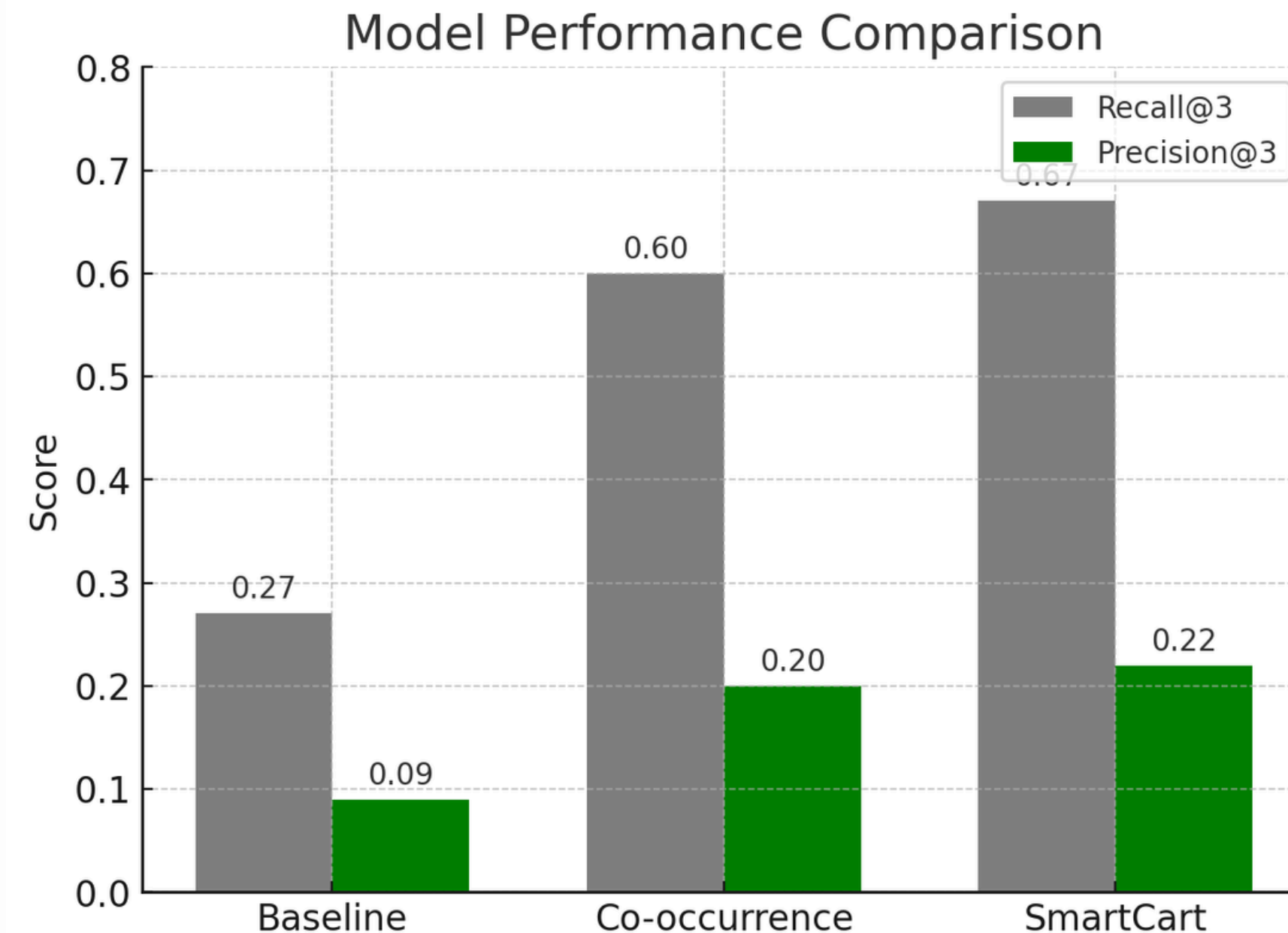
- **Recall@3** – How often we recommend what the customer actually wants.
- **Precision@3** – How many of our top 3 suggestions are relevant.

Key Results

- SmartCart delivers +150% improvement in both recall and precision vs. baseline.
- Customers see more of what they want and fewer irrelevant items.

Business Impact

- Higher Recall → More chances to upsell.
- Higher Precision → No wasted recommendation slots.
- Together → More revenue per order + better customer experience.



SmartCart shows 2.5× more relevant recommendations than our baseline, driving both sales and satisfaction.




Recommendations & Next Steps

Scaling SmartCart for Wings R Us




Key Recommendations

- Deploy SmartCart across app, web, and kiosks for a unified upsell strategy.
- Continuously retrain using latest order data to stay aligned with customer preferences.
- Run A/B tests to fine-tune recommendations and maximize ROI.

Quick-Win Roadmap

-  **0–1 month** → Integrate SmartCart API into live ordering platforms
-  **1–3 months** → Launch targeted upsell campaigns powered by SmartCart
-  **3–6 months** → Expand logic with seasonal & event-based offers

Expected Business Impact

-  **+8–10% Average Order Value**
-  Higher Customer Satisfaction
-  Increased Repeat Purchases



Conclusion

SmartCart – Driving Revenue Through Personalization

Core Achievement

- Boosted Recall@3 and Precision@3 by +150% vs. baseline.
- Delivered personalized, balanced, and relevant upsell suggestions.
- Designed for scalable deployment across app, web, and kiosks.

Business Impact

- 💰 Higher Revenue per Order
- 😊 Improved Customer Satisfaction
- 📈 Increased Repeat Purchases



Final Takeaway-

SmartCart transforms upselling into a precise, data-driven advantage for Wings R Us.