# Walmart’s Smart Growth Engine

## *A Real-Time Business Intelligence Framework for Strategic Retail Growth*

**Executive Summary**

This report presents a fully integrated, data-driven Business Intelligence (BI) framework for Walmart Canada, designed and executed using synthetic yet realistic data. Our solution connects five key business pillars—Sales Optimization, Inventory Management, Real Estate Development, eCommerce Performance, and Employee Benefits—using a unified star schema data model and visualized through Power BI dashboards.

The result: a dynamic decision-support system that empowers Walmart to identify opportunities, mitigate risks, and execute strategic initiatives with real-time precision./

**Framework Assumptions**

* All data used is synthetic, generated using Python (Pandas, Faker, NumPy) to simulate realistic operations.
* Star schema modeling with surrogate keys and normalized dimension tables ensures scalability and consistency.
* Geographic granularity includes major Canadian provinces and postal regions.
* No real-time APIs were implemented—focus remained on modeling, simulation, and executive-level dashboarding.

### Business Domain Analyses

**Sales & Revenue Optimization**

Our Power BI dashboard provided a comprehensive view of sales performance across product categories, store locations, and time periods. Between 2022 and 2024, Walmart generated a total revenue of **$48.99 million**, with an average revenue of **$1.96 million per store**. Seasonal trends revealed that **Q2 and Q3**, particularly **May through August**, yielded the highest revenue. The most profitable product categories were **Home Goods**, followed by **Apparel** and **Grocery**. Among all stores, **Walmart Laval #1** and **Walmart London #14** emerged as top performers.

To build on these insights, we recommend promoting high-margin products through bundled offerings and expanding seasonal campaigns that align with Q2 and Q3 sales peaks. Additionally, underperforming stores should be modeled after the top-performing ones by adopting their training approaches and pricing strategies.

**Inventory Management**

The inventory dashboard tracked warehouse activity across four provinces, capturing key transaction types including purchases, returns, and adjustments. **Overall warehouse utilization stood at 67.16%**, with a notable underutilization warning in **Alberta**, which reported fewer than **15% usage**—only 600 units stored out of a 4,600-unit capacity. Meanwhile, **Nova Scotia** and **Manitoba** displayed balanced inventory-to-capacity ratios, reflecting efficient operations. Since 2025, purchase volumes have steadily increased, indicating a readiness for growth.

Strategically, Alberta’s distribution approach should be reassessed, with potential downsizing or reallocation options considered. Capacity should be scaled in high-fulfillment provinces like Nova Scotia and Manitoba. Lastly, integrating inventory metrics with sales forecasts will further optimize procurement and replenishment cycles.

**Real Estate Development**

Used the past three years of sales data and the predicted sales growth rate to identify cities with strong potential for expansion and to determine the target number of new store openings. Each potential supermarket site was evaluated using 13 carefully designed and weighted measures. These measures were grouped into four categories — **Commercial Term Score** (40% weight), **Property Score** (10% weight), **Location Score** (30% weight), and **Investment Score** (20% weight) — and included key factors such as rent, competitor density, and developer reputation. These were used collectively to calculate a total score for each location.

If a site received a score greater than 80, it was classified as approved. Scores between 70 and 80 were marked as pending, while scores below 70 were considered not recommended. Assumptions were applied across all 13 measures to standardize evaluation. For instance, the Developer Reputation Score, which accounts for 5% of the total weight, was determined based on the rating in the dimension table: if the rating was greater than 4.5, a score of 5 was assigned; if it was between 4 and 4.5, a score of 4 was assigned, and so on.

Similarly, for the Early Termination Score under the Commercial Terms category (weighted at 10%), if the termination penalty was less than one month's rent, a score of 10 was given. If it was less than two months' rent, the score was 9, and if it equaled three months' rent, a score of 7 was applied.

**eCommerce Trends**

This section focused on digital sales performance, payment preferences, discount sensitivity, and regional adoption of digital channels. Total eCommerce sales reached **256,300 transactions**, with the top-performing product categories being **Grocery**, **Home Goods**, and **Apparel**. Among these, **Home Goods** showed the greatest responsiveness to discounting strategies.

The highest-performing digital sales locations included **Ottawa Store #12**, **Vancouver Store #17**, and **Toronto Store #14**. In terms of payment behavior, **credit cards** accounted for **28.5%** of transactions, followed by **debit cards (25%)**, **cash (24.5%)**, and **digital wallets (22%)**, the latter showing rapid growth in adoption.

Strategically, expanding discount strategies in Home Goods could drive volume uplift. We also recommend supporting digital wallet promotional campaigns to accelerate modern checkout usage. Finally, enhancing warehouse fulfillment capacity near top-performing eCommerce locations will help shorten delivery times and improve customer experience.

**Employee Benefits & Productivity**

To improve workforce insights, an **Employee Benefits Management System** was developed to monitor claim activity, premium deductions, and enrollment trends across various benefit types. As of the latest reporting period, the system captured **12,060 total deductions**, **56,740 in premiums**, and **200 claims processed**.

The most utilized benefits included **Dental (25%)**, **Mental Health (22%)**, and **Vision (17.5%)**. Employee enrollment peaked in **2025**, followed by a slight decline after **2026**.

Strategic initiatives moving forward include relaunching awareness campaigns for underutilized programs such as Wellness, analyzing the correlation between benefits engagement and store productivity to guide benefit adjustments, and incentivizing participation in health and vision plans through performance-linked bonuses.

**Expanded Domains (Proof of Concept)**

To strengthen long-term insight capability, we added exploratory metrics in the following areas:

* **Marketing Effectiveness**: Uplift and ROI modeled from campaign-level attribution.
* **Customer Sentiment**: Simulated NPS and reviews tied to store churn.
* **Sustainability Index**: Modeled cost reductions from eco-certified buildings.
* **Vendor Scorecard**: Analyzed delivery delays and impact on sales loss.
* **Workforce Efficiency**: Mapped staffing against footfall and service quality.

**Conclusion**

This project successfully demonstrates how Walmart Canada can use a real-time BI ecosystem to interlink multiple business operations. The use of a unified star schema, interactive dashboards, and actionable KPIs turns raw data into strategic intelligence.

**Recommendations**

1. Proceed with new store development in Laval, based on top site score.
2. Optimize underutilized warehouses, particularly Alberta.
3. Expand targeted discount strategies in Home Goods and Grocery.
4. Incentivize benefit plan engagement, especially among high-retention departments.
5. Enhance mobile and digital wallet adoption through fintech partnerships.

**References**

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