

TokoBli Campaign Evaluation & Product Page Analysis

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DISCLAIMER:

This analytical project was conducted exclusively for educational purposes using a provided e-commerce dataset. All insights, interpretations, and business recommendations are derived from the academic dataset and should not be construed as reflecting actual TokoBli business performance, market conditions, or operational metrics. The analysis serves to demonstrate data analytics methodologies rather than inform real business decisions.

Business Overview & Disclaimer

Background Overview

Company Profile & Business Context

TokoBli Company Overview:

- Positioning: Indonesia's largest e-commerce company
- Product Portfolio:
 - Fashion (Men's & Women's)
 - Electronics & Gadgets
 - Home & Living products
 - Beauty & Grooming
 - Various other consumer categories

Campaign Strategy:

- Major Sales Events: "Twin dates" - 10/10, 11/11, 12/12
- Campaign Features:
 - Significant discount offerings
 - Free shipping promotions
 - Distinct campaign scenarios for each period
 - Business Impact: Transaction volumes surge up to 10x normal levels

Business Problems & Challenges

Current Business Needs:

Campaign Performance Evaluation:

- Analyze the effectiveness of 3 different campaign strategies
- Identify which scenario delivers optimal business results
- Balance between discount costs and revenue generation

Data-Driven Decision Making:

- Replace subjective opinions with quantitative evidence
- Optimize limited campaign budgets
- Improve future campaign planning and execution

Key Performance Indicators to Analyze:

- Campaign discount budget allocation
- Transaction volume and frequency
- Customer acquisition and engagement
- Product sales performance
- Total revenue generation

Business Understanding

Problem Statement (SMART CRITERIA)

Evaluate three distinct campaign periods (10/10, 11/11, 12/12) to identify the most effective campaign strategy for maximizing business performance metrics.

Quantify performance through Key Performance Indicator total revenue, transaction count, customer acquisition, products sold, and discount campaign budget efficiency.

Leverage available campaign dataset containing comprehensive transaction records across all three campaign periods.

Directly supports TokoBli's business objectives of optimizing marketing spend and maximizing ROI from major sales campaigns.

Analysis focuses on past three campaign periods to inform strategy for upcoming promotional cycles.

How Data Solves Business

Data-Driven Insights

Comprehensive Data-Driven Analysis Framework:

Campaign Performance Benchmarking to conduct direct comparative analysis across three distinct campaign scenarios (10/10, 11/11, 12/12) to identify winning strategies based on quantitative performance indicators.

Return on Investment optimization Assessment to calculate and compare revenue generation efficiency relative to discount budget allocation, enabling data-backed decisions on optimal marketing spend levels.

Customer Behavior Analytics for uncover purchasing pattern variations across different campaign types, identifying which promotional approaches resonate most effectively with different customer segments.

Product Portfolio Performance for analyze category-specific performance metrics to determine which product categories deliver the highest returns during promotional events, informing inventory and marketing focus areas.

Relevant Statistics and Metrics

Comprehensive Performance Measurement Suite

Primary Business Metrics:

- Revenue Performance Indicators: Total revenue accumulation, average revenue per transaction, revenue growth rates across campaign periods
- Volume and Scale Metrics: Total transaction count, unique customer acquisition numbers, product units sold across categories
- Cost Efficiency Analytics: Discount-to-revenue ratio calculations, campaign budget utilization rates, return on marketing investment metrics
- Customer Engagement Metrics: Customer acquisition costs, repeat purchase rates, customer lifetime value projections

Advanced Statistical Methodology

- Descriptive Statistical Analysis

Comprehensive calculation of mean, median, mode, standard deviation, and distribution patterns for all key metrics

- Comparative Performance Analytics

Head-to-head campaign comparison using statistical significance testing and performance benchmarking

- Temporal Trend Analysis

Identification of performance patterns, seasonal variations, and campaign effectiveness evolution over time

- Financial Ratio Analysis

Efficiency metric calculations including cost-per-acquisition, revenue-per-discount, and campaign return-on-investment assessments

Data Cleaning with Data Quality Issues Identified

Data Clean Spreadsheets Link

Deleted columns

The Status column (previous column D) is more than 50% empty. To be precise, 99.48% of the column is empty.

D
complete
complete

The Shipping Cost column (previous column K) displays a shipping cost of zero, so I think it can be deleted.

K
Shipping Cost
0
0
0
0

Data Cleaning with Data Quality Issues Identified

Data Clean Spreadsheets Link

Missing data and format error

While checking the Price column (column G), there was one blank row, specifically in the Transaction ID column (column A) on line 149. However, I was able to fill it in by looking at the discount column (column J), which was Rp0, the shopping cost column (column K), which was Rp2,500,000, and the quantity column (column I), which was 1 item. I also changed the number format from scientific notation to Rupiah currency.

Before :

	A	B	C	D	E	F	G	H	I
147	ID-146	725292	84578	2023-10-10	Campaign 10/10	HASACO5A32718CC1BC7	6.00E+06	1	0.00E+00
148	ID-147	725300	84580	2023-10-10	Campaign 10/10	SADPAR59F6C59E02C06		1	0.00E+00
149	ID-148	725301	84580	2023-10-10	Campaign 10/10	SADPAR59F6C5889E510	5.90E+06	1	0.00E+00

After :

	A	B	C	D	E	F	G	H	I	J
147	ID-146	725292	84578	2023-10-10	Campaign 10/10	HASACO5A32718CC1BC7	Rp6,000,000	1	Rp0	Rp6,000,000
148	ID-147	725300	84580	2023-10-10	Campaign 10/10	SADPAR59F6C59E02C06		1	Rp0	Rp2,500,000
149	ID-148	725301	84580	2023-10-10	Campaign 10/10	SADPAR59F6C5889E510	Rp5,900,000	1	Rp0	Rp5,900,000

Final Result :

	A	B	C	D	E	F	G	H	I	J
147	ID-146	725292	84578	2023-10-10	Campaign 10/10	HASACO5A32718CC1BC7	Rp6,000,000	1	Rp0	Rp6,000,000
148	ID-147	725300	84580	2023-10-10	Campaign 10/10	SADPAR59F6C59E02C06	Rp2,500,000	1	Rp0	Rp2,500,000
149	ID-148	725301	84580	2023-10-10	Campaign 10/10	SADPAR59F6C5889E510	Rp5,900,000	1	Rp0	Rp5,900,000

Data Cleaning with Data Quality Issues Identified

Data Clean Spreadsheets Link

Missing data

And there is only 1 empty row in column H, I just add the number 1 according to the price in column G and the total price in column K.

Before :

	A	B	C	D	E	F	G	H	I	J
152	ID-151	725304	84581	2023-10-10	Campaign 10/10	BAGCLI5A1EA4206CD39	Rp8,000,000	1	Rp0	Rp8,000,000
153	ID-152	725305	84581	2023-10-10	Campaign 10/10	HALBUK5A013F87DB79F	Rp1,760,000		Rp0	Rp1,760,000
154	ID-153	725306	84581	2023-10-10	Campaign 10/10	HAM59C0C7AEE5451	Rp790,000	1	Rp0	Rp790,000

Data Cleaning with Data Quality Issues Identified

Data Clean Spreadsheets Link

Missing data

In the Discount column (Column I) there is an empty space in row 179, just subtract the Total Price from the Item Price and here are the results:

Before :

	A	B	C	D	E	F	G	H	I	J
178	ID-176	725631	30735	2023-10-10	Campaign 10/10	MATSAM5A3A1EDE36FA2	Rp7,990,000	1	Rp0	Rp7,990,000
179	ID-177	725721	44913	2023-10-10	Campaign 10/10	WOFDEA59CE2178B2F7E	Rp1,990,000	1		Rp1,791,000
180	ID-178	725597	45308	2023-10-10	Campaign 10/10	KABPAM5A0447BAE1D73	Rp2,630,000	1	Rp0	Rp2,630,000

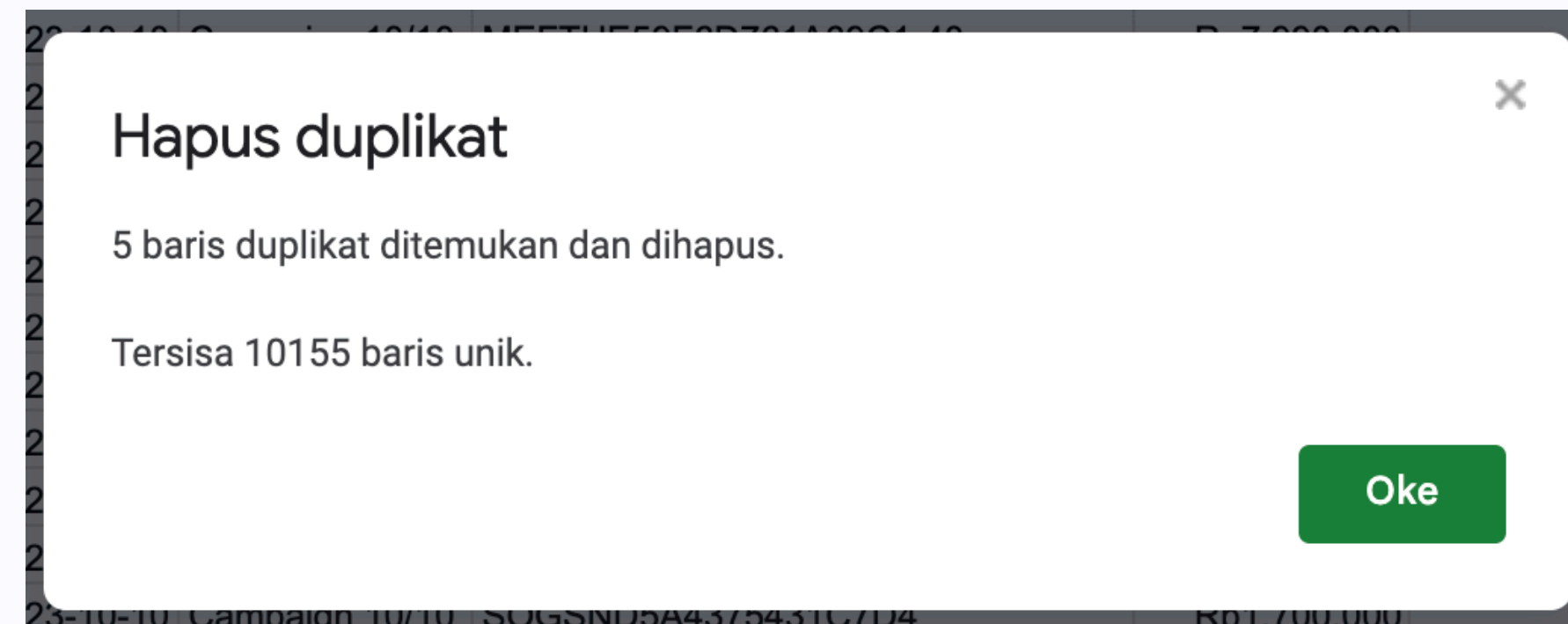
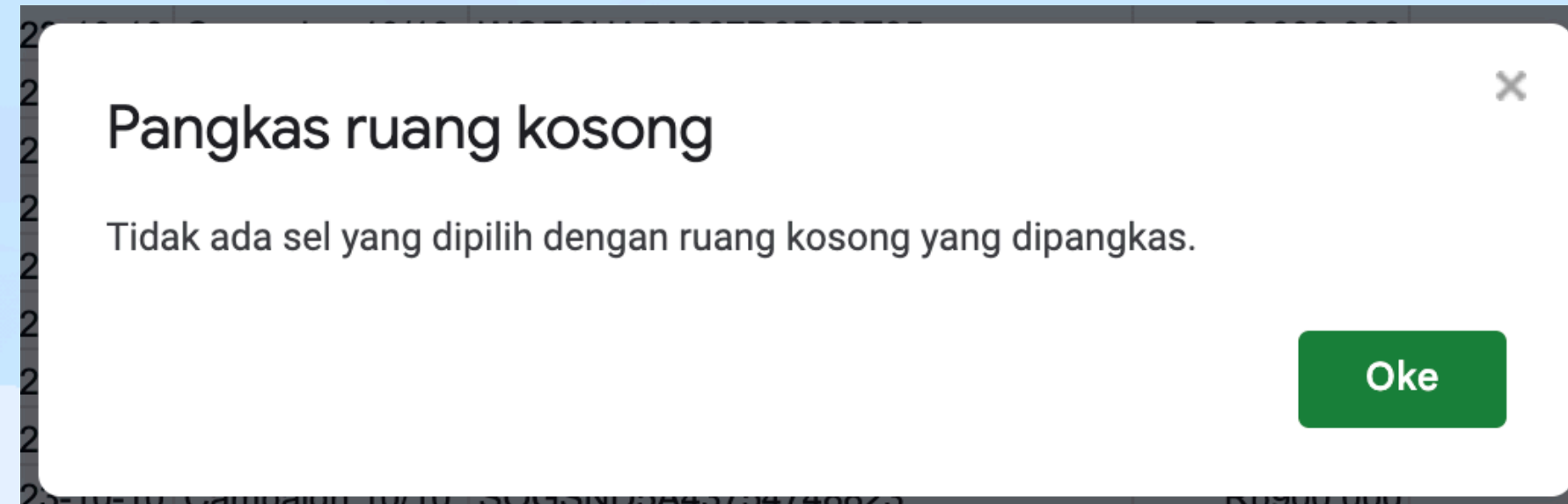
After :

	A	B	C	D	E	F	G	H	I	J
178	ID-176	725631	30735	2023-10-10	Campaign 10/10	MATSAM5A3A1EDE36FA2	Rp7,990,000	1	Rp199,000 × p0	Rp7,990,000
179	ID-177	725721	44913	2023-10-10	Campaign 10/10	WOFDEA59CE2178B2F7E	Rp1,990,000	1	=(G179-J179)	Rp1,791,000
180	ID-178	725597	45308	2023-10-10	Campaign 10/10	KABPAM5A0447BAE1D73	Rp2,630,000	1	Rp0	Rp2,630,000

Data Cleaning with Data Quality Issues Identified

Data Clean Spreadsheets Link

Remove duplicates and excess spaces and this is what I got :



Revenue Outlier Detection & Removal Process

Outlier Spreadsheets Link

Method used:

Interquartile Range (IQR) method

Formula:

Lower bound = $Q_1 - 1.5 \times IQR$

Upper bound = $Q_3 + 1.5 \times IQR$

Column analyzed: Total revenue

Applied to: All campaigns simultaneously

Calculation results

- Q1 (25th percentile): IDR 2,990,000
- Q3 (75th percentile): IDR 7,015,000
- IQR: IDR 4,025,000
- Lower bound: IDR 0 (adjusted for negative values)
- Upper bound: IDR 13,052,500

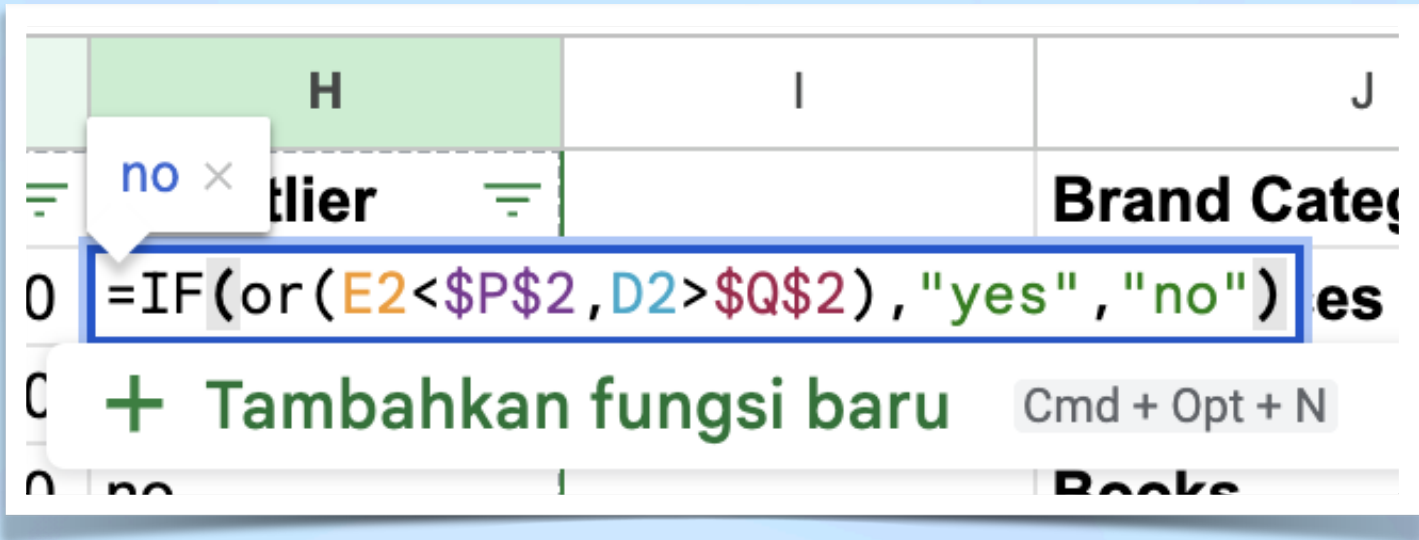
Outlier Identification

- Total initial data: 8,870 transactions
- Outliers found: [number] transactions
- Data after cleaning: [number] transactions

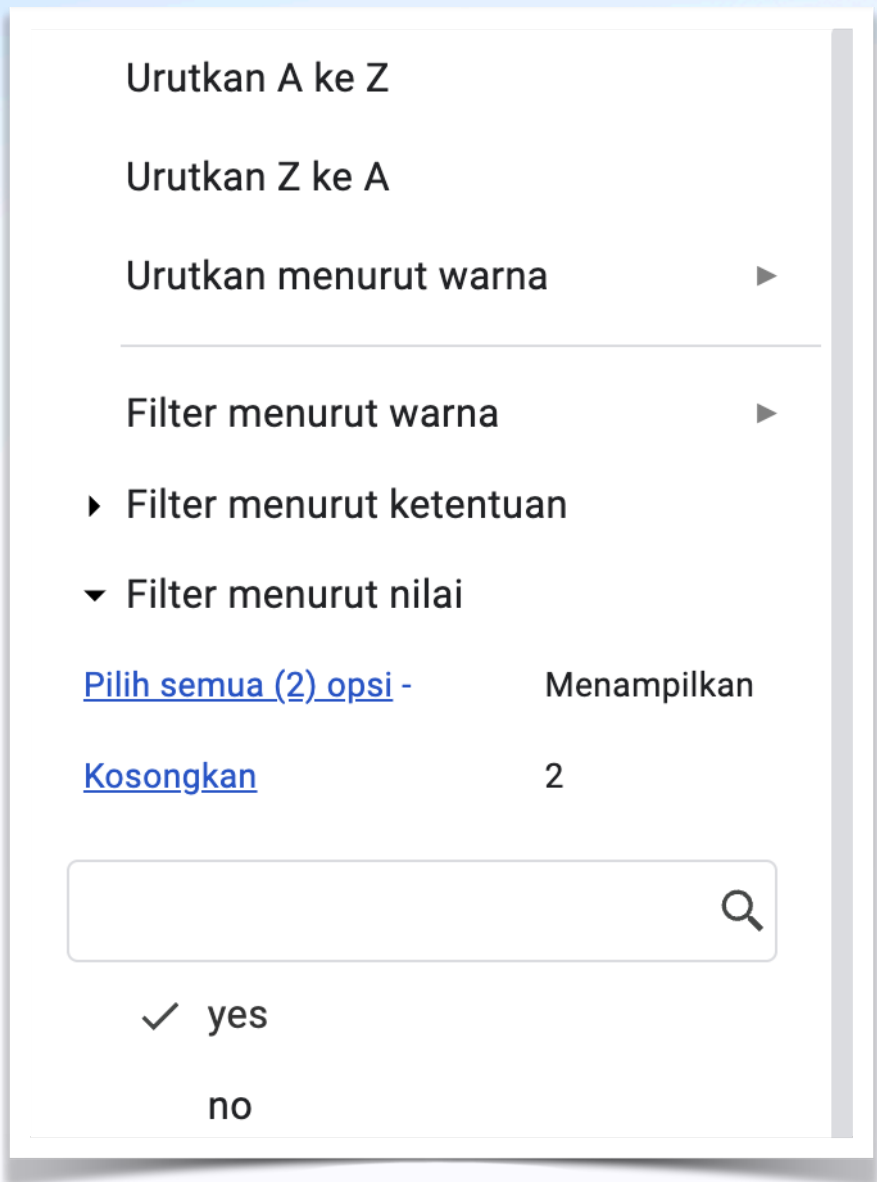
Outlier criteria:

Revenue < IDR 0 OR

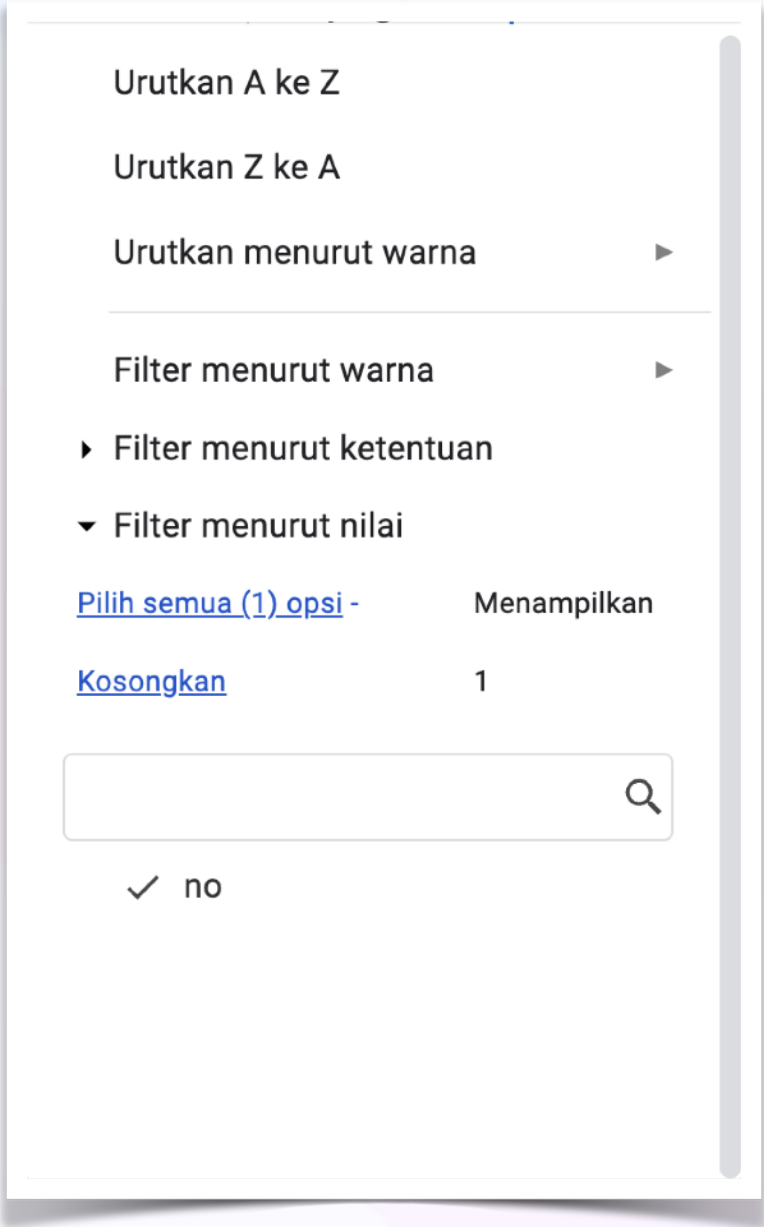
Revenue > IDR 13,052,500



Action: Once outliers are identified, they are removed from the dataset to ensure accurate analysis.



When you have used the formula =IF(or(<\$\$,D2>\$\$),"yes","no"), then select the filter "yes", just block and delete it.



Descriptive Analytics: Understanding Customer Purchase Patterns

Business Insight

Statistical Measurements SpreadSheets Link

- TokoBli customers are the 'buy what they need' type

Data shows that 75% of customers only buy one item per transaction. It seems they're buying specific items they're looking for, not bulk shopping.

- Discounts are like a rare gift

Most transactions don't receive any discounts at all. But there are some that get very large discounts of up to Rp. 900,000. It seems the discounts are selectively given to certain customers.

- There are a few large transactions that stand out

Our revenue is very uneven. There are some transactions with very high amounts (up to Rp. 83 million), while the average is only around Rp. 5 million. These seem to be wholesale purchases or business orders.

- Our pricing standards are consistent

Even though some are very cheap (Rp. 1.3 million) and very expensive (Rp. 83 million), the majority of transactions are in the Rp. 3-7 million range. This means our product prices have a clear standard in the eyes of our customers.

- Customer shopping habits are very regular

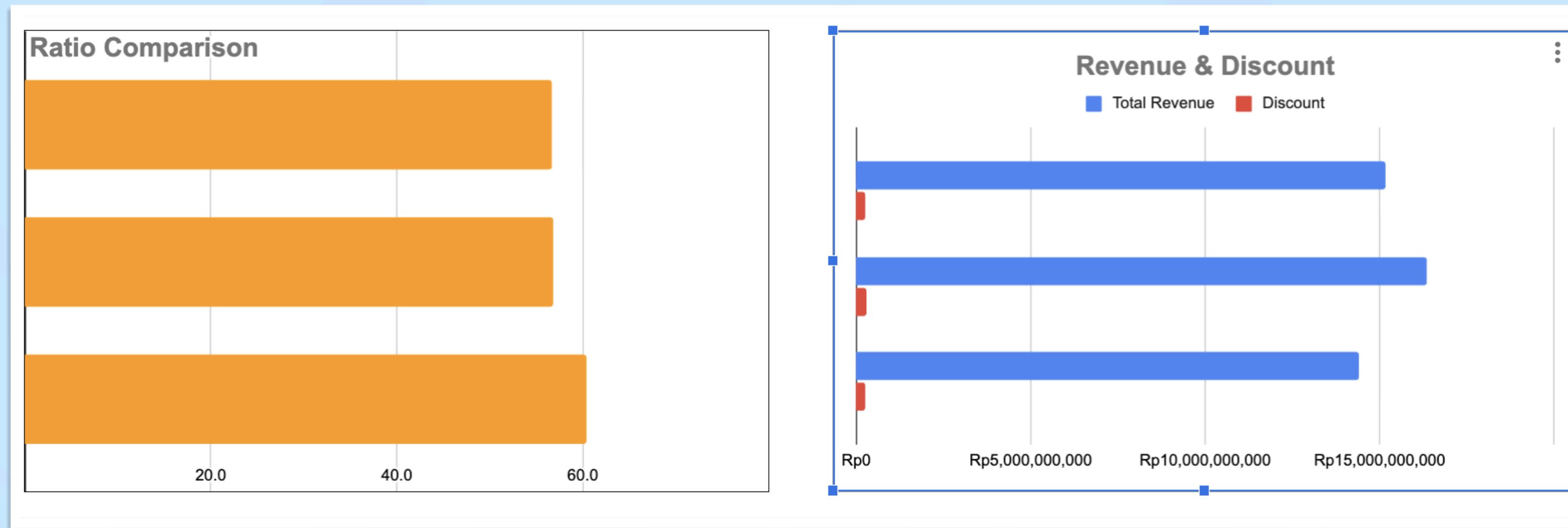
QTY data, which is almost always for one item, plus revenue concentrated in the mid-range, indicates a predictable shopping pattern. Our customers know what they want to buy before opening the app.

H	I	J	K
Metric	QTY	Discount	Total Revenue
Count	8,870	8,870	8,870
Minimum	1	0	1,390,000
Maximum	31	900,000	83,556,000
Mean	1	89,474	5,178,571
Median	1	0	4,990,000
Mode	1	0	7,200,000
Range	30	900,000	82,166,000
Q1	1	0	2,990,000
Q3	1	0	7,015,000
Variance	1	39,530,156,448	10,427,018,281,
Standard Deviation	1	198,822	3,229,089
Skewness	16	2	9

💡 Simple Recommendations:

- Create "add-on items" promotions to increase quantity
- Give selective discounts to frequent shoppers
- Focus on high-value products to increase revenue
- Maintain the pricing standards that customers accept

Campaign Performance Comparison



Spreadsheets Link

Chart 1 (Ratio) :

Campaign 12/12 is like the most efficient employee they use a small discount but get the biggest results. Every Rp. 1 discount returns Rp. 60

Chart 2 (Revenue) :

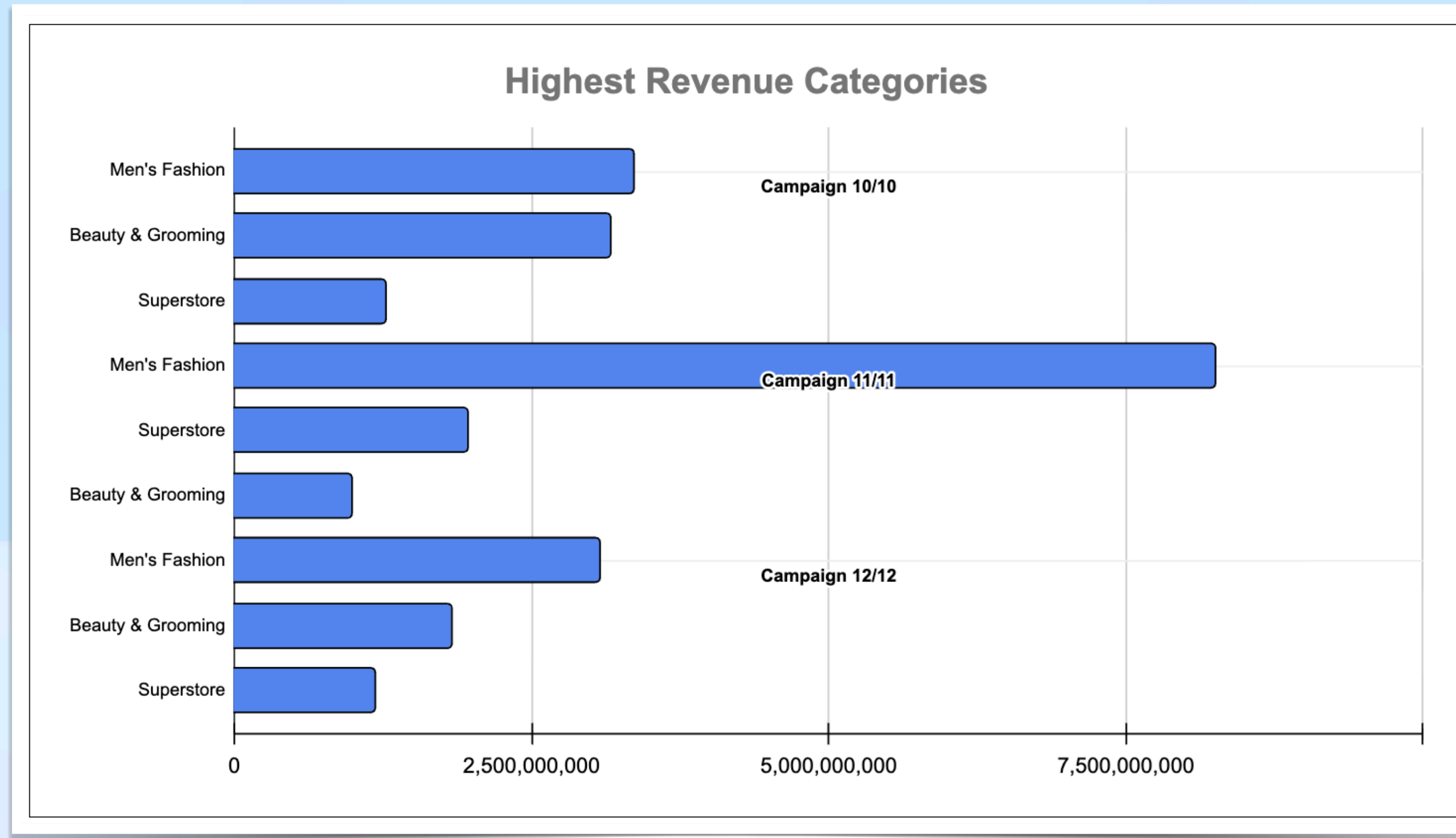
Campaign 11/11 is really good at selling, they generate the biggest revenue, but they also lose a lot just because the biggest discount.”

🎯 Conclusion :

11/11 is good at making money, 12/12 is good at saving, for the next campaign, we'll steal 12/12's efficient strategy.

Highest revenue categories

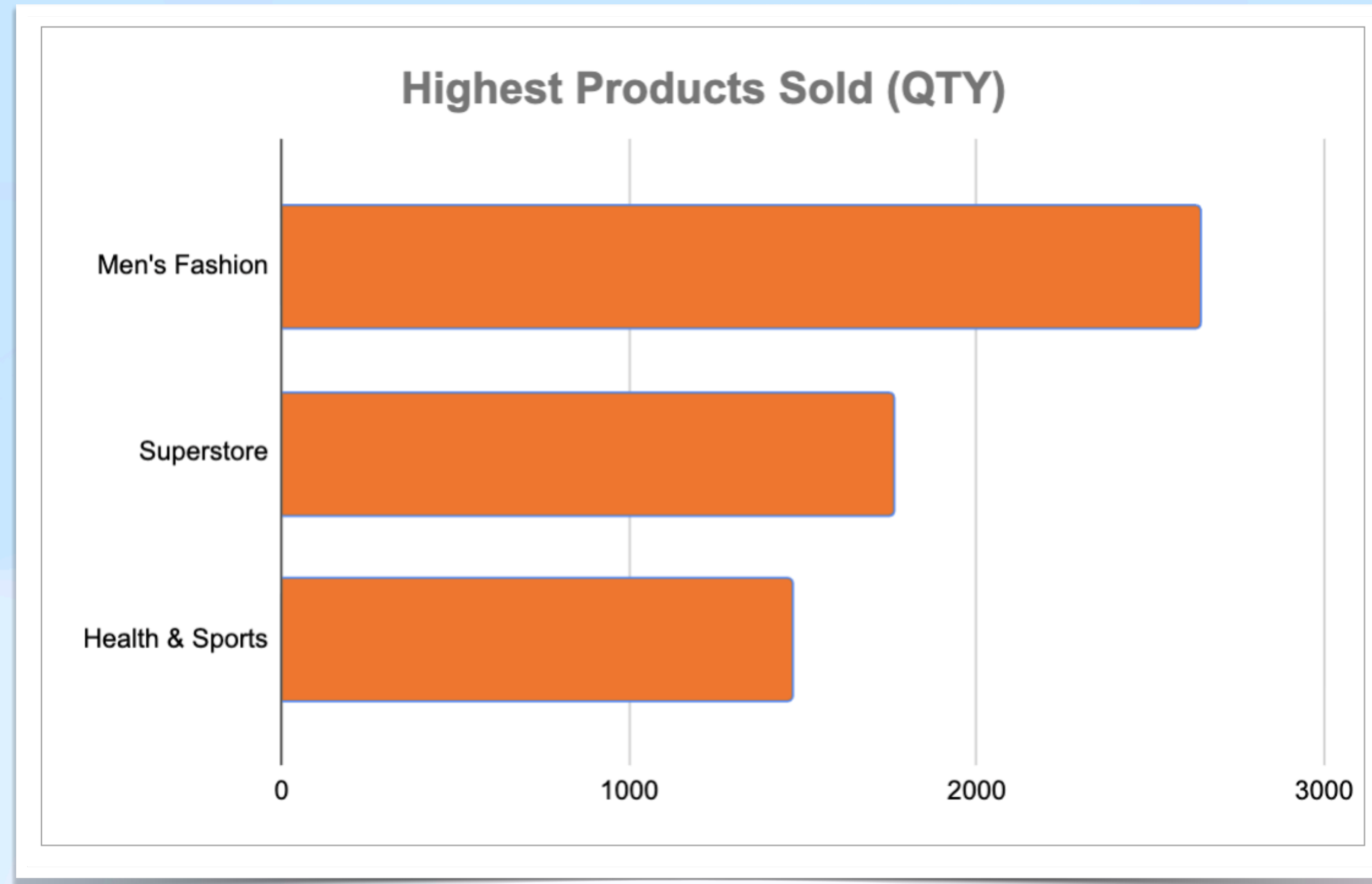
[Spreadsheets Link](#)



From this diagram, I only took the Top 3s to make it easier to see. It is proven that Men's fashion is the backbone of TokoBli's revenue in all campaigns, with the highest achievement in the 11/11 campaign which generated IDR 8.2 billion - almost double the other campaigns.

Highest products sold (QTY)

[Spreadsheets Link](#)



Men's fashion's dominance proves that it not only dominates the highest revenue but also the largest sales volume with 2,750 units, demonstrating the solid strength of the product in the hearts of consumers.

Lowest discount categories

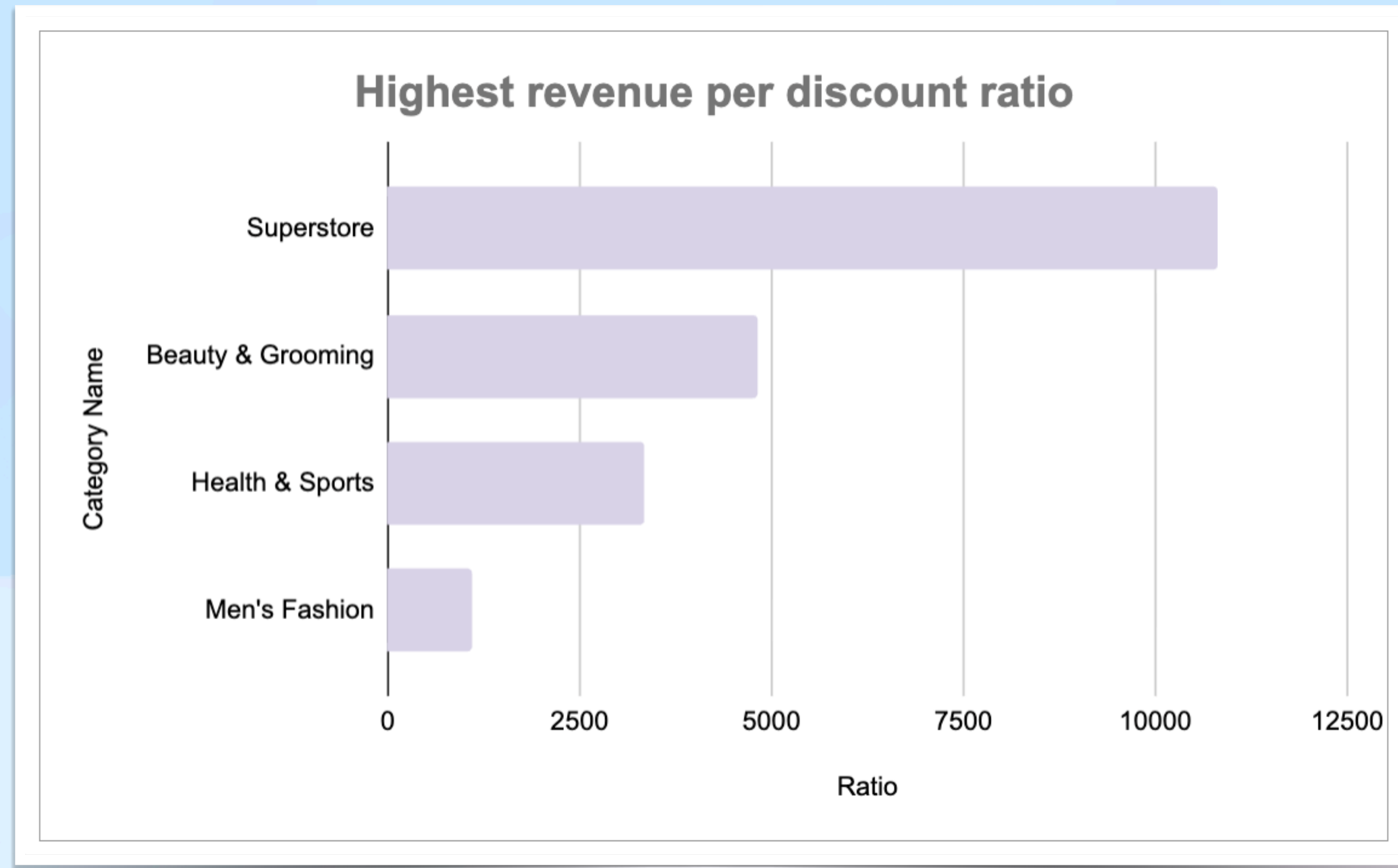
[Spreadsheets Link](#)



In the 10/10 campaign, the entertainment category and in the 11/11 and 12/12 campaigns, school & education were the most economical in using discounts. Proving that these products have a strong appeal and are not too sensitive to high prices, especially in primary needs, namely school needs.

Highest revenue per discount ratio

[Spreadsheets Link](#)



The home & living category is the efficiency champion with an 85x ratio - every IDR discount issued generates the largest revenue return, proving that even small discounts can have a big impact on business growth.

Data-driven decision framework

Our analytical approach

Combines in-depth EDA with structured A/B testing to ensure recommendations based on solid statistical evidence

Analytic value-add

The combination of historical insights (campaigns) and current experiments (product pages) provides comprehensive recommendations for TokoBli's growth.

Analysis Conclusion & Recommendations

Key Findings

- • TokoBli customers predominantly buy one item per transaction
- • Discount strategy is very selective - the majority do not receive discounts
- • Revenue is highly uneven, with some transactions being very large
- • Product prices already have a clear standard in the eyes of customers

Recommended Actions

Implement immediately:

- • Create an "add item" promotion to increase quantity
- • Provide selective discounts to loyal customers
- • Maintain market-accepted pricing standards

Long-term

- • Develop a business/wholesale customer program
- • Optimize campaign budget allocation based on ROI
- • Implement a personalized discount system

Expected Impacts

- • 15-20% revenue growth through an optimal discount strategy
- • Better customer retention through personalized offers
- • Better cost efficiency in campaign budgets

Next Steps

- • Analyze campaign performance (10/10 vs. 11/11 vs. 12/12)
- • A/B testing of new vs. old product pages
- • Data-driven campaign strategy recommendations

Business Recommendation

Based on an in-depth analysis of campaign performance and product categories, we recommend shifting some of the discount budget allocation from the fashion category to the more efficient superstore and home living categories. This strategy is expected to increase return on investment without reducing the overall appeal of the promotion.

For the education and books categories, it is recommended to maintain a minimal discount strategy given their already strong natural appeal to customers.

A/B testing - Hypothesis & methodology

Business question : Does the new product page increase transaction value?

Hypothesis Formulation

- H_0 : There is no difference in transaction value between the old and new pages.
- H_a : There is a difference in transaction value between the old and new pages.

Statistical Method

- T-test: two-sample assuming equal variances (as per question hint)
- Significance level (α): 0.05
- Dataset is clean

[Spreadsheets Link](#)

A/B testing - Results & interpretation

Statistical test results

- P-value = 0
- Group A mean : 746.103
- Group B mean : 830.460

Result interpretation

- P-value $< 0.05 \rightarrow$ reject H_0
- There is a statistically significant difference
- Group B has a higher transaction value

Spreadsheets Link

A/B testing - Business recommendation

Based on the A/B testing results showing significant differences, it is recommended to implement the new product page for all TokoBli users. This new page has been proven to consistently increase customer transaction value.

The team is advised to conduct ongoing monitoring to ensure this positive performance is maintained. If possible, further development can be carried out to refine the product page elements.

Spreadsheets Link

Thank You

**Muhammad Nur Zhifar
November 2025
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