



# **BUSINESS DATA MANAGEMENT** **CAPSTONE PROJECT**

**Data-Driven Insights into Credit Sales and Customer Dynamics in a Jewellery Store**

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# Executive Summary

This study investigates operational challenges at Shri Giriraj Ji Jewellers, a rural, unorganized retailer in Rajau Paraspur, Bareilly, Uttar Pradesh. Established in 2018, Operating in a traditional B2C model, the business relies on manual processes, limiting credit management, customer tracking, and inventory planning.

## Problem Statements:

- Delayed Credit Repayment and Unstructured Customer Behavior Impacting Profitability.
- Lack of Seasonal Demand Visibility and Inventory Inefficiencies Across Product Lines.



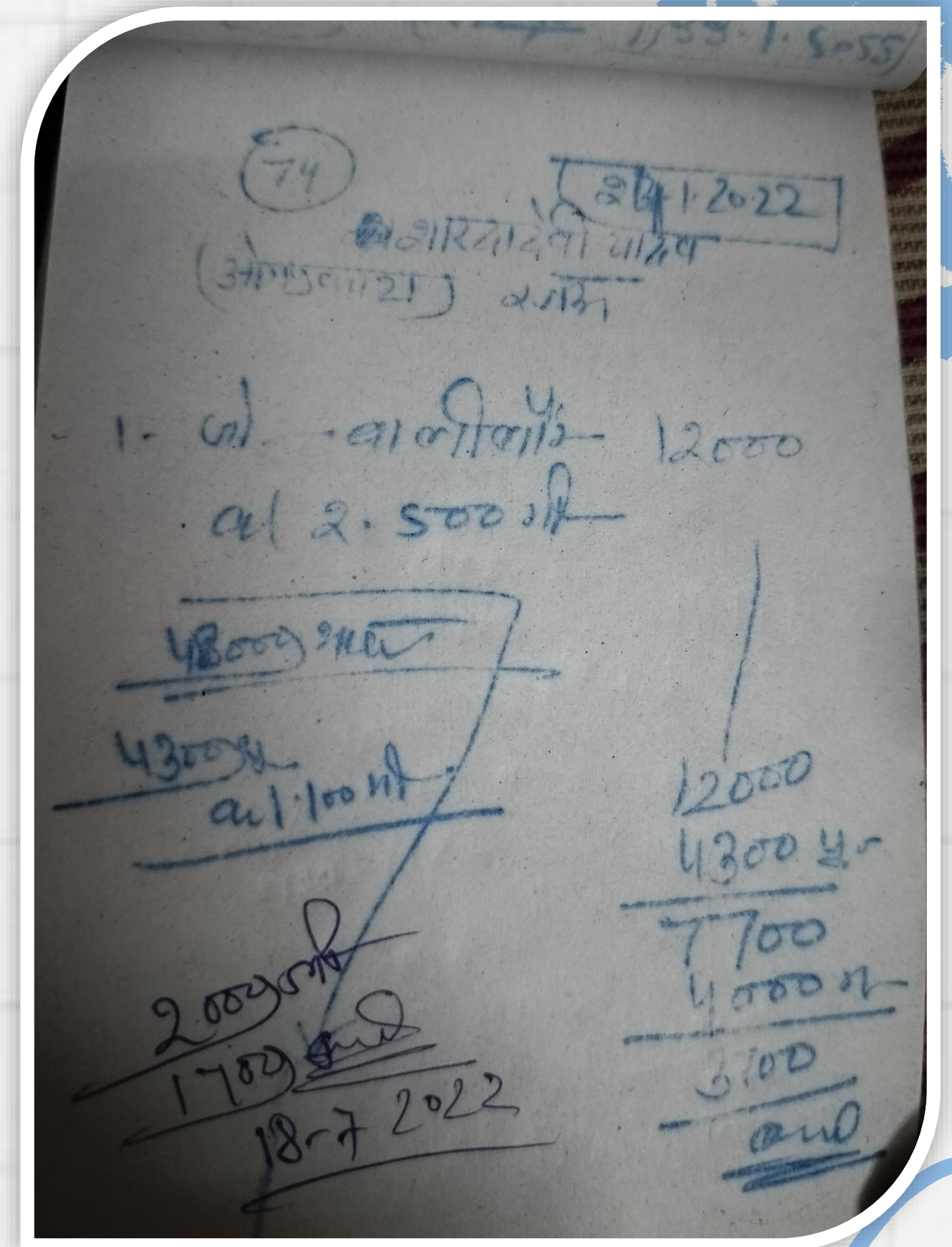


# Data Collection

The business owner has maintained sales bills from late 2020 to early 2024 , Each bill contains key fields customer name, date, item name, weight, rate per gram, total amount.

Sales data and credit data was collected in the form of raw handwritten bills and diary entries which required digitalization. Through this process, a total of 985 individual sales bills and 297 credit entries , spanning the period from December 2020 to November 2023, were compiled.

The basic data that was gathered for analysis was extremely raw. Therefore, Google Sheets and Excel were utilized to consolidate and clean the data in preparation for further analysis.





# Analysis Used

## **Preprocessing:**

To handle missing values for making charges and discounts, a rule-based logic was applied , Inconsistent customer names across the sales and credit datasets were cleaned using fuzzy matching via the Rapid Fuzz library. All visualizations were generated using the Matplotlib module of python on google colab .

## **KPI Analysis :**

KPIs define the key parameters in the data that have a significant impact on the analytics . In our study we can evaluate aspects like Inventory Turnover Ratio , Average Transaction Value for a particular category , best-Selling Items by Category.

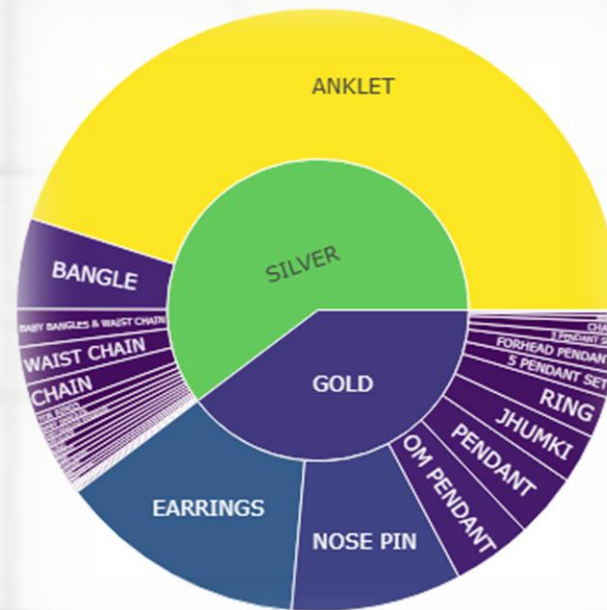
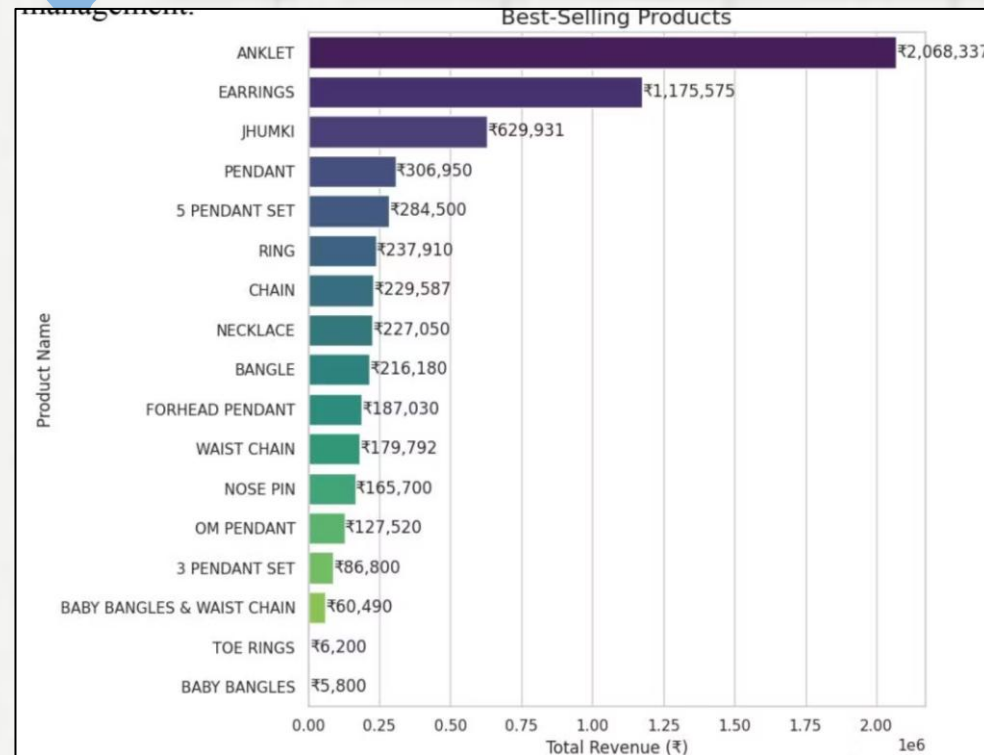
## **Customer Profiling:**

Creating detailed profiles of target customers to understand their preferences , installment payment behavior , repeated purchases and Exchange Impact Evaluation to assess revenue variation caused by jewellery trade-ins .

## **Product & Inventory Forecasting:**

Uncover cyclical sales patterns and category performance used to identify factors like high moving , slow moving ,random demand , Predicting future trends and demands , Seasonality effects on each product category based on historical sales data .

# Findings & Result

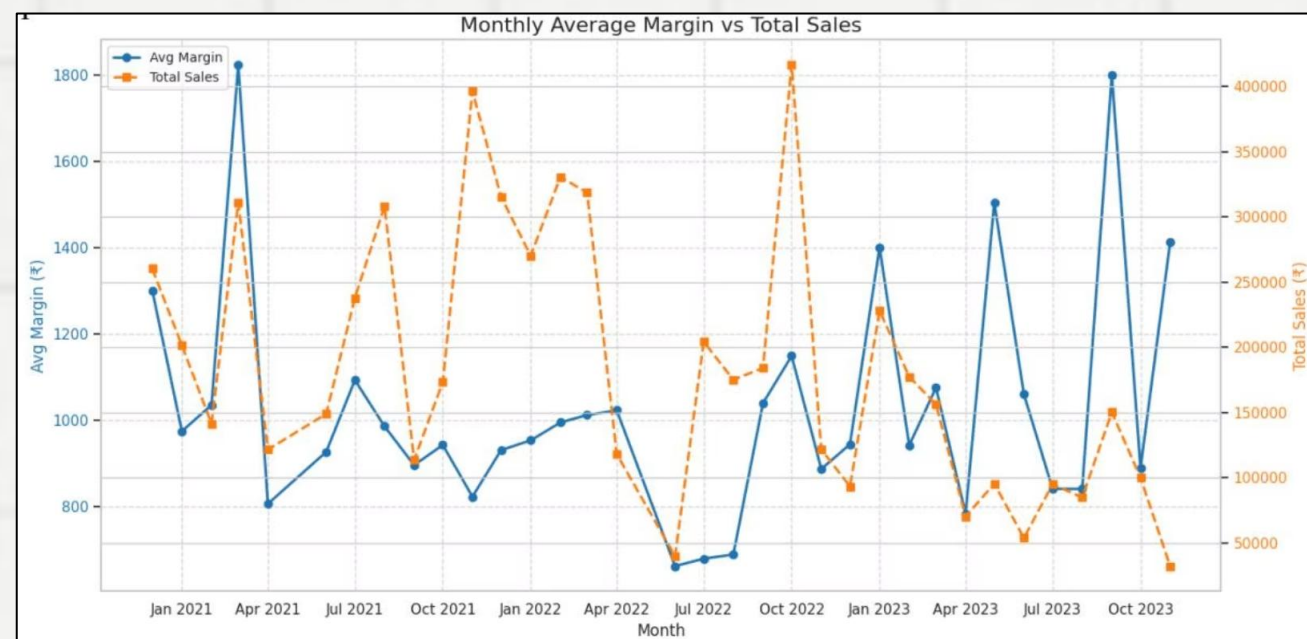


## Best – Selling Products

Anklets (₹20+ lakhs) and Earrings (₹11.75 lakhs) are top revenue contributors, indicating strong demand. Premium items like Jhumki (₹24,229 ATV) and 5 Pendant Sets (₹21,885 ATV) are high-value gold products.

## Transaction Value

Gold items (40% volume) have a mean transaction value of ₹9,548.54, 2.25x higher than Silver (60% volume) at ₹4,232.6. Overall ATV: ₹6,342.



Sales and margins show an inconsistent relationship, driven by shifts in product mix and transaction terms. This underscores the need to balance revenue growth with sustained profitability.



# Findings & Result

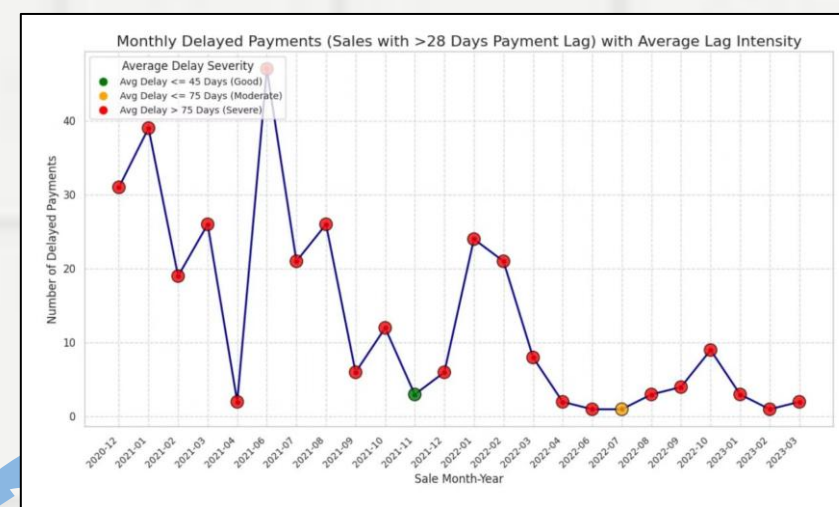
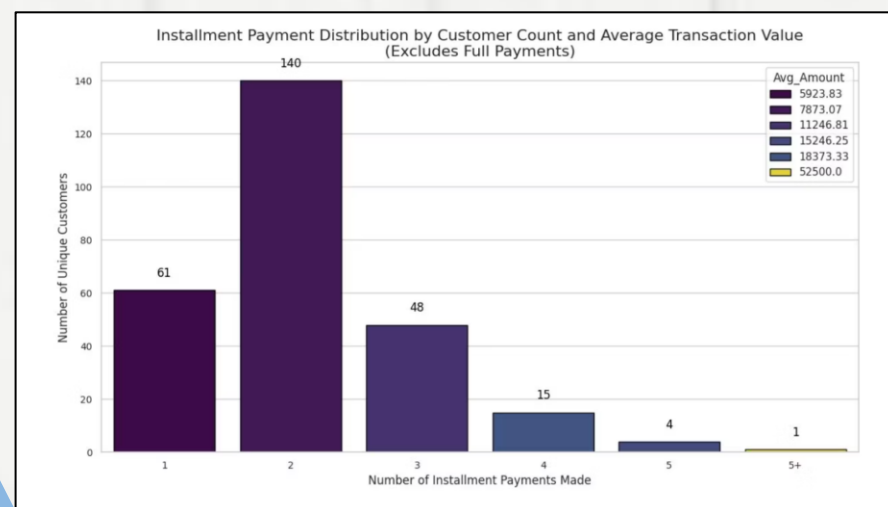


**Segment 0 (Green):** Moderate to high frequency, mid-value customers (up to ₹75,000 spend).

**Segment 1 (Orange):** Low spend, low frequency, possibly one-time buyers

**Segment 2 (Blue):** High-value customers with lower frequency but larger ticket sizes.

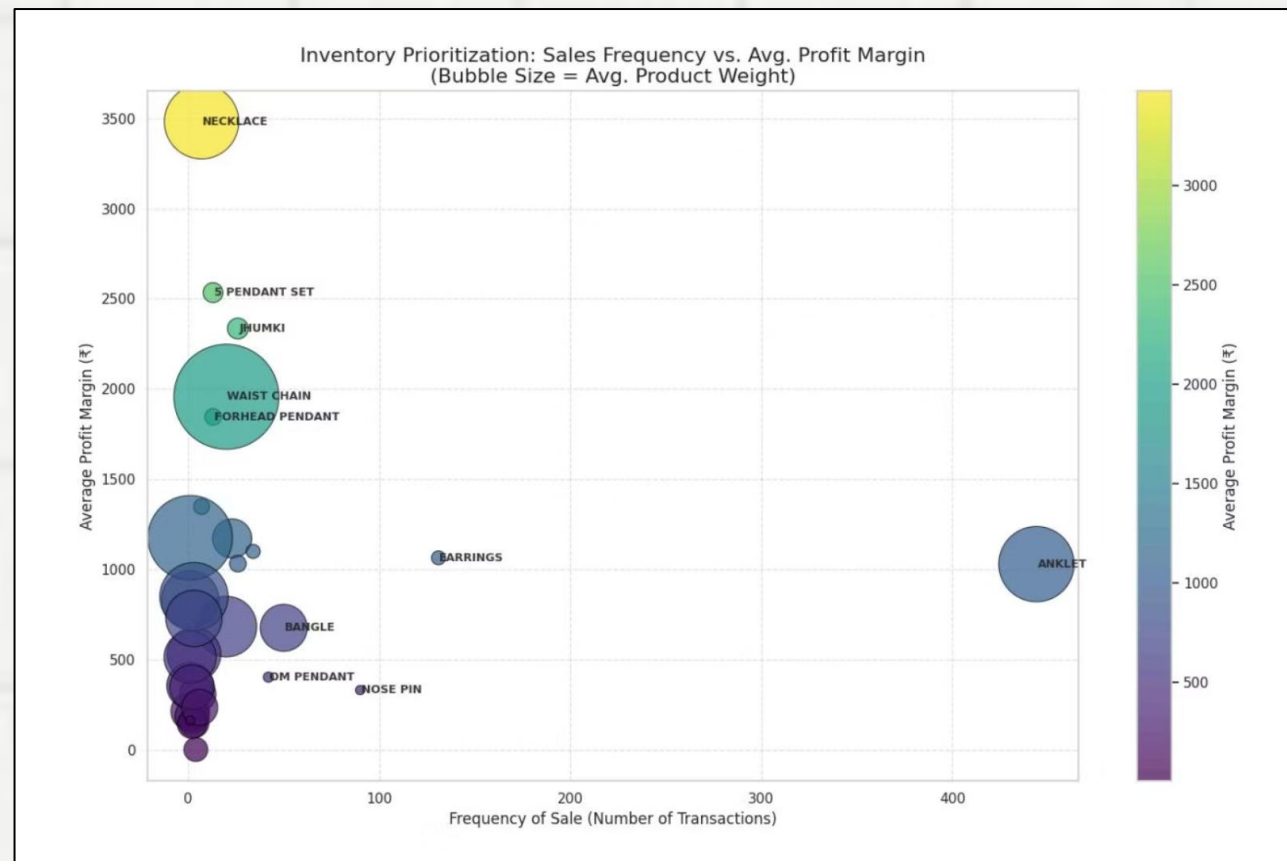
High-value, low-frequency customers (Segment 2) offer opportunities for targeted premium services.



Most customers (140) opt for 2 installment payments, averaging ₹7,873. Higher installment counts correlate with larger purchase values (5+ installments: ₹52,500).

Delayed payments (lag >28 days) were severe in 2021 (avg. >75 days), especially May-July and Dec-Jan, aligning with agricultural lean periods.

# Findings & Result

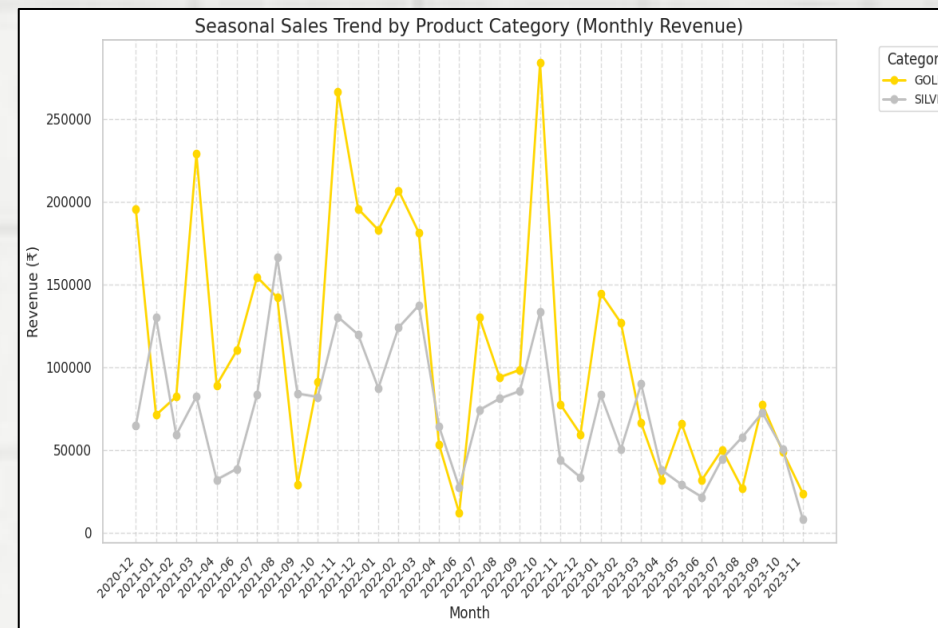
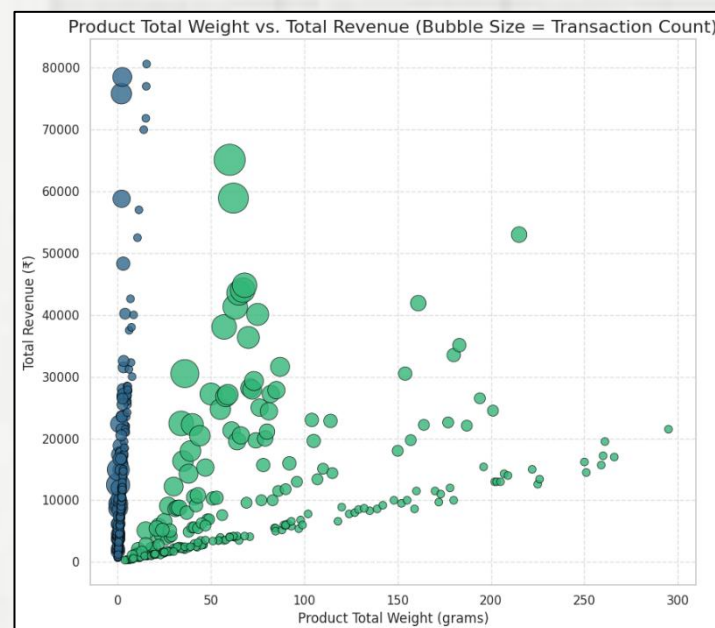


**High Frequency + High Margin:** Anklets are leaders, but their weight requires efficient storage.

**High Frequency + Low Margin:** Nose Pins, Earrings, Bangles sell well but have lower margins.

**Low Frequency + High Margin:** Necklaces and Pendant Sets are luxury items, suitable for lean inventory.

**Low Frequency + Low Margin:** Small items like Om Pendants offer balanced performance.



Lightweight Gold items offer high returns with low storage costs, ideal for agile inventory strategies, while heavier Silver products provide steady revenue but need tactical stocking. Low-weight, low-revenue items hold cultural value, whereas high-weight, low-revenue products are least efficient and best limited. Align Gold inventory with demand peaks to optimize turnover.



# Recommendation

## Credit Policy

Implement a standardized 30–60 day credit cycle with interest on delayed payments. Restrict disbursement during low liquidity months (May–Jul, Dec–Jan), and activate during harvest-driven inflow periods (Jan, Feb, Aug, Sep) to align repayment with income cycles.

## Customer Segmentation

Offer credit/retention to Segment 0. Incentivize Segment 1 to become repeat buyers. Provide flexible, premium options for high-value Segment 2 customers.

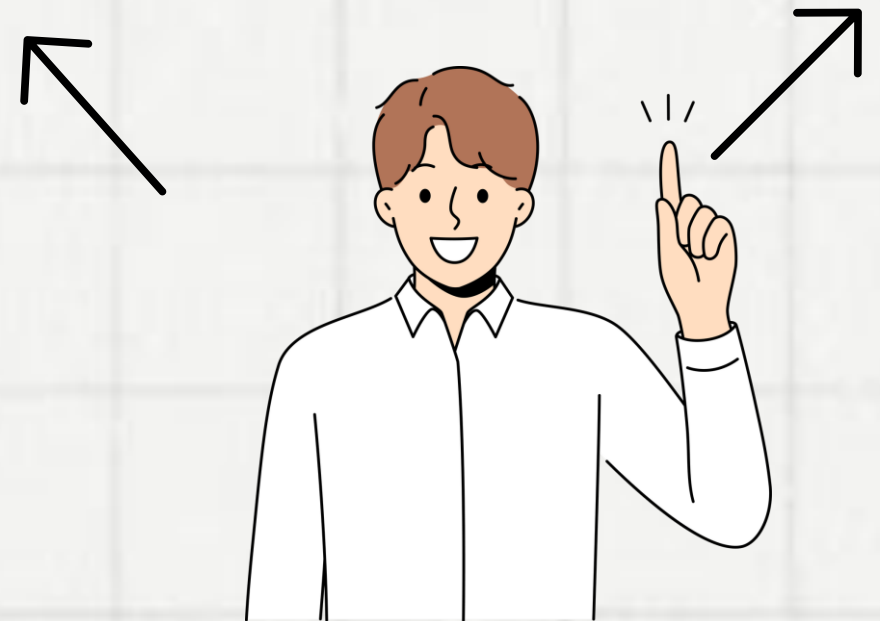
## Inventory Optimization

Align procurement with seasonal cycles:

- Stock lightweight gold (1.5–5g) for festive demand (Mar, Oct, Dec).
  - Procure heavyweight silver (60–80g) pre-harvest (Feb, Apr, Nov).
  - Avoid overstocking during May–Aug; reallocate capital from low-turnover items.
- Use revenue-to-weight ratio to optimize product lifecycle and warehouse ROI.

## Digital Adoption

Leverage digital platforms for billing, inventory tracking, and CRM to improve operational resilience, reduce overheads, and enable real-time decision-making across the supply chain



**Thank you**

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**Thank you  
very much!**