Inventory Revenue Risk Analysis(SQL,POWER-BI)

Project Title: Inventory Revenue Risk Analysis(SQL,POWER-BI)
Date: septmber 12, 2025
Prepared By: Ravula Preethi

1. Executive Summary

This analysis quantifies revenue loss caused by out-of-stock (OOS) products in a quick-commerce inventory environment. Traditional sales dashboards show completed sales but fail to capture unrealized revenue due to product unavailability. Using inventory and transactional data, this project identifies 891M in immediate revenue at risk, representing 12% of product unavailability. The analysis enables revenue-prioritized restocking and operational decision-making.

2. Business Problem & Objectives

Problem

Out-of-stock products negatively impact revenue and customer experience. However, not all stockouts have equal financial impact.

Objectives

- Quantify total revenue at risk due to OOS products
- Identify high-impact categories and SKUs
- Separate revenue risk from execution gaps
- Support inventory prioritization decisions

4. Data Preparation & Validation

- Verified data completeness
- Used discounted selling price for revenue calculation
- Validated out-of-stock flag
- Base revenue calculated before applying risk logic

5.Methodology

1. What is the revenue generated per product?

name character varying (150)	category character varying (120)	quantity integer	discountedsellingprice numeric (8,2)	revenue numeric
Yummiez Chicken Breakfast Sausages	Ice Cream & Desserts	250	150.00	37500.00
Pantai Red Curry Paste	Ice Cream & Desserts	114	128.00	14592.00
Bagrrys Muesli Crunchy Fruit & Nut With Cranberries	Ice Cream & Desserts	400	297.00	118800.00
Quaker Oats Pouch	Ice Cream & Desserts	1	248.00	248.00
Prasuma Momos - Cheesy Spicy Veg	Ice Cream & Desserts	24	295.00	7080.00
Veeba Sriracha Chilli Garlic Sauce	Ice Cream & Desserts	320	137.00	43840.00

2.How much potential revenue is at risk due to out stock items?

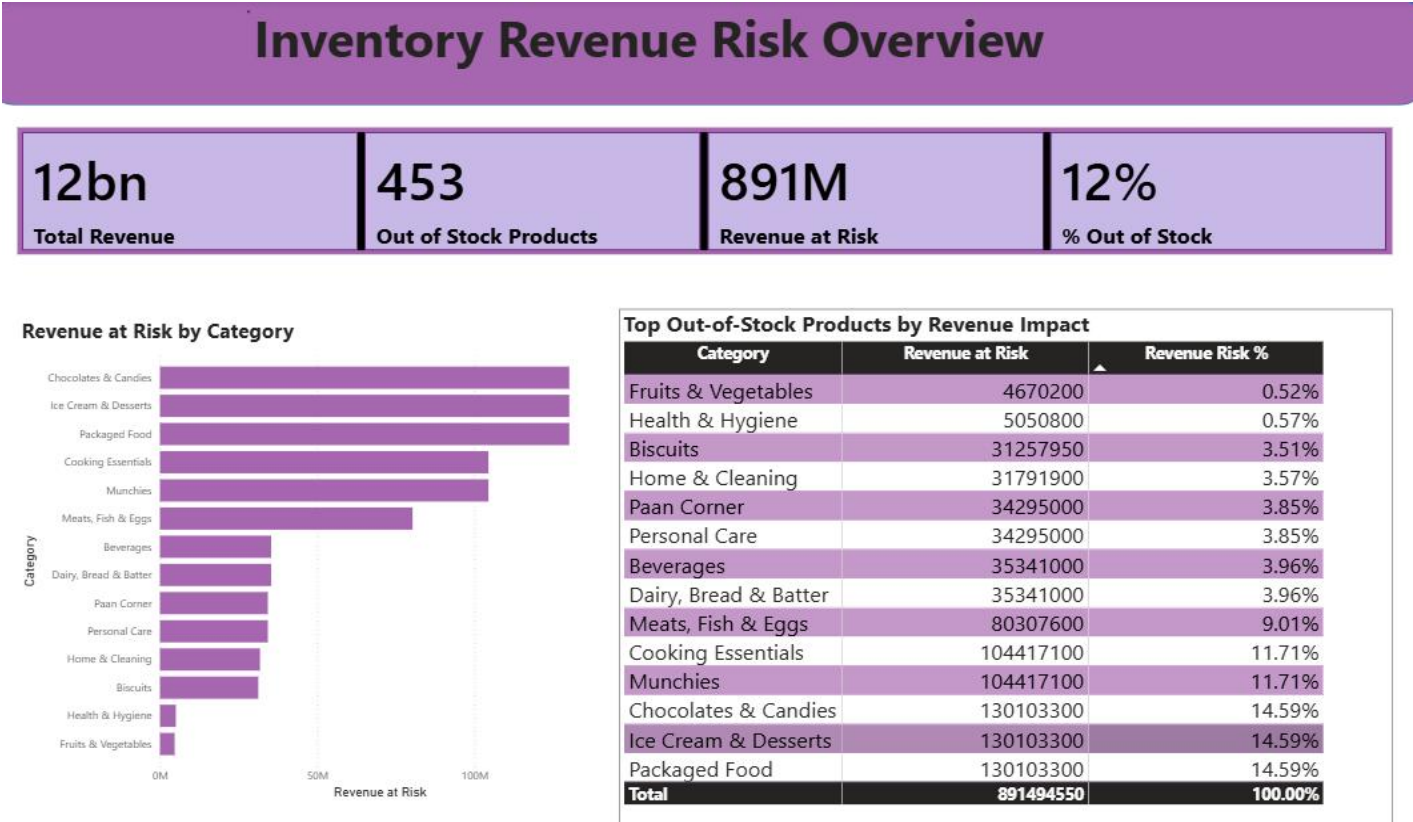|	total_revenue_at_risk numeric
1	8914945.50

3. Which product categories are causing the highest revenue risk?

category character varying (120)	revenue_at_risk numeric
Packaged Food	1301033.00
Chocolates & Candies	1301033.00
Ice Cream & Desserts	1301033.00
Munchies	1044171.00
Cooking Essentials	1044171.00
Meats, Fish & Eggs	803076.00
Beverages	353410.00
Dairy, Bread & Batter	353410.00
Personal Care	342950.00
Paan Corner	342950.00
Home & Cleaning	317919.00
Biscuits	312579.50
Health & Hygiene	50508.00
Fruits & Vegetables	46702.00

4. Which individual products (SKUs) are contributing most to revnue loss?

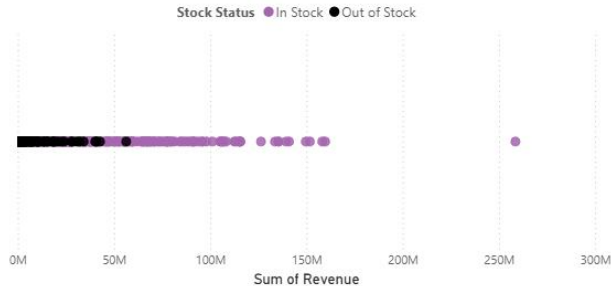|	name character varying (150)	category character varying (120)	discountedsellingprice numeric (8,2)	revenue_at_risk numeric
1	Comfort After Wash Fabric Conditioner Lily Fre...	Home & Cleaning	212.00	182320.00
2	Everest Kashmiri Lal Chilli Powder	Cooking Essentials	279.00	139500.00
3	Everest Kashmiri Lal Chilli Powder	Munchies	279.00	139500.00
4	Kelloggs Corn Flakes With Real Strawberry Pure	Packaged Food	236.00	135700.00
5	Kelloggs Corn Flakes With Real Strawberry Pure	Ice Cream & Desserts	236.00	135700.00
6	Kelloggs Corn Flakes With Real Strawberry Pure	Chocolates & Candies	236.00	135700.00
7	Zorabian Chicken Cubes	Meats, Fish & Eggs	270.00	135000.00
8	Del Monte Pitted Green Olives	Packaged Food	250.00	112500.00
9	Del Monte Pitted Green Olives	Ice Cream & Desserts	250.00	112500.00
10	Del Monte Pitted Green Olives	Chocolates & Candies	250.00	112500.00

5. DashboardAnalysis
Dashboard 1:

Inventory Revenue Risk Overview

12bn	453	891M	12%
Total Revenue	Out of Stock Products	Revenue at Risk	% Out of Stock

Revenue at Risk by Category

Top Out-of-Stock Products by Revenue Impact

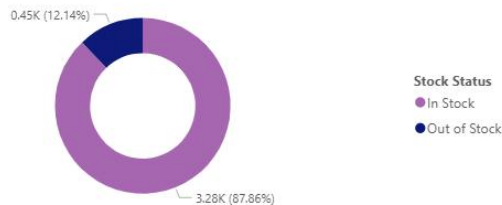| Category	Revenue at Risk	Revenue Risk %
Fruits & Vegetables	4670200	0.52%
Health & Hygiene	5050800	0.57%
Biscuits	31257950	3.51%
Home & Cleaning	31791900	3.57%
Paan Corner	34295000	3.85%
Personal Care	34295000	3.85%
Beverages	35341000	3.96%
Dairy, Bread & Batter	35341000	3.96%
Meats, Fish & Eggs	80307600	9.01%
Cooking Essentials	104417100	11.71%
Munchies	104417100	11.71%
Chocolates & Candies	130103300	14.59%
Ice Cream & Desserts	130103300	14.59%
Packaged Food	130103300	14.59%
Total	891494550	100.00%

Dashboard 2:

Inventory Risk Drivers & Execution Gaps

Revenue Concentration by Price and Stock Status

Stock Status ● In Stock ● Out of Stock

% Out of Stock by Category

product by Stock Status

0.45K (12.14%)

Stock Status
● In Stock
● Out of Stock

3.28K (87.86%)
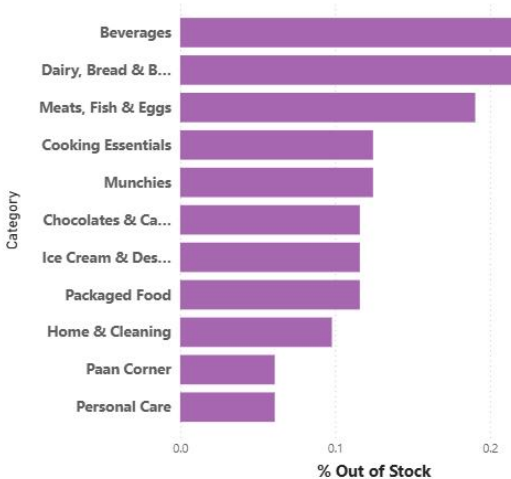
6. Key Insights

- **Revenue Leakage Exists Despite Strong Sales**
  Even with ₹12B total revenue, ₹891M is currently at risk due to stock outs, proving that top-line performance is masking real-time revenue loss.
- **Revenue Risk Is Highly Concentrated**
  A small set of categories contributes the majority of revenue at risk, confirming a Pareto pattern where limited inventory failures cause out-sized impact.
- **High-Priced SKUs Drive Disproportionate Loss**
  Out-of-stock high-value products generate significantly higher revenue loss per SKU compared to low-priced items, increasing financial sensitivity to availability.
- **Execution Gaps Are Category-Specific**
  Some categories show high % out-of-stock despite lower revenue contribution, indicating replenishment and execution inefficiencies rather than demand issues.
- **Availability Failure > Demand Failure**
  Products are not failing due to lack of demand; revenue loss is primarily caused by unavailability at the point of purchase.

7.BUSINESS RECOMMENDATIONS

- **Adopt Revenue-at-Risk as a Core KPI**
  Track revenue at risk alongside sales to proactively identify and prevent revenue leakage instead of reacting post-loss.
- **Prioritize Restocking Based on Revenue Impact**
  Restock SKUs contributing the highest revenue risk first rather than using volume-based or SKU-count-based prioritization.
- **Apply Revenue-Weighted Inventory Allocation**
  Allocate inventory capacity across categories based on revenue contribution, not product count, to minimize financial exposure.
- **Fix Execution Gaps Using % OOS Metrics**
  Use % out-of-stock by category to flag and audit operational inefficiencies in forecasting, replenishment, or supplier execution.

- **Focus on High-Price SKU Availability**
  Implement stricter availability thresholds for high-priced SKUs to reduce disproportionate revenue loss from single-product stockouts.

8.conclusion

This project demonstrates how inventory and transactional data can be transformed into decision-oriented business intelligence rather than static reporting. By introducing Revenue at Risk as a core KPI, the analysis uncovered nearly ₹891M in potential revenue loss, driven primarily by 12% product unavailability.

The findings show that revenue loss is highly concentrated across a small number of categories and high-priced SKUs, proving that stockout impact is not evenly distributed. Category-level and SKU-level analysis enabled clear prioritization, while execution gap metrics (% out-of-stock) separated financial impact from operational inefficiency.