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Data Visualization (934E902)

Case Study

From Data Chaos to Strategic Clarity:

The Data Visualization Journey of Vistara Retail Pvt. Ltd.

Industry Context

Vistara Retail Pvt. Ltd. is a rapidly growing mid-sized Indian retail chain operating in **Tamil Nadu, Kerala, and Karnataka**, with **46 physical outlets** and a growing digital presence. The company caters to the urban middle-class segment through three main categories: **Apparel, Footwear, and Accessories**. Over the last three years, the company reported an **average annual revenue growth of 18%**.

However, despite strong top-line growth, the firm faced a steady **decline in net profit margins**, which dropped from **14.2% in 2021 to 8.7% in 2024**. Senior management suspected that inefficiencies in **inventory movement, regional demand planning, and marketing effectiveness** were eroding profitability.

The Decision-Making Challenge

Vistara's leadership relied on:

- Monthly **Excel-based MIS reports**
- Static **PDF summaries**
- Manual consolidation across departments

Each monthly report extended beyond **100 pages of tabular data**, but decision-makers found it:

- Difficult to **detect trends**
- Impossible to **identify root causes**
- Ineffective for **predictive or prescriptive decision-making**
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At the April 2024 Board Review, the CEO remarked:

"We have all the data in the world, yet we are unable to see the business clearly."

This marked the beginning of Vistara's formal transition into **Data Visualization and Business Intelligence (BI)**.

Sample Operational Dataset (Extract Used for Visualization)

Below is a simplified sample of the type of dataset used by Vistara for visualization:

Store ID	Region	Category	Monthly Sales (₹)	Inven-tory Units	Foot-fall	Con-versio n %	Market -ing Spend (₹)	Monthl y Profit (₹)
S101	Tamil Nadu	Apparel	12,50,000	420	1,200	21.5	78,000	1,22,00 0
S102	Kerala	Footwear	9,75,000	520	950	18.6	55,000	89,000
S103	Karnat aka	Accessories	5,60,000	310	740	22.8	38,000	71,000
S104	Tamil Nadu	Apparel	14,20,000	610	1,320	25.3	82,000	1,55,00 0
S105	Kerala	Footwear	7,80,000	450	880	19.2	61,000	65,000

This data was previously stored across different Excel files without integration.

Phase 1: Understanding the Data Problem

An internal audit revealed:

- Inconsistent **data formats across departments**
- No centralized **data model**
- Over **40% duplication in inventory records**
- Reporting delays of **12–15 days every month**

The company was operating in **descriptive analytics mode**, with no reliable **diagnostic, predictive, or prescriptive intelligence**.

Phase 2: Designing the Visualization Framework

A Business Intelligence Task Force was formed with representation from:

- Finance
- IT
- Operations
- Marketing

They adopted a **five-stage visualization framework**:

1. **Data Collection** – POS, CRM, Inventory, Marketing
2. **Data Cleaning** – Power Query in Power BI
3. **Data Modeling** – Relationships and star schemas
4. **Visualization Design** – Dashboards and reports
5. **Insight Distribution** – Live dashboards for managers

The firm implemented:

- **Power BI** for operational dashboards
- **Tableau** for executive storytelling
- **Python and R** for forecasting and advanced visualizations

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Phase 3: Visualization Design Failures & Learning

The first version of dashboards failed due to:

- Overuse of **3D charts**
- Excessive **color combinations**
- Poor **contrast and labeling**
- Information overload

Managers found dashboards visually attractive but **analytically weak**. The team then redesigned dashboards using:

- **Human perception principles**
- Minimalist design

- Proper **data-ink ratio**
- Strategic **color coding**
- Logical **visual hierarchy**

Phase 4: Diagnostic Insights Through Visualization

Once redesigned, visualization revealed:

- High sales were driven mainly by **low-margin discount products**
- Premium categories contributed only **22% of revenue but 48% of profits**
- Kerala stores suffered from **overstocking of Footwear by 37%**
- Tamil Nadu stores faced frequent **stock-outs during festive seasons**
- Marketing ROI varied sharply across regions

These insights were **never visible in tabular MIS reports**.

Phase 5: Predictive & Prescriptive Analytics

Using historical data visualization with:

- **Python-based sales forecasting**
- **Power BI trend analysis**
- **R-based seasonal pattern detection**

The team developed:

- Demand forecasts by store
- Region-wise promotion planning
- Inventory reordering triggers
- Profit optimization simulations

Prescriptive dashboards now suggested:

- What to **stock**
- When to **discount**

- Where to **invest marketing budgets**
- How to **reduce working capital blockage**

Organizational Impact After 6 Months

Performance Metric	Before Visualization	After Visualization
Inventory Turnover	3.1	5.4
Reporting Time	12–15 Days	3 Hours
Stock-out Frequency	19%	6%
Profit Margin	8.7%	12.9%
Managerial Decision Confidence	Low	High

The CEO now conducts all reviews through **live dashboards instead of static reports**.

Strategic Dilemma

With visible success, Vistara's leadership is now debating:

- Should AI-driven visualization be introduced?
- Should store managers be given **self-service BI access**?
- Should dashboard governance remain centralized?
- Can data visualization be considered a **strategic organizational capability**?

The future of Vistara's analytical maturity now depends on these decisions.

Discussion Questions

1. Why did Excel-based MIS reporting fail at Vistara Retail?
2. How did visualization convert descriptive data into diagnostic insight?
3. What role did human visual perception play in dashboard redesign?
4. How did Vistara shift from diagnostic to predictive and prescriptive analytics?
5. Should data visualization be treated as a strategic asset or only as a reporting tool?
6. What challenges may arise if BI access is decentralized?
7. If you were the CFO, what additional KPIs would you include in the executive dashboard?