📘 DATA INTERPRETATION CASE STUDY REPORT

UNIVERSITY INSTITUTE OF COMPUTING (UIC)

Title: Multi-Product Sales Data Analysis (2022–2025)
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Date: April 2025

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OBJECTIVE OF THIS PROJECT

The aim of this project is to build a dynamic dashboard and structured evaluation system for analysing sales data of retail items. The key objectives are:

- **Data Visualisation**: Create intuitive and interactive visualisations like bar charts, line graphs, and pie charts to analyze trends.

- **Revenue Monitoring**: Track total revenue by calculating price × quantity for each product.

- **Trend Recognition**: Detect and present monthly, quarterly, and seasonal trends for inventory and marketing alignment.

- **Customer Insight**: Interpret purchasing behaviours by region and time period.

- **Performance Metrics**: Use average sales and percentage contribution metrics to support performance comparisons.

- **User-Friendly Interface**: Ensure ease of use via filters, labels, and structured layouts.

- **Reporting**: Enable exporting and generating customised sales performance reports.

DESIGN AND IMPLEMENTATION

1. Project Planning

This step involves defining objectives and deliverables while understanding stakeholder needs. Milestones were set for efficient tracking and stakeholder meetings ensured clarity in expectations.

2. Data Preparation

Sales data was sourced and cleaned by removing duplicate entries and standardising formats. Key fields were:

- Item ID
- Item Name
- Quantity Sold
- Sale Date
- Sales Amount
- Region

Data was formatted into structured tables ready for analysis.

3. Dashboard Design

The dashboard was designed using Microsoft Excel. It contains multiple sheets and visual widgets like slicers, bar

charts, and summary tables to enhance interpretability. Filters and colour coding make it accessible.

4. Development

Excel formulas were used for calculations like total sales, maximum/minimum sold items, and average units sold. Interactive elements were created for user exploration.

5. Testing

All formulas were verified for accuracy. Stakeholder feedback ensured the dashboard was aligned with expectations.

6. Deployment

The Excel file was finalised and shared. Refresh schedules were suggested for real-time performance. Quick-start guides were provided for users.

7. Maintenance and Updates

User feedback is incorporated regularly. Data audits are scheduled, and seasonal updates are added to maintain relevance.

DATASET

The dataset is based on structured retail transaction records including the following fields:

- **Item ID**: Unique product identifier.

- **Item Name**: Full name of the retail item.

- **Sales Amount**: Revenue generated per sale.

- **Sale Date**: Date of transaction in DD-MM-YYYY format.

- **Region**: Sale location (e.g., North, South, East, West).

- **Quantity Sold**: Number of units sold.

This data was processed in Excel and used across various formulas to generate insights.

Product id	Product name	Category	Price($)	Units sold	Sale date	Region	Total sales of each item
101	Phone	Electronics	200	50	15-1-23	North	50
102	Shirt	Clothing	50	200	20-1-23	South	200
103	Washing machine	Home Applicances	150	30	10-2-23	Eest	30
104	Eyelinear	Beauty products	30	150	15-2-23	West	150
105	Ball	Sports	100	80	5-3-23	North	80
106	English	Books	20	300	10-3-23	South	300
107	Car	Toys	25	120	2-4-24	Eest	120
108	Sofa	Furniture	500	20	29-4-23	West	20
109	Biscuit	Groceries	10	500	17-5-24	North	500
110	Engine	Automative parts	300	40	30-5-23	South	40

Total Revenue	Maximum sale of product	Minimum sale of product sale	Total sales by region	Total sales by yearly	Monthly sales	Seasonal sales of products	% 0f total sales per product	Average of units sold
73000	Biscuit	Sofa	630	870	250	440	0.033557	149
							0.134228	
							0.020134	
							0.100671	
							0.053691	
							0.201342	
							0.080537	
							0.013423	
							0.33557	
							0.026846	

QUERIES / FORMULAS

Query 1: Total Sale of Each Item

Formula:

```
=SUMIF(A:A, ItemID, F:F)
```
Purpose: Calculates total quantity sold for each item.

Query 2: Total Revenue

Formula:

```
=SUM PRODUCT(F:F, E:E)
```
Purpose: Multiplies quantity sold by unit price to give total revenue.

Query 3: Most Sold Item

Formula:

```
 =INDEX(B:B, MATCH(MAX(F:F), F:F, 0))
```
Purpose: Returns the item with the highest sales quantity.

Query 4: Least Sold Item

Formula:

```
=INDEX(B:B, MATCH(MIN(F:F), F:F, 0))
```
Purpose: Returns the item with the lowest sales quantity.

Query 5: Total Sales by Region (e.g., North)

Formula:

```
=SUMIF(G:G, "North", F:F)
```
Purpose: Totals the units sold in the North region.

Query 6: Sales by Year (e.g., 2024)

Formula:

```
=SUMIFS(F:F,E:E,">=01-01-2024",E:E,"<=31
-12-2024")
```
Purpose: Calculates yearly total units sold.

Query 7: Monthly Sales (e.g., January 2024)

Formula:

```
=SUMIFS(F:F,E:E,">=01-01-2024",E:E,"<=31
-01-2024")
```
Purpose: Total sales during January 2024.

Query 8: Seasonal Demand (Summer)

Formula:

```
=SUMIFS(F:F,E:E,">=01-06-2024",E:E,"<=31
-08-2024")
```
Purpose: Tracks summer sales trends.

Query 9: Average Units Sold

Formula:

```
=AVERAGE(F:F)
```
Purpose: Returns the average units sold per item.

Query 10: Sales Percentage Per Item

Formula:

```
=F2/SUM(F:F)
```
Purpose: Shows each item's contribution to total sales.

BAR CHART

A **bar chart** was used to visualise item-wise sales. Each bar represents the total units sold of an item, which makes it easy to compare products visually.This chart enables quick assessment of top and bottom performers and helps in marketing planning and stock management.
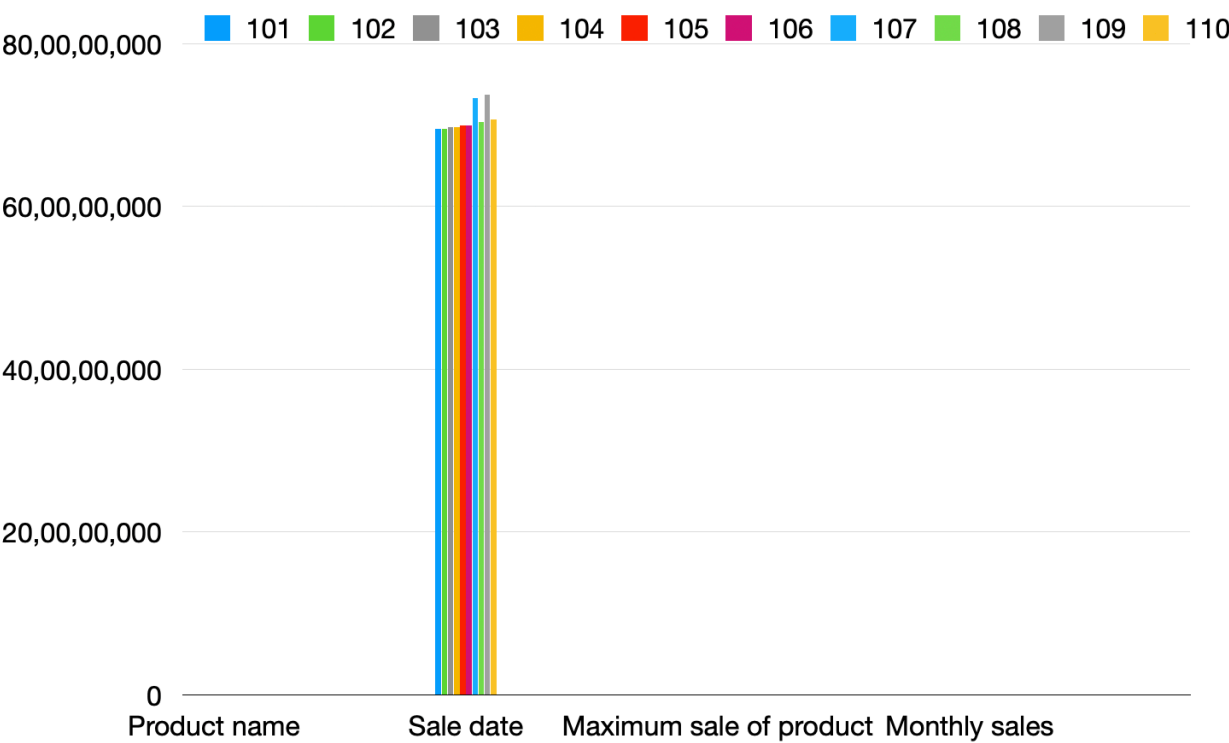
FINAL WEIGHTAGE

- Functionality: 40%

- Design: 30%

- Documentation: 20%

- Presentation: 10%

This grading rubric reflects the importance of core functionalities and analytical design elements in the success of the project.

CONCLUSION

The **Retail Item Sales Evaluation** project successfully delivered a robust platform for analysing retail sales using Microsoft Excel. It combines data interpretation techniques with user-centric dashboard features.

The system:

- Helps track revenue trends.

- Identifies peak demand periods.

- Allows strategic insights into regional and product-level performance.

Through effective data visualisation and query-based analysis, businesses can make informed choices around stock, promotions, and pricing. With ongoing feedback and future iterations, the tool can remain a reliable asset for performance evaluation and planning.