

DATA ANALYSIS REPORT



SALES PERFORMANCE 2018-2022

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EXECUTIVE SUMMARY

This report evaluates Rainbow Retail's sales performance from 2018 to 2022, highlighting key trends and providing actionable insights to optimise future strategies. The analysis is based on synthetic data comprising customers, sales, products and calendar entities, allowing for sales tracking and analysis.

Key Findings:

- Sales and Revenue Growth: A consistent upward trend in sales and revenue was observed, with technology products accounting for 49% of total revenue. Notably, office supplies contributed 33%, while the furniture category underperformed at 3%.
- Product Performance: High-performing products include the High-Speed Automatic Electric Letter Opener and the Cisco Telepresence System EX90. The dominance of a few products indicates potential for diversification and enhanced promotion of lower-performing items.
- Regional Sales Analysis: Key markets identified include KwaZulu-Natal, Gauteng and Eastern Cape, with significant growth opportunities in provinces like Limpopo and Northern Cape. The data suggests potential for market expansion and optimised resource allocation based on regional demand patterns.
- Average Order Value (AOV): The AOV stands at R4,467, offering insights into customer purchasing behaviour and suggesting areas for upselling and cross-selling strategies.

Recommendations:

- Product Portfolio Optimisation: Expand technology offerings, review the underperforming furniture line and investigate unclassified categories for new growth opportunities.
- Sales and Marketing Strategies: Intensify efforts in high-performing regions, launch targeted campaigns in lower-performing areas and develop strategies to increase the AOV.
- Seasonal Sales Optimisation: Analyse sales trends for seasonal insights and implement dynamic pricing strategies.
- Data Analysis Enhancement: Improve product categorisation, conduct deeper customer behaviour analysis and refine data collection processes to ensure accuracy.

Technical Approach:

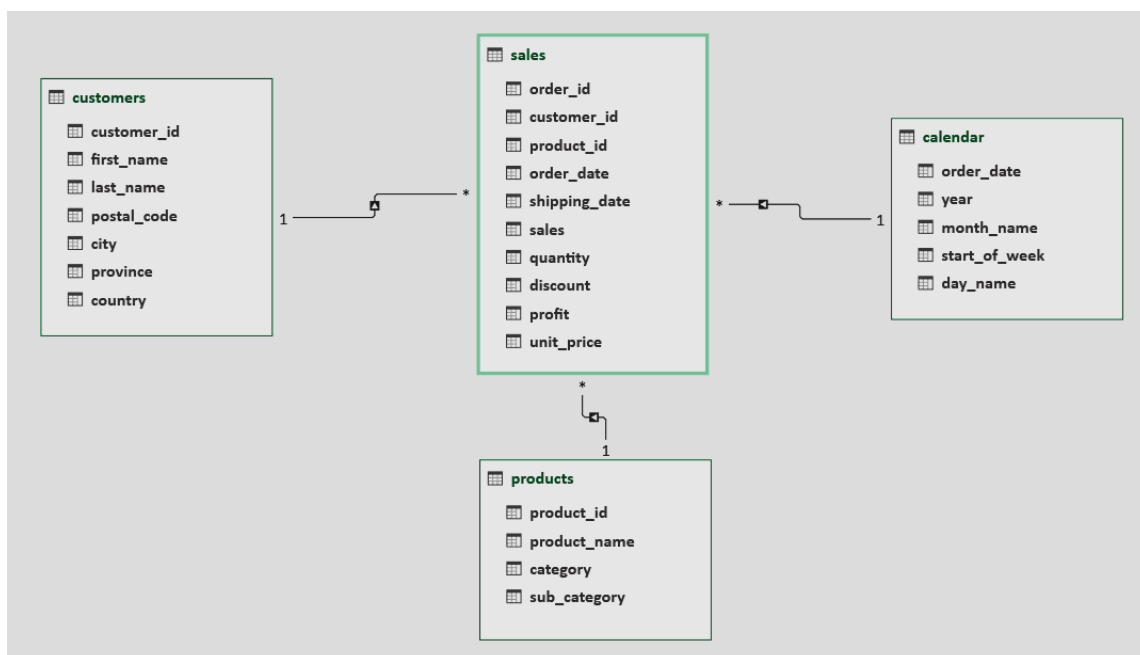
The project utilised advanced Excel features and MySQL for comprehensive data extraction, transformation, loading and analysis, for insights and reporting.

1. INTRODUCTION

Rainbow Retail is a fictitious, South African e-commerce retailer of office supplies, furniture and technology products. The objective of this report is to evaluate sales performance, identify key trends and provide actionable insights to optimise future sales strategies.

2. DATA OVERVIEW

Synthetic data is used and the schema comprises four primary entities: Customers, Sales, Products and Calendar. This design allows for comprehensive tracking and analysis of sales transactions, customer information, product details and temporal data.



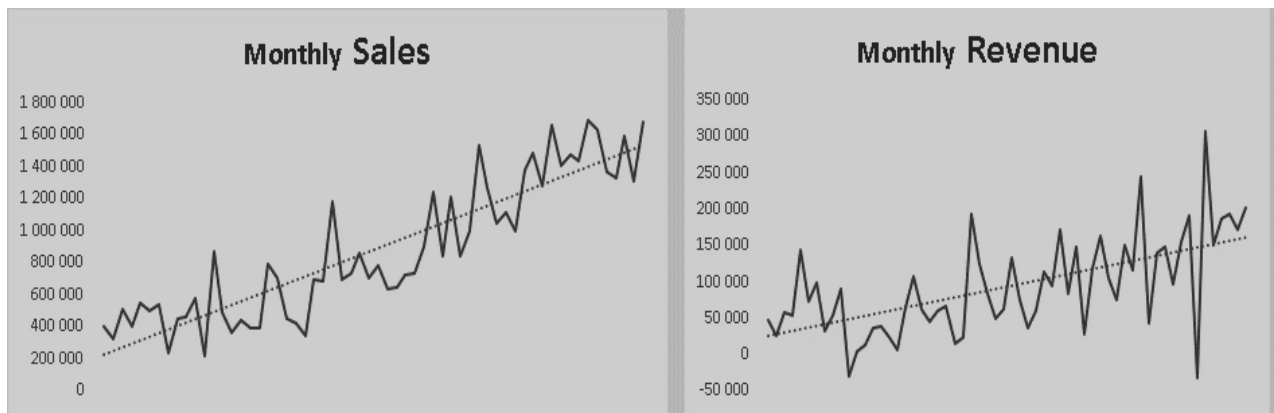
Key aspects:

- The Customers table stores essential customer details, enabling customer segmentation and targeted marketing analyses.
- The Sales table serves as the central repository for transaction data, linking customers to products and capturing crucial sales metrics like quantity, profit, and discounts.
- The Products table categorises the item inventory, supporting product performance evaluations.
- The Calendar table facilitates time-based analyses, allowing for trend identification across various time frames.

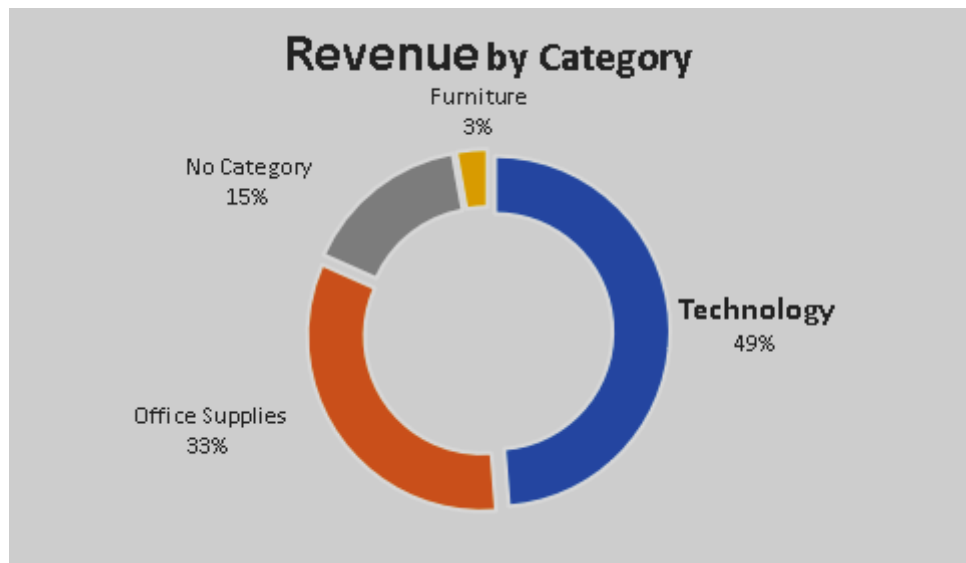
Time Frame: 01 January 2018 – 31 December 2022

3. ANALYSIS

a. Sales and Revenue Growth Trend



- The line graphs for monthly sales and revenue from 2018 to 2022 demonstrate a general upward trajectory.
- This trend indicates consistent growth over the five-year period, suggesting overall positive performance for Rainbow Retail.
- Key observation: There are noticeable fluctuations within this upward trend, potentially indicating:
 - Seasonal variations in consumer spending patterns
 - Impact of specific market events or economic conditions on sales performance
- Further analysis of these fluctuations could reveal important insights about market dynamics and consumer behaviour.

b. Product Category Performance

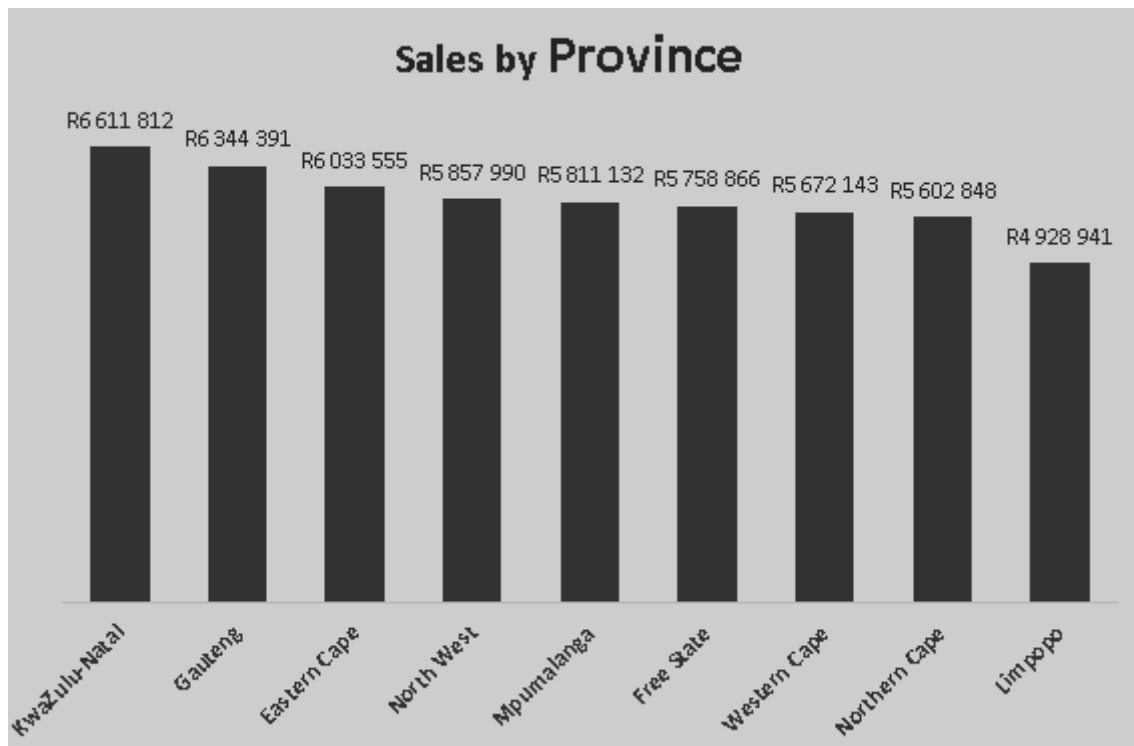
- Technology products dominate revenue generation, contributing a substantial 49% of total revenue.
- Office Supplies follow as the second-largest contributor at 33%.
- An intriguing finding is the significant 15% revenue from unclassified categories, which warrants further investigation.
- Anomaly detected: Furniture category underperforms significantly, contributing only 3% to overall revenue.
- This distribution highlights a heavy reliance on technology products, potentially indicating a strong market position in this sector but also suggesting a need for diversification.

c. Top-Selling Products



- **Top Performers:**
 - High-Speed Automatic Electric Letter Opener leads in sales, generating R1,466,247.
 - Cisco Telepresence System EX90 follows closely with R1,256,436 in sales.
- **Product Diversification:** The range of products includes a mix of office equipment, high-end technology systems and furniture, suggesting a diverse product portfolio.
- **Sales Distribution:** The leading products significantly outperform others, indicating a reliance on a few key products for revenue. This may suggest a need to diversify the product offerings or enhance the promotion of lower-performing items.
- **Market Trends:** The high sales of office equipment like the letter opener and telepresence system could indicate strong demand in the business and corporate sectors.
- **Opportunities for Growth:** There may be potential to increase marketing efforts for mid and lower-tier products, particularly those that complement the top-selling items.

d. Sales by Province



- **Regional Focus:** KwaZulu-Natal, Gauteng and Eastern Cape are key markets. These provinces should be the focus of intensified marketing and sales strategies to capitalise on existing demand.
- **Growth Opportunities:** Provinces with lower sales, such as Limpopo and Northern Cape, present opportunities for targeted marketing campaigns and promotional activities to boost sales.
- **Market Expansion:** The variance in sales figures across provinces suggests potential for expansion in underperforming regions. This could involve market research to understand local consumer behaviour and needs.
- **Resource Allocation:** The data can guide resource allocation, such as sales team deployment and inventory distribution, to ensure alignment with demand patterns.

e. Average Order Value (AOV)

- The average order value stands at R4,467 over the observed period.
- This figure provides insight into the typical purchasing power and behaviour of Rainbow Retail's customer base.
- **Trend to investigate:** How this AOV compares to industry standards and how it has evolved over time.
- **Potential anomaly:** If this AOV is significantly different from industry benchmarks, it could indicate unique market positioning or customer segment targeting.

f. Ad-Hoc Queries

The SQL snippets below answer some common business questions asked by stakeholders.

-- Query 1: Top Products by Total Sales Amount

```
WITH ProductSales AS (
  SELECT p.product_name, SUM(s.sales) AS total_sales
  FROM sales s
  JOIN Products p ON s.product_id = p.product_id
  GROUP BY p.product_name
)
SELECT product_name, total_sales,
       RANK() OVER (ORDER BY total_sales DESC) AS sales_rank
FROM ProductSales;
```

Output 1:

	product_name	total_sales	sales_rank
►	High Speed Automatic Electric Letter Opener	1466247	1
	Cisco Telepresence System Ex90 Videoconferen...	1256436	2
	Canon Imageclass 2200 Advanced Copier	971246	3
	Hp Designjet T520 Inkjet Large Format Printer -...	631308	4
	Martin Yale Chadless Opener Electric Letter Ope...	573140	5
	Fellowes Pb500 Electric Punch Plastic Comb Bind...	569022	6
	Riverside Palais Royal Lawyers Bookcase	558375	7
	Samsung Galaxy Mega 6.3	548549	8
	Dmi Eclipse Executive Suite Bookcases	522724	9
	Hon 4070 Series Pagoda Armless Upholstered S...	463601	10

-- Query 2: Customer Ranking by Total Purchase Amount

WITH CustomerSales AS (

 SELECT c.customer_id, CONCAT(c.first_name, ' ', c.last_name) AS
customer_name, SUM(s.sales) AS total_purchase

 FROM Sales s

 JOIN Customers c ON s.customer_id = c.customer_id

 GROUP BY c.customer_id, customer_name

)

SELECT customer_id, customer_name, total_purchase,

 RANK() OVER (ORDER BY total_purchase DESC) AS purchase_rank

FROM CustomerSales;

Output 2:

	customer_id	customer_name	total_purchase	purchase_rank
▶	457	Herbert Nixon	526777	1
	82	Rutherford Truman	486777	2
	58	Calvin Polk	449784	3
	690	Rutherford Coolidge	431336	4
	488	Harry Ford	422916	5
	444	John Van Buren	342772	6
	295	Woodrow Truman	312325	7
	9	Calvin McKinley	278577	8
	348	John Hoover	257412	9
	382	Benjamin Harding	249757	10
	11	Ulysses Hardinn	244005	11

-- Query 3: Products with Sales Above Average

```

SELECT p.product_id, p.product_name, SUM(s.sales) AS total_sales
FROM Sales s
JOIN Products p ON s.product_id = p.product_id
GROUP BY p.product_id, p.product_name
HAVING SUM(s.sales) > (
    SELECT AVG(total_sales) FROM (
        SELECT SUM(s.sales) AS total_sales
        FROM Sales s
        JOIN Products p ON s.product_id = p.product_id
        GROUP BY p.product_id
    ) subquery
);

```

Output 3:

	product_id	product_name	total_sales
▶	367	Xerox 1908	40391
	393	Fellowes Bankers Box Staxonsteel Drawer File/S...	53854
	54	At&T CL83451 4-Handset Telephone	92985
	542	Office Star - Mesh Screen Back Chair With Vinyl ...	54278
	1210	Novimex Fabric Task Chair	39261
	408	Hon 4700 Series Mobuis Mid-Back Task Chairs W...	138300
	575	Bush Andora Bookcase	103558
	1341	Safco Mobile Desk Side File	37337
	1295	Belkin 5 Outlet Surgemaster Power Centers	48984
	1811	Zebra Gk420T Direct Thermal/Thermal Transfer ...	39057
	65	Global Value Mid-Back Manager'S Chair	39314

4. RECOMMENDATIONS

Product Portfolio Optimisation (For Product Management and Sales Teams)

- Leverage the strong performance of the Technology category by expanding the range of technology products offered.
- Investigate opportunities for bundling technology products with complementary items from other categories.
- Address the underperformance of the Furniture category by conducting a thorough review of the furniture product line.
- Consider repositioning, repricing or potentially phasing out underperforming furniture items.

Category Expansion and Refinement (For Product Development and Marketing Teams)

- Investigate the 15% revenue from unclassified categories:
 - Analyse these products to identify emerging trends or niche markets.
 - Consider creating new formal categories based on this analysis.
- Develop strategies to grow the Furniture category:
 - Research market demands and trends in office and home furniture.
 - Explore partnerships with popular furniture brands or designers.

Sales Strategy Enhancement (For Sales and Marketing Departments)

- Capitalise on the strong performance of office supplies:
 - Develop targeted marketing campaigns for top-selling office supply products.
 - Investigate cross-selling opportunities, pairing office supplies with technology products.
- Implement strategies to increase the Average Order Value:
 - Train sales staff on upselling techniques.
 - Create attractive bundle offers combining products from different categories.

Seasonal Sales Optimisation (For Sales, Marketing and Inventory Management Teams)

- Analyse the fluctuations in the sales and revenue trends:
 - Identify peak and off-peak seasons.
 - Develop tailored marketing and inventory strategies for different seasons.

- Implement dynamic pricing strategies:
 - Adjust prices based on seasonal demand to maximize revenue during peak periods and maintain sales during slower periods.

Data Analysis and Reporting Enhancement (For Business Intelligence and IT Departments)

- Improve product categorisation:
 - Develop a more comprehensive categorization system to reduce the 'unclassified' portion.
 - Regularly review and update product categories to ensure accuracy.
- Conduct deeper analysis on customer purchasing behaviour:
 - Investigate factors influencing the Average Order Value.
 - Segment customers based on purchasing patterns and develop targeted strategies for each segment.

5. ASSUMPTIONS

Data Completeness: The significant portion of revenue from 'unclassified' categories (15%) suggests potential issues with product categorisation or data entry processes. This could lead to incomplete insights about true category performance.

6. TECHNICAL

- Utilised advanced Excel features, including Power Query and Power Pivot, for data extraction, transformation and loading (ETL).
- Used Power Query for initial data cleaning tasks such as filtering, merging and reshaping data.
- Employed Power Pivot to create data model and facilitate advanced exploratory data analysis (EDA) through interactive pivot tables and charts.
- Utilised MySQL for querying the database, enabling sophisticated data manipulation and extraction of insights using SQL.

7. CONCLUSION

Implementing these recommendations will help Rainbow Retail enhance its sales performance, optimise product offerings and strengthen its market presence. By addressing the specific needs of each department, Rainbow Retail can achieve sustainable growth and maintain its competitive edge in the South African e-commerce market.