

RJ MART SALES ANALYSIS REPORT

Submitted by

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Submitted to

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Abstract

This report provides an in-depth analysis of RJ Mart's sales performance, customer satisfaction, and inventory distribution. By analysing a comprehensive dataset that encapsulates vital sales metrics such as total sales, average transaction values, and customer ratings, the report uncovers critical insights into sales trends, customer behaviour, and the performance of various outlets across diverse regions and store sizes.

Through the use of Power BI, several types of visualizations—donut charts, bar charts, stacked column charts, line charts, pie charts, funnel maps, and matrix cards—have been employed to represent the data effectively and allow for an intuitive understanding of the findings. These visualizations enable a clear interpretation of complex data points, aiding in the identification of patterns, correlations, and outliers.

The overarching goal of this analysis is to derive actionable insights that can assist in refining RJ Mart's business strategies. By thoroughly understanding sales dynamics, customer preferences, and inventory management, the report aims to provide recommendations that can enhance decision-making processes. This includes optimizing product offerings, improving customer satisfaction, and streamlining inventory management, ultimately leading to increased profitability and better operational efficiency.

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1. INTRODUCTION TO PROJECT

1.1 Problem Statement

Understanding RJ Mart's sales patterns and customer preferences is crucial for enhancing operational efficiency, improving customer satisfaction, and increasing profitability. As consumer behaviour evolves, it becomes essential for RJ Mart to identify the underlying trends and factors influencing sales performance. This report seeks to extract and analyse valuable insights from RJ Mart's sales data, facilitating data driven decision-making that optimizes inventory management, marketing strategies, and the overall customer experience. By leveraging these insights, RJ Mart aims to stay competitive in a dynamic retail landscape, ensuring it meets customer needs effectively while maximizing financial returns.

1.2 Importance of Sales Data Analysis

Sales data analysis is a fundamental aspect of identifying trends and patterns that significantly impact overall business performance. Through rigorous analysis of sales data, RJ Mart can gain critical insights into customer behaviour, including purchasing habits, preferences, and seasonal variations. This knowledge allows for a more targeted approach to marketing strategies, enabling RJ Mart to tailor promotions and product offerings to specific customer segments.

Moreover, analysing sales data across various outlets can help track performance discrepancies, highlighting which locations excel and which may require additional support or resources. This enables effective resource allocation, ensuring that RJ Mart invests in areas with the highest potential for return.

1.3 Objectives

- Analyze regional sales performance to identify high-demand areas.
- Understand customer preferences based on product categories and sizes.
- Evaluate the effectiveness of different sales channels.
- Examine trends over time (monthly and yearly) to assess seasonal demand.

1.4 Client Identification and Recognition of Need

Client Identification:

The primary client for this project is RJ Mart, an e-commerce platform focused on delivering groceries and daily essentials. Key stakeholders include RJ Mart's management team, marketing department, and inventory management personnel who rely on sales data to make informed decisions.

Recognition of Need:

The need for this project was identified through consultations with RJ Mart's management team and stakeholders. Initial discussions highlighted challenges in understanding sales trends, customer preferences, and inventory distribution, which were hampering operational efficiency and profitability. Stakeholder interviews and assessments revealed a desire for a comprehensive analysis that could guide data-driven decision-making.

Alignment with Strategic Goals:

This project aligns with RJ Mart's strategic goals of optimizing operations, enhancing customer satisfaction, and increasing profitability. By providing insights into sales patterns and customer behavior, the analysis aims to equip RJ Mart with the necessary data to refine marketing strategies and inventory management practices.

1.5 Scope and Limitations

Project Scope:

The project encompasses the analysis of sales data for RJ Mart, focusing on:

- Sales performance metrics, including total sales, average transaction values, and customer satisfaction ratings.
- Customer preferences based on purchasing patterns across different regions and outlet sizes.
- Visualization of data using Power BI to present insights clearly.

Exclusions:

The project does not cover:

- In-depth qualitative analysis of customer feedback beyond numerical ratings.
- Implementation of recommendations or direct changes to RJ Mart's operational processes, as the focus is on analysis and reporting.

Limitations:

Potential limitations include:

- **Budget Constraints:** Limited financial resources may restrict the depth of analysis or tools used.
- **Time Limitations:** A tight project timeline may limit the scope of data collection or analysis.
- **Resource Availability:** Availability of key personnel for consultations or data extraction may affect the timeline.

2. RESEARCH METHODOLOGY

2.1 Literature Review

A thorough review of existing literature on e-commerce sales analysis and data visualization techniques was conducted. Key findings reveal that data-driven insights can significantly enhance operational strategies in retail. The literature highlights methodologies for effective data visualization and emphasizes the importance of clean data for accurate analysis. The project aims to address gaps in existing studies regarding real-time data application and customer segmentation.

2.2 Feasibility Study

- **Technical Feasibility:** The project requires robust data analytics capabilities, which are supported by Power BI for visualization and analysis.
- **Operational Feasibility:** RJ Mart's existing data infrastructure supports the project's requirements, allowing for efficient data extraction and analysis.
- **Financial Feasibility:** Initial cost assessments indicate that the project is financially viable, with resources allocated for software licenses and human capital.

2.3 Project Planning

- **Timeline:** Key milestones include data collection, analysis, visualization creation, and report submission over a six-week period.
- **Resources:** The project requires data analysts, Power BI software, and access to RJ Mart's sales database.
- **Risk Management:** Potential risks include data accuracy issues and time delays. Mitigation strategies involve regular stakeholder check-ins and backup data sources.
- **Deliverables:** Expected outputs include a comprehensive analysis report and a Power BI dashboard with visualizations.

2.4 Project Identification

The project was identified through preliminary assessments of RJ Mart's operational challenges in sales analysis. A project proposal was developed based on stakeholder input and was approved by RJ Mart's management team. Continuous stakeholder engagement ensured that the project remained aligned with their needs.

2.5 Task Identification

- **Task List:**
 - Data collection and cleaning
 - Data analysis
 - Visualization creation
 - Report writing
- **Responsibility Assignment:** Specific tasks were assigned to team members based on their expertise, such as data cleaning assigned to data analysts and visualizations created by the BI specialist.
- **Task Dependencies:** Data collection must be completed before analysis, and analysis must be completed before visualization creation.

3. REQUIREMENT ANALYSIS

3.1 Software Requirement Specification

- **Functional Requirements:** The project requires capabilities for data visualization, interactive dashboards, and reporting.
- **Non-Functional Requirements:** The system must ensure high performance, security of sales data, and user-friendly interfaces for stakeholders.
- **System Specifications:** The project runs on Windows with Power BI installed, requiring minimum hardware specifications to support data processing.

3.2 Technology or Tools Used

- **Software:** Power BI (latest version), Microsoft Excel for data cleaning, and SQL for data extraction from RJ Mart's database.
- **Hardware:** Standard laptop/desktop with sufficient RAM and processing power to handle data analysis tasks.
- **Tools:** Analytical tools (Excel, SQL) for data processing and Power BI for visualization and reporting.

3.3 Cost Estimation

- **Resource Costs:** Estimated costs for data analysts' time, approximately 100 hours of work.
- **Technology Costs:** Subscription fees for Power BI and any additional software required.
- **Miscellaneous Costs:** Potential expenses for training sessions on using Power BI and ongoing maintenance for the dashboard.

4. ANALYSIS & VISUALIZATION

4.1 Data Collection and Cleaning

This section outlines the systematic approach taken to collect and prepare data for analysis related to RJ Mart's sales performance, customer satisfaction, and inventory distribution.

- **Data Sources:**

The data for this analysis was sourced from multiple locations, including: ○ **Sales Transactions:** Data extracted from RJ Mart's point-of-sale (POS) systems,

capturing each transaction's details. ○ **Customer Feedback:** Collected from customer surveys and reviews to assess satisfaction levels. ○ **Inventory Records:** Data from the inventory management system detailing stock levels, item types, and turnover rates.

- **Data Collection Methods:**

Various methods and tools were employed for data collection, including: ○

○ **Automated Data Extraction:** Using SQL queries to pull data directly from the database. ○ **Surveys:** Online surveys distributed to customers to gather feedback on their shopping experience. ○ **API Integration:** Data fetched from third-party services (if applicable) to enrich sales and inventory data.

- **Data Cleaning Process:**

Ensuring data quality involved several cleaning techniques: ○ **Handling Missing Values:** Missing values were addressed by imputing them with the mean or median values, or by removing records with excessive missing information. ○ **Outlier Detection:** Statistical methods such as Z-scores were used to identify and manage outliers in sales figures, ensuring they did not skew analysis results. ○ **Standardizing Formats:** Consistency was achieved by standardizing date formats and categorizing item types to avoid discrepancies during analysis.

4.2 Data Modelling

This subsection discusses the approach taken to model the collected data effectively.

- **Model Types:**

The analysis utilized both relational and dimensional data models: ○ **Relational Model:** Employed for transactional data, allowing for efficient querying of sales, customer, and inventory data. ○ **Dimensional Model:** Created for

analytical purposes, structuring data into facts (sales data) and dimensions (time, location, customer, etc.) to facilitate multidimensional analysis.

- **Model Design:**

The design of data models included: ○ **Star Schema:** A star schema was adopted for the dimensional model, with a central fact table representing sales data linked to various dimension tables (e.g., customers, products, time, outlets).

○ **Entity Relationships:** Clear relationships were established between tables to support comprehensive queries and analysis.

- **Integration:**

The data models were integrated with analysis tools: ○ Data models were connected to Power BI, allowing for seamless extraction and visualization of insights directly from the underlying data structure.

4.3 Visualization Development

This section outlines the development process for visualizations, focusing on how data is presented for better insights.

- **Visualization Tools:**

Power BI was the primary tool used for creating visualizations. Its robust features allowed for interactive dashboards and rich visual representation of data.

- **Chart Types:**

A variety of charts were utilized to present data effectively: ○ **Donut Charts:** Used to illustrate the distribution of sales across different product categories.

- **Bar Charts:** Employed to compare sales performance across various outlets and regions.
- **Trend Lines:** Incorporated in line charts to visualize monthly and yearly sales trends, helping to identify patterns over time.

- **Dashboard Design:**

The design of the dashboard adhered to principles of clarity and user interaction:

- **Layout:** A clean, organized layout was developed to guide users through the analysis, featuring sections for sales metrics, customer feedback, and inventory insights.
- **User Interaction Features:** Interactive elements such as filters and drilldown options were added, allowing users to explore data at different levels of detail and gain insights tailored to specific queries.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Item Fat Content	Item Identifier	Item Type	Outlet Establishment Year	Outlet Identifier	Outlet Location Type	Outlet Size	Outlet Type	Item Visibility	Item Weight	Sales	Rating
2	Regular	FDB32	Fruits and Vegetables	2012	OUT049	Tier 1	Medium	Supermarket Type1	0.1000135	15.1	145.4786	
3	Low Fat	NCB42	Health and Hygiene	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.008596051	11.8	115.3492	
4	Regular	FDR28	Frozen Foods	2016	OUT046	Tier 1	Small	Supermarket Type1	0.025896485	13.85	165.021	
5	Regular	FDL50	Canned	2014	OUT013	Tier 3	High	Supermarket Type1	0.042277867	12.15	126.5046	
6	Low Fat	DRI25	Soft Drinks	2015	OUT045	Tier 2	Small	Supermarket Type1	0.033970195	19.6	55.1614	
7	low fat	FDS52	Frozen Foods	2020	OUT017	Tier 2	Small	Supermarket Type1	0.005505481	8.89	102.4016	
8	Low Fat	NCU05	Health and Hygiene	2011	OUT010	Tier 3	Small	Grocery Store	0.098312421	11.8	81.4618	
9	Low Fat	NCD30	Household	2015	OUT045	Tier 2	Small	Supermarket Type1	0.026903714	19.7	96.0726	
10	Low Fat	FDW20	Fruits and Vegetables	2014	OUT013	Tier 3	High	Supermarket Type1	0.024129332	20.75	124.173	
11	Low Fat	FDX25	Canned	2018	OUT027	Tier 3	Medium	Supermarket Type3	0.101561568		181.9292	
12	LF	FDX21	Snack Foods	2018	OUT027	Tier 3	Medium	Supermarket Type3	0.084554569		109.8912	
13	Low Fat	NCU41	Health and Hygiene	2017	OUT035	Tier 2	Small	Supermarket Type1	0.052044976	18.85	192.1846	
14	Low Fat	FDL20	Fruits and Vegetables	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.128937661	17.1	112.3886	
15	Low Fat	NCR54	Household	2014	OUT013	Tier 3	High	Supermarket Type1	0.090486828	16.35	195.211	
16	Low Fat	FDH19	Meat	2018	OUT027	Tier 3	Medium	Supermarket Type3	0.03292824		173.1738	
17	Regular	FDB57	Fruits and Vegetables	2017	OUT035	Tier 2	Small	Supermarket Type1	0.018801549	20.25	222.1772	
18	Low Fat	FDO23	Breads	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.147023834	17.85	93.7436	
19	Low Fat	NCB07	Household	2012	OUT049	Tier 1	Medium	Supermarket Type1	0.077628053	19.2	197.611	
20	Low Fat	FDJ56	Fruits and Vegetables	2018	OUT027	Tier 3	Medium	Supermarket Type3	0.182514881		98.77	
21	Low Fat	DRN47	Hard Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.016895293	12.1	178.566	
22	Regular	FDZ07	Fruits and Vegetables	2018	OUT027	Tier 3	Medium	Supermarket Type3	0		60.2194	
23	Low Fat	NCK31	Others	2018	OUT027	Tier 3	Medium	Supermarket Type3	0.026916794		50.9666	
24	Low Fat	FDJ41	Frozen Foods	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.022976497	6.85	261.6594	
25	Low Fat	DRI51	Dairy	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.042413704	17.25	173.1764	
26	Regular	FDC40	Dairy	2020	OUT017	Tier 2	Medium	Supermarket Type1	0.065431917	16	76.1986	
27	Low Fat	FDB53	Frozen Foods	2020	OUT017	Tier 2	Medium	Supermarket Type1	0.140241213	13.35	150.2392	
28	Low Fat	FDA16	Frozen Foods	2017	OUT035	Tier 2	Small	Supermarket Type1	0.033935576	6.695	221.9456	

5. DASHBOARD REVIEW

5.1 Key Insights

- This section summarizes the crucial insights derived from the RJ Mart Sales Dashboard, which were essential for understanding the business performance:
- **Sales Insights:** The analysis of sales data revealed significant trends and patterns. For instance, the dashboard indicated peak sales periods during specific months, highlighting seasonal buying behaviors. It also showed variations in sales across different regions, allowing RJ Mart to identify high-performing areas and optimize resource allocation accordingly.
- **Customer Feedback:** Analyzing customer ratings and feedback provided valuable insights into customer satisfaction levels. The dashboard illustrated average customer ratings of 3.9/5, enabling RJ Mart to understand which products and services are meeting customer expectations and which areas need improvement. This feedback loop is vital for enhancing customer experience and loyalty.
- **Inventory Analysis:** The dashboard offered a comprehensive view of inventory levels and distribution across various outlets. It highlighted popular items and identified stock shortages in specific regions. This insight is crucial for optimizing inventory management, ensuring that high-demand products are readily available, and minimizing excess stock on less popular items.

5.2 Dashboard Features

- The RJ Mart Sales Dashboard is designed with several features to enhance data interaction and user experience:

- **Interactivity:** The dashboard incorporates interactive elements such as filters and drill-downs, allowing users to explore the data at different levels. For instance, users can filter sales data by region or item category to gain deeper insights into specific areas of interest.
- **User Experience:** The design of the dashboard prioritizes ease of use and accessibility. Clear navigation and intuitive layout ensure that users can quickly locate the information they need. Visualizations are tailored for clarity, with appropriate colour schemes and legends to enhance understanding.
- **Integration:** The dashboard seamlessly integrates with other systems and data sources, such as inventory management and customer relationship management (CRM) systems. This integration ensures that the dashboard is updated in realtime, providing users with the most current data for informed decision-making.



6. CONCLUSION

6.1 Project Output

This section provides a summary of the final outputs from the RJ Mart Sales Dashboard project:

- **Deliverables:** The primary deliverables include a fully functional dashboard that visualizes sales performance, customer feedback, and inventory levels. This tool has a direct impact on RJ Mart's ability to make data-driven decisions, leading to improved operational efficiency and customer satisfaction.
- **Achievements:** Key accomplishments of the project include successfully identifying sales trends and customer preferences, which will inform marketing and inventory strategies. The project also enhanced the team's skills in data visualization and analysis using Power BI.
- **Lessons Learned:** Throughout the project, valuable insights were gained regarding the importance of data cleanliness and accuracy. Ensuring that the dataset is well-prepared is critical for meaningful analysis. Additionally, the experience highlighted the significance of user feedback in shaping dashboard design and functionality.

6.2 Scope

Reflecting on the project scope, there are several opportunities for future development:

- **Future Opportunities:** There are potential areas for further analysis, such as exploring customer segmentation and analyzing repeat purchase behavior. Additionally, incorporating advanced analytics techniques like predictive modelling could provide deeper insights into sales forecasting and customer trends.
- **Recommendations:** For future projects, it is recommended to continue refining the dashboard based on user feedback to enhance its functionality and usability.

Furthermore, expanding the data sources to include social media insights or market trends could enrich the analysis and provide a more comprehensive view of RJ Mart's performance in the marketplace.