Superstore Sales Data Analysis

Prepared by:

1. **Mayar Saad Khalifa**
2. **Aml Mohamed**
3. **Mohammed Salama**
4. **Fady Makram**
5. **Ayman Elsayed Abdelhalim**

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1. Project Planning & Management

Project Proposal: Superstore Sales Data Analysis

a. Overview of the Project

Objective:

The project aims to analyze sales data of a large store to uncover customer trends, boost profits, and enhance operations. Excel, SQL, Python, and Power BI will be used for exploratory analysis, data cleaning, and interactive dashboard creation.

Scope:

1-Analyze sales and financial performance to identify the most profitable products and trends across time zones.
2- Identify high-value customer segments and develop strategies to enhance loyalty and revenue.
3- Assess costs and profit margins to refine pricing strategies and maximize returns.
4- Evaluate the geographic performance of existing branches and pinpoint high-demand areas for expansion.
5- Develop interactive dashboards for tracking sales and financial performance to support data-driven decision-making.
6- Provide strategic recommendations to optimize operations, prevent past mistakes, and improve efficiency.
7- Enhance customer experience and satisfaction through improved services and effective marketing strategies.

b. Project Timeline:

Key Tasks	**Week**
Data collection, quality verification, and project scope understanding.	Week 1
Data cleaning and handling missing or outlier values for accuracy	Week 2
Exploratory data analysis to identify initial patterns and trends.	Week 3
Sales analysis, identifying profitable products/categories, and customer segmentation.	Week 4
Cost evaluation, profit margin analysis, and pricing strategy assessment.	Week 5
Developing interactive dashboards using Power BI to visualize insights.	Week 6
Final report preparation, recommendations, and stakeholder presentation.	Week 7
Two buffer weeks for revisions, analysis enhancements, and additional adjustments.	Week 8,9

2. KPIs

1. Monthly Sales Growth
2. Average Profit Margin
3. Monthly Sales Bookings
4. Sales Opportunities
5. Sales Target Attainment
6. Average Purchase Value
7. Sales Per Rep
8. Product Performance
9. Sales by Contact Method
10. Average New Deal Size/Length
11. Average Sales Cycle Length
12. Lead-to-Sale %
13. Average Cost Per Lead
14. Retention and Churn Rates
15. Customer Lifetime Value
16. Average Conversion Time
17. New and Expansion Monthly Recurring Revenue (MRR)
18. Number of Monthly Onboarding and Demo Calls
19. Customer Acquisition Cost

1. Monthly Sales Growth:

A business can survive for only so long without growing its sales. By tracking this metric in your monthly sales dashboard, leaders can quickly spot problems and act on trends. Establishing realistic monthly sales growth targets can motivate a sales team and ensure consistent alignment of their efforts with an organization's expectations. The formula for monthly sales growth is:

Monthly sales growth =

((Sales for the current month - sales for the prior month) / sales for the prior month) x 100

2. Average Profit Margin:

Average profit margin is how much of overall sales revenue results in profits and is an important financial KPI. It's calculated by subtracting the costs

associated with producing the company's goods and services from sales revenue. Companies can also analyze profit margins generated by specific products, sales territories and salespeople. Businesses with a wide range of products or services should monitor profit margins closely, as should companies that allow their sales reps flexibility in setting prices. This can be monitored for overall average profit margin or for specific areas. The formula for average profit margin is:

Average profit margin = (Net income / net sales) X 100

3. Monthly Sales Bookings:

Sales bookings calculates the value — factoring in associated costs — of a committed, signed or won sale over a specific period. Software-as-a-service (SaaS) sales teams often use monthly sales bookings to track the value of their wins. Leaders also use this metric to develop sales strategy and prepare forecasts. The formula for monthly sales bookings is:

Monthly sales bookings = Total new bookings sales dollars for the month - (average cost per transaction x total number of bookings)

4. Sales Opportunities:

The sales opportunity metric calculates the estimated sales value of a lead based on the probability of closing the sale. Prospects are categorized into stages in your sales opportunity dashboard, such as proposal, qualified or negotiation, with each stage assigned a weighted value. The formula for sales opportunity is:

Sales Opportunity = Value of sale x opportunity status

For example, the negotiation stage of a sale may be assigned a weighted value of 0.5. If a prospect is estimated to make a $10,000 purchase, then the sales opportunity would be $5,000 ($10,000 x 0.5).

Tracking sales opportunities helps teams forecast sales and identify which leads are most worth pursuing. Increasing sales opportunities indicate the potential for generating higher sales, while decreasing opportunities may signal a need to increase sales efforts.

5. Sales Target Attainment:

Will the sales team reach their sales targets, also known as quotas? Is actual revenue better or worse than forecasted? Which sales rep is trailing behind and can use some guidance? The sales target attainment KPI can help answer all these questions. In your dashboard, it compares sales performance against established targets or previous periods. Sales leaderboards are an effective way to visualize sales performance against targets. The formula for sales target attainment is:

Sales target attainment = (Sales for the current period / sales target) x 100

6. Average Purchase Value:

Average purchase value is the average amount each customer spends on a business's products or services. One of the most cost-effective ways to boost revenue is to sell more to each customer. Teams use the average purchase value to develop sales strategies that incent customers to spend more and to forecast the value of leads. The formula for average purchase value is:

Average purchase value = Total sales / number of customers or transactions

7. Sales Per Rep:

A key sales KPI for most businesses is sales generated per rep. Comparing this measurement to previous periods can help teams assess sales growth and trends. Sales managers use sales per rep to set sales targets, identify

top-performing and underperforming reps, and improve individual and team performance. Since sales reps tend to be competitive, businesses use sales leaderboards to create transparency across the team and inspire reps to reach their peak performance. The formula for sales per rep is:

Sales per rep = Total sales / number of sales made by rep

8. Product Performance:

Which products are top-selling, and which are behind the pack? This product performance and inventory KPI answers these questions by ranking products based on sales.

Product sales volume doesn't always directly correlate to revenue performance. Low-price but high-volume products may account for a significant portion of total sales but may not rank in the top 10 revenue-generating products. As with most metrics, it's important to consider other factors surrounding the product. For example, is a product experiencing a boost due to a concentrated marketing campaign? Or did a product slip because the competition rolled out an updated version at a lower price? Sales leaders can use the rankings to evaluate product market trends, while sales managers can use product performance to adjust their sales plans based on these trends.

9. Sales by Contact Method:

Tracing a closed deal back to the way it originally began offers some of the best sales data and insight. By calculating the percentage of sales generated by each contact method, such as via email or in-person visit, sales leaders can arm their sales teams with the tools most effective in generating sales — and know which methods to avoid or use less frequently.

Pair this KPI with other metrics, such as contact method cost or individual rep performance metrics, to add further context. For example, a specific rep may be more successful at generating sales in person rather than sending emails, even though emails may be the company's top tool overall. The formula for sales by contact method is:

Sales by contact method = (Sales per contact method / total revenue) x 100

10. Average New Deal Size/Length:

By tracking sales dollars generated by new deals and the related duration of the sales stream, teams can gauge which offerings are most profitable for the business. Managers use this metric to compare rep performance, as well. For example, one rep may have sold 100 month-to-month subscriptions last month, while another has landed 20 bigger contracts for annual subscriptions. The formula for average new deal/length size is:

Average new deal size = Total revenue from new deals / total number of new deals

Average new deal length = Total number of days to close new deals / total number of deals

11. Average Sales Cycle Length:

Average sales cycle length is the average length of time from an initial interaction with a prospective customer to closing a sale. Track this metric in your sales cycle length dashboard to evaluate the efficiency of your sales process. Once a business sets a sales cycle length benchmark, it can look for ways to shorten the sales cycle. Sales managers can analyze the average sales cycle by rep to see who closes sales quickly and who needs improvement. Like many metrics, it is important to understand context. If a rep is closing a complex deal, it may take longer than closing a few smaller deals. The formula for average sales cycle length is:

Average sales cycle length =
Total number of days to close all sales / total number of new deals

12. Lead-to-Sale %:

The lead-to-sale percentage, or the lead conversion rate, is the percentage of leads that convert to actual sales. This KPI measures the sales teams' effectiveness in converting a prospective customer into a paying customer. It also identifies which marketing channels work best to generate quality leads. With a lead-to-sales benchmark in place, sales managers can use this percentage along with the length of the sales cycle to evaluate the efficiency of the lead-to-sales process and the strength of the team's pipeline. By aligning together, sales and marketing teams can bolster sales by focusing on top-quality prospects. The formula for lead-to-sale % is:

Lead to sale % = (Total number of sales / total number of leads) x 100

13. Average Cost Per Lead:

Average cost per lead measures the cost efficiency of marketing campaigns and provides the marketing team with an amount that is reasonable to spend on generating new leads. Average cost per lead can be tracked in aggregate for all marketing efforts or by individual campaigns. When combined with average new deal size, marketing teams can evaluate which lead channels generate customers with higher buying power. The goal is to keep average cost per lead low while generating a high volume of quality leads. The formula for average cost per lead is:

Average cost per lead = Total cost of campaign / number of leads generated

14. Retention and Churn Rates:

Retention and churn rates have a yin and yang relationship. Retention rate is the percentage of customers who stay or renew their contracts or subscriptions for a company's products or services. This critical sales metric reflects a sales team's ability to retain customers and generate recurring revenue. Rising retention rates indicate a business's products or services are well-received in the marketplace and customers are loyal.

On the flip side, churn rate represents the percentage of customers who cancel or don't renew their contracts or subscriptions for a company's services or products. Rising churn rates could indicate a problem with a company's offerings, customer experience or sales approach, as well as competitive reasons. Since it is more cost-effective to retain existing customers than it is to find new ones, businesses closely monitor this KPI. The formulas for retention and churn rates are:

Retention rate = ((Number of customers at the end of period – number of customers acquired during period) / starting number of customers) x 100

OR

Retention rate = 1 / churn rate

Churn rate = (Number of customers lost / starting number of customers) x 100

15. Customer Lifetime Value:

Customer lifetime value (CLV) refers to how much a company expects to earn over the entire time it conducts business with a customer. Businesses use this important metric to determine which customer segments generate the most revenue and how much to spend to acquire new customers. The calculation for customer lifetime value involves several components. The formula is:

Customer lifetime value = Gross margin % x retention rate x average revenue per customer

For example, if a business has a gross margin of 80% and monthly customer churn of 5%, and each customer spends an average of $100 per month, the calculation would be: 80% x (1 / 5%) x $100 = $1,600 of lifetime value. The goal is to see rising customer lifetime values, which signal increasing revenue from each customer over a longer period.

16. Average Conversion Time:

Average conversion time is the average length of time it takes to convert a lead to a sale. Sales managers use sales conversion dashboards to monitor this metric and evaluate the productivity of the sales funnel, which cycle lengths result in the most won deals and the effectiveness of an individual rep at closing a deal. The formula to calculate average conversion time is:

Average conversion time = Total length of time to convert lead to sale / total number of new deals

17. New and Expansion Monthly Recurring Revenue (MRR):

Monthly recurring revenue (MRR) is the amount of predictable revenue a company expects to receive on a monthly basis. New MRR is the additional revenue added for the month from new customers. Expansion MRR is the additional recurring revenue generated from the existing customer base, usually due to upgrades or expanded services. These KPIs are critical for SaaS or subscription-based businesses in forecasting, understanding new revenue sources and gauging sales growth trends. The formula to calculate new and expansion monthly recurring revenue is:

Monthly recurring revenue (MRR) = (Average monthly revenue from total new and expanded accounts / total number of accounts) x total number of accounts that month

18. Number of Monthly Onboarding and Demo Calls:

For some companies, such as SaaS businesses, a trial or demonstration is a critical part of the sales cycle and can help close the sale. Since leads in the demo phase have a higher likelihood of converting to sales, this is a powerful KPI to gauge both the sales funnel and the success of a rep in winning the deal.

19. Customer Acquisition Cost:

Customer acquisition cost (CAC) refers to how much it costs a business to acquire one new customer. The costs to acquire depend on the business model, but factoring in all sales and marketing expenses, including salaries and overhead, can ensure a comprehensive calculation. Growing customer lifetime value and average revenue per customer, while cutting customer acquisition costs, can help maintain or increase profitability. The formula to calculate customer acquisition cost is:

Customer acquisition cost = Total sales and marketing cost / number of new customers

3. Requirements Gathering

a. Stakeholder Analysis:

- **Business Owners:** Need insights on sales trends and profitability.
- **Sales Team:** Require data on top-performing products and regions.
- **Marketing Team:** Interested in customer purchasing behavior and discount impact.
- **Data Analysts:** Need access to clean, well-structured data for analysis.
- **IT Department:** Ensure data security, tool integration, and performance.

b. User Stories & Use Cases:

- **As a Business Owner**, I want to view a sales dashboard so that I can track monthly revenue and profits.
- **As a Sales Manager**, I want to identify the best-selling products so that I can focus on boosting their sales.
- **As a Marketing Analyst**, I want to analyze customer behavior to design more effective promotions.
- **As a Data Analyst**, I want to clean and process data efficiently to uncover insights.
- **As an IT Administrator**, I want to ensure data access controls to maintain security.

c. Functional Requirements:

- Sales data import and preprocessing.
- Visualization of sales trends and profit margins.
- Filtering options by region, product, and time range.
- Statistical analysis of discount effectiveness.
- Real-time dashboards for stakeholders.
- Report generation and export options.

d. Non-functional Requirements:

- **Performance:** Dashboards should load within 3 seconds.
- **Security:** Ensure secure access through role-based permissions.
- **Usability:** User-friendly interface for non-technical stakeholders.
- **Reliability:** System should have 99.9% uptime.

4-Key Stakeholders' Needs:

- **The Management Team**

Strategic Insights:

The management group looks for concise, in-depth reports that emphasize consumer preferences, sales trends, and prospective market prospects.

They will be better equipped to decide how best to distribute resources and where to open new branches thanks to this knowledge.

Risk Assessment:

To find any hazards that might affect operations or sales, they want the data analysis team to employ predictive analytics.

They can take proactive measures to resolve these problems by identifying them early.

- **Senior Management**

Performance Metrics:

Senior management requires a clear summary of the business's performance. To rapidly assess the state of the business, they want dashboards that display sales growth, operational effectiveness, and customer satisfaction.

ROI Analysis:

They want to know how much money is being spent on marketing initiatives and current branches. They will use this information to determine whether to expand their activities or make more investments in their current ones.

Market Feasibility Studies:

Data-driven assessments of potential markets would be valued by them. Their decisions about expansion will be guided by an analysis of demand, competition, and client demographics in prospective areas.

- **Investors**

Growth Projections:

Investors are very interested in forecasts that are based on historical sales data and market trends. They want to know how implementing better sales techniques or opening more outlets could boost revenue.

Financial Health Reports:

Providing information on profitability, cash flow, and cost control is necessary to reassure investors of the company's financial viability.

How to Get Help from the Data Analysis Team?

Sales Performance Analysis:

By determining which products and regions are performing well, the team may apply successful strategies in new branches.
They can also identify areas that require improvement, helping to improve strategies before expanding.

Customer Behavior Insights:

By analyzing purchasing patterns, the team can modify items to the preferences of clients in different regions.
By segmenting their customer base, they can create marketing campaigns that are more appealing to specific audiences.

Finding Market Opportunities:

The data analysis team can evaluate untapped markets by assessing factors like population density and purchasing power. This makes it easier to identify areas that have a high chance of developing new branches.
Visual aids such as heat maps make it simple for stakeholders to spot opportunities.

Operational Efficiency:

Evaluating logistics performance can assist future and current branches optimize operations and make sure everything goes without a hitch.
Preventing customer unhappiness can be achieved by identifying typical faults in inventory management or order processing.

Risk Mitigation Tools:

By establishing automated alerts for notable shifts in operational indicators or sales performance, you can keep everyone informed and prepared to take action.

By performing scenario assessments, the team can get ready for unforeseen obstacles or changes in the industry.

Visualization & Reporting:

Developing intuitive dashboards for every stakeholder group will facilitate their rapid assimilation of crucial information.

Decisions may be made quickly and with confidence when data is presented in an understandable and actionable manner.

The data analysis team can offer insightful information that empowers stakeholders at all levels by concentrating on these demands. This partnership will spur expansion, make branch openings easier, and assist steer clear of expensive blunders.

5- **Risk Assessment & Mitigation Plan**

Risk Factor	Probability	Impact	Mitigation Plan
Incomplete Data	High	High	Validate data and handle missing values
Inaccurate Analysis	Medium	High	Peer review and cross-verification
Time Overrun	Medium	Medium	Regular progress checks and updates
Technical Issues	Low	High	Ensure data backup and tool readiness
Unclear Objectives or Scope	Medium	High	Involve all stakeholders in the requirements gathering process and set measurable KPIs
Stakeholder Misalignment	Low	High	Maintain regular communication and update meetings

6-Task Assignment & roles

Name	Role
Mayar Saad	She was responsible for determining Stakeholder needs by the project in all fields of the management starting from management team, senior management and investors. She also has a great role on showing how to get help from the data analysis team and making the presentation of the project.
Aml Mohamed	She provided the overview and timeline of the project so she structured and planned the tasks for each phase by putting the scope and distributing key tasks among all weeks of the project.
Mohamed Salama	He identified the project KPIs and highlighted all the key questions that help us in extracting the required information, along with specifying how to find and calculate them.
Fady Makram	He defined the task management framework, assigned roles to each team member, and outlined the risk management plan
Ayman Elsayed	He defined the requirements gathering process as Stakeholder Analysis , User Stories & Use Cases , Functional Requirements and Non-functional Requirements. He also organized the internal layout of the project's Word document and defined the primary database on which this work is based.