

Data Analysis Project (Intermediate Level)

Navigating the Digital Landscape: Enhancing Brand Reputation with Cutting-Edge Social Media Monitoring

Specialization: Brand and Communication

Business focus: General

Tool: PostgreSQL, Power BI

Learning Opportunities:

This project offers valuable learning opportunities in database design, SQL querying, and database optimization using PostgreSQL, enhancing essential skills for data management and analysis. Additionally, it provides hands-on experience in data transformation, views, stored procedures, and performance tuning, contributing to a comprehensive understanding of database development and administration. Furthermore, participants will gain practical knowledge in Power BI, including data visualization, report creation, DAX functions, and dashboard design, equipping them with the ability to transform raw data into actionable insights for decision-making.

Learning Skills:

- Database Design
- SQL Querying
- Data Transformation
- Views
- Stored Procedures and Functions
- Data Import and Export
- Dashboard Building in Power BI

Business Introduction

AfriTech Electronics Ltd. stands out as a prominent player in the global consumer electronics sector, particularly renowned for its innovative offerings in smartphones, tablets, and wearable technology. The company is headquartered in the United States and has been growing steadily, now boasting a workforce of 200 dedicated employees. In the fiscal year 2022, AfriTech Electronics achieved an impressive annual revenue of \$2 million.

This achievement is a testament to the company's unwavering commitment to quality and its focus on integrating cutting-edge technology into its products. Such dedication has not only helped AfriTech Electronics carve a niche for itself in the competitive electronics market but has also garnered it a reputation as a reliable and trusted brand among consumers worldwide. The company's strategic focus on key technological trends and commitment to excellence positions it for continued success and influence in the international electronics industry.

Business Problem

AfriTech Electronics Ltd. has been facing a growing challenge related to its brand reputation. In recent years, the company has encountered several issues such as negative customer reviews, product recalls, and public relations crises. These issues have led to a decline in customer trust and have affected sales and market share.

Specific Problems:

1. **Negative Social Media Buzz:** The company is experiencing a surge in negative social media conversations about its products and customer service. These conversations are damaging its brand image.
2. **Customer Complaints:** Complaints related to product defects, delays in customer support response, and billing issues have been rising, leading to a drop in customer satisfaction.
3. **Product Recalls:** Recent product recalls have received significant media attention, causing panic among customers and stakeholders.
4. **Competitive Pressure:** Rivals are gaining market share by exploiting AfriTech Electronics Ltd.'s reputation challenges.

Reason for the Project

The primary objectives of this project are as follows:

- **Protecting Market Position:** Maintaining positive brand reputation is vital to retaining market share and fending off competition.
- **Customer Retention:** Improving customer satisfaction and addressing concerns promptly can reduce customer churn.
- **Crisis Mitigation:** Effective monitoring can help identify and address potential crises before they escalate.
- **Data-Driven Decision-Making:** Social media monitoring tools provide valuable insights into customer sentiment, enabling data-driven decision-making
- **Enhanced Marketing:** Consistent messaging and understanding customer preferences can lead to more effective marketing campaigns.

Aim for the Project

Brand reputation is a critical asset in the consumer electronics industry, and social media plays a pivotal role in shaping influencing public perception. The significance of initiating this project lies in addressing the following key reasons:

- **Monitor Social Media Conversations:** Continuously monitor social media platforms for mentions of the company and its products.
- **Sentiment Analysis:** Analyze sentiment in social media conversations to identify positive and negative trends.
- **Customer Issue Resolution:** Identify and prioritize customer complaints and issues for swift resolution.
- **Crises Detection:** Implement early warning systems to detect potential crises and take proactive measures.

Data Description

- CustomerID: A unique identifier for each customer.
- Customer Name: The name of the customer.
- Region: The region or state associated with the customer.
- Age: The age of the customer.
- Income: The income of the customer.
- CustomerType: The type of customer, which can be 'New', 'Returning', or 'VIP'.
- CustomerID: A reference to the customer who made the transaction.
- Transaction Year: The year in which the transaction occurred (e.g., 2021, 2022, 2023).
- Transaction Date: The date of the transaction.
- Product Purchased: The product purchased (e.g., 'Smartphone', 'Tablet', 'Laptop', 'Smartwatch').
- Purchase Amount: The amount spent on the purchase.
- Product Recalled: A boolean indicating whether the purchased product was recalled.
- Competitor: The competitor associated with the transaction, if any.
- CustomerID: A reference to the customer who interacted on social media.

Data Description

- Interaction Date: The date of the social media interaction.
- Platform: The social media platform where the interaction occurred (e.g., 'Twitter', 'Facebook', 'Instagram').
- Post Type: The type of social media post (e.g., 'Text', 'Image', 'Video', 'Link', 'Story').
- Engagement Likes: The number of likes the post received.
- Engagement Shares: The number of shares or retweets the post received.
- Engagement Comments: The number of comments the post received.
- User Followers: The number of followers the user has.
- Influencer Score: A score representing the influence of the user.
- BrandMention: A boolean indicating whether the post mentioned the brand.
- Competitor Mention: A boolean indicating whether the post mentioned a competitor.
- Sentiment: The sentiment of the post, which can be 'Positive', 'Neutral', or 'Negative'.
- Competitor: The competitor mentioned in the post, if any.
- Crisis Event Time: The date of a crisis event mentioned in a negative post.
- First Response Time: The date of the first response to a negative post.
- Resolution Status: A boolean indicating whether the crisis was resolved.
- NPS Response: The Net Promoter Score (NPS) response associated with the post.

TECH STACK

SQL will be used to efficiently query, analyze, and manage the underlying dataset, enabling us gain insights and make data-driven decisions quickly and effectively.



Power BI will be used to visually analyze and interpret the dataset, enabling us to create interactive dashboards and reports that provide meaningful insights and support data-driven decision-making efficiently.



Project Enhancement

To enhance the project deliverable, you are required to create a **four-page interactive dashboard in Power BI**, focusing on customer insights, brand sentiment analysis, and crisis management.

Home Page – An interactive landing page with navigation buttons linking to the three dashboards.

1. **Customer & Sales Insights Dashboard**– Analyze revenue, customer demographics, and product sales.
2. **Brand Sentiment & Social Media Analysis Dashboard** – Track sentiment trends, engagement, and competitor mentions.
3. **Customer Complaints & Crisis Management Dashboard** – Monitor product recalls, crisis response, and complaint trends.

Data Analytics Project Scope

Data Collection and Preprocessing

Extract data, perform data cleaning and transformation using SQL



Data Integration

Load cleaned data into PostgreSQL for structured storage and efficient querying.



Exploratory Data Analysis:

Use SQL for aggregations, joins, and trend analysis to uncover key business insights



Build Interactive Dashboard:

Connect Power BI to SQL, define KPIs, and build three dashboards



Testing and Publishing:

Test dashboard interactivity and publish the final Power BI report for stakeholders.

Resources



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Project Activity Tracker

Day	Task	Details
Day 1 (Monday)	Project Kickoff & Brief Review	Review the brief, understand deliverables, and get your tools ready (PostgreSQL, Power BI).
Day 2 (Tuesday)	Set Up Environment & Explore Data	Create Database and tables
Day 3 (Wednesday)	Data Validation and Exploratory Data Analysis	Clean and validate data. Begin SQL-based exploratory analysis to uncover trends in customer behavior, sentiment, and sales.
Day 4 (Thursday)	Deep-dive Analysis	Conduct deeper SQL queries to analyze social media engagement, sentiment distribution, competitor mentions, and complaint patterns. Document insights.
Day 5 (Friday)	Power BI Connection and build Customer & Sales Insights Dashboard	Connect Power BI to SQL. Visualize revenue, customer demographics, and product sales.

Project Activity Tracker

Day	Task	Details
Day 6 (Monday)	Build brand sentiment & social media analysis dashboard	Visualize sentiment trends, engagement, and competitor mentions.
Day 7 (Tuesday)	Build customer complaints & crisis management dashboard	Visualize product recalls, crisis response, and complaint trends.
Day 8 (Wednesday)	Create slides for Presentation	Summarize insights and dashboard views into slides. Highlight key findings and recommendations for brand strategy.
Day 9 (Thursday)	Presentation Day 1	Present dashboards and findings. Gather feedback and identify areas for improvement.
Day 10 (Friday)	Presentation Day 2	Present dashboards and findings. Gather feedback and identify areas for improvement.