

# Sales prediction and competitive product analysis using Power BI

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## ABSTRACT

Sales prediction helps the business to make data-driven decisions and improve the overall performance of the company. This study uses rolling forecasting method to determine the sales growth rate and make sales prediction. While Chai Waale may have multiple outlets, this study will focus on a specific location such as Adambakkam to provide more detailed information. The study used Power BI to predict the future sales of Chai Waale. Based on this analysis, Chai Waale is expected to grow by 8.59% from August 2024 to July 2025. The time series forecasting method is used which understand the trends, and seasonal changes in the data. The study aims to create interactive dashboards and chart that represents sales data and competitive product analysis. The findings of this study will help Chai Waale in making data driven decisions, inventory management and resource allocation and enhance customer satisfaction. The study also includes the competitive product analysis which highlights the consistent performance of milk chai and also recognized the growth opportunities in new product categories such as Sandwiches and Maggi.

**Key words:** Sales prediction, data visualization, Power BI, business intelligence, product performance, and data driven decisions.

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## INTRODUCTION

Sales forecasts are crucial to ensure that all business activities are aligned and prepared for future demands. The study analyses the purchasing patterns and preferences of customers to make accurate forecasts. By using Power BI in the sales prediction process, companies can improve their prediction accuracy, adjust their sales strategies, and boost their revenue. It identifies the period of high and low demand and recognizes the seasonal variations in demand for better financial planning and budgeting. Sales prediction using Power BI is an effective way for businesses to stay competitive by analyzing historical sales data.

This study includes charts and interactive dashboards to represent sales data and competitive product analysis. Dashboards in Power BI are dynamic allowing the end users to drill down into the data, apply filters, and focus on specific details. In this study, the time series forecasting method is used which highlights the trends, and seasonal changes in the data. Time series forecasting can be used to analyze and make predictions over time providing business with invaluable insights for planning and decision making. Power BI can generate time series forecasts using its in-built forecasting features.

Based on the historical data from August 2023 to July 2024, the sales forecasts are done for August 2024 to July 2025. Competitive product analysis helps in identifying the top performing product indicating the notable rise in sales. This provides the insights about the customer response towards the new product launches in 2024. This positive response from customers provides a base for further expansion of innovative products. Positive feedback from customers reflects the success of the new product launches.

## REVIEW OF LITERATURE

**Microsoft Power BI: Extending Excel to Manipulate, Analyze, and Visualize Diverse Data (2013)** by Louis T. Becker and Elyssa M. Gould. This paper provides information about how Microsoft Power BI enhances Excel's ability to manage various datasets. This paper highlights that users can utilize advanced data models, execute intricate calculations, and use DAX (Data Analysis Expressions) to develop more dynamic and insightful analyses. A key benefit noted is Power BI's extensive visualization features. In contrast to Excel's basic charts and graphs, Power BI provides interactive dashboards, visual reports, and a wide range of advanced charting options.

**Applied Microsoft Power BI (3rd Edition): Bring Your Data to Life (January 2018)** is written by Teo Lachev. This paper provides in-depth explanations on crafting DAX formulas for measures and calculated columns, allowing users to build complex analytics models and extract deeper insights from their data. The 3rd edition has been updated to include the latest features and advancements in Power BI as of 2018. Additionally, it covers how to integrate real-time data streams into Power BI dashboards, a crucial feature for businesses that need to track metrics and KPIs in real-time, such as sales performance, operational data, or website traffic.

**Sales Forecasting in Small and Medium-Sized Enterprises (2016)** by Timo Haataja this paper examines the specific challenges and strategies related to sales forecasting in small and medium-sized enterprises (SMEs). This paper highlights that although sales forecasting is essential for businesses of any size, SMEs often encounter limitations such as restricted resources, data access, and technological capabilities, which can make the forecasting process more difficult.

**The Sales Prediction of Four Wheelers Unit (4W) using the Seasonal Algorithm Trend Decomposition with Loess (STL) at PT. Astra International, Tbk. (2017)** This paper focuses on utilizing the STL algorithm to forecast the sales of four-wheel vehicles for PT. Astra International, is a leading automotive distributor in Indonesia. This study highlights the significance of precise sales forecasting in the automotive sector, where demand often fluctuates due to seasonal trends, economic factors, and changing consumer preferences. The STL method employed here is a powerful time series decomposition technique that breaks down a series into three key components: trend, seasonality, and residuals.

**Self-Service Business Intelligence by Paul Alpar and Michael Schulz (2016)**. This paper highlights the concept and increasing importance of self-service business intelligence (SSBI) in organizations. The paper highlight how SSBI tools enable non-technical business users to access, analyse, and visualize data without needing extensive support from IT departments or data specialists. This shift towards democratizing data analytics marks a significant departure from traditional business intelligence (BI) practices, where data management was typically confined to experts. Alpar and Schulz discuss how SSBI platforms like Power BI, Tableau, and Qlik empower users to create tailored reports, conduct ad-hoc queries, and derive insights in a more accessible and intuitive way.

**Using Microsoft Power BI for sales forecasting as a data mining technique by Laifa Assala and Hadouga Hassiba (2023)**. The goal of this paper is to predict the sales of a commercial organization and highlight how modern information technology contributes to the efficient and accurate processing of data through the Microsoft Power BI business intelligence program. It emphasizes the crucial role that projected future sales data plays in the planning process, as well as how it aids the sales manager in making informed decisions to enhance the organization's performance.

**Global Superstores Sales Prediction and Data Visualization Using Power BI (2023) by Shruti Shivankar, Shardul Mehetar, Neha Darade, Saachi Bhimanpalli, and Danyanada Dafale**. This paper explains how Power BI can be utilized for sales prediction and visualization in a global retail context. The paper also highlights how predictive analytics within Power BI can aid in inventory management, optimize supply chains, and refine marketing strategies. By achieving more precise sales predictions, global superstores can effectively manage their stock levels, minimize excess inventory, and synchronize marketing efforts with expected demand surges.

**Power Business Intelligence in the Data Science Visualization Process to Forecast CPO Prices" by Albara Al-Khowarizmi and Riyan Pradesyah (2020)**. This paper examines how Power BI can be used as a tool for data visualization and forecasting, specifically for predicting Crude Palm Oil (CPO) prices. It provides information about the ability of Power BI to improve decision-making by offering a strong platform for visualizing and analysing market trends within the commodity sector. This research highlights the critical need for accurate CPO price forecasts, especially considering the fluctuations in global commodity markets and the significant impact of CPO on the economies of countries that are major producers and exporters.

## OBJECTIVES OF THE STUDY

- To perform sales prediction using Power BI
- To examine the historical sales data and make accurate sales predictions regarding future sales.
- To identify the key factors that significantly impacts the sales.
- To design a sales dashboard and competitive product analysis dashboard that provides insights which is easy to understand.

## RESEARCH METHODOLOGY

### Research design

The study aims to analyze the historical sales, identify patterns and consumer behavior and make accurate sales prediction using Power BI, descriptive research design and predictive research design are used in this research.

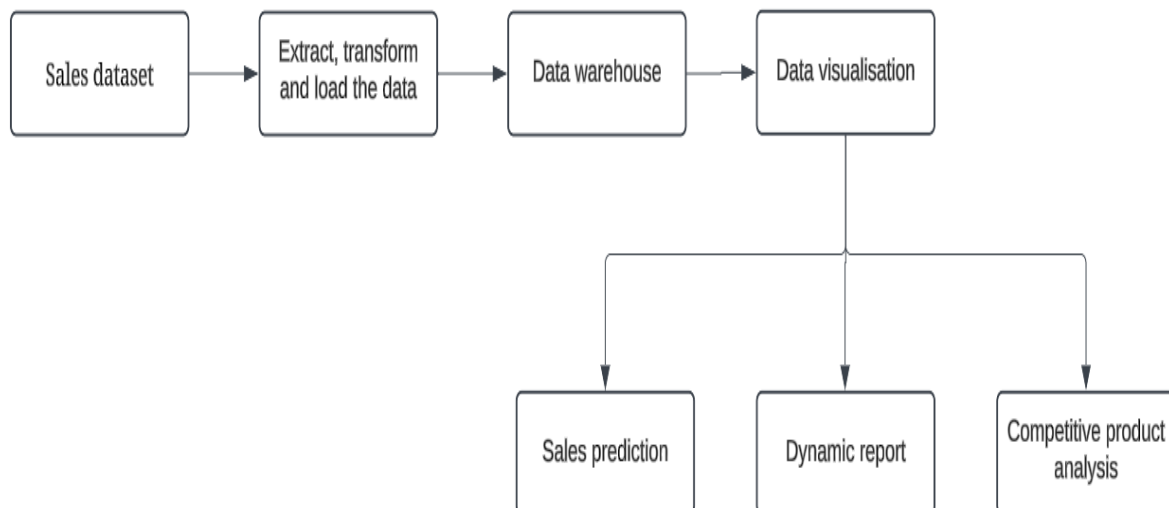
### Sampling method

The sampling method utilized in this study is the historical sales data of Chai Waale and it is imported into power BI to clean the raw data, transform and load so that it can draw accurate and reliable sales predictions.

### Data collection method

This study is conducted based on the historical sales data provided by Chai Waale, particularly, Adambakkam branch. It comprises of the past year sales data from August 2023 to July 2024.

## RESEARCH MODEL



**DATA ANALYSIS AND VISUALISATION**

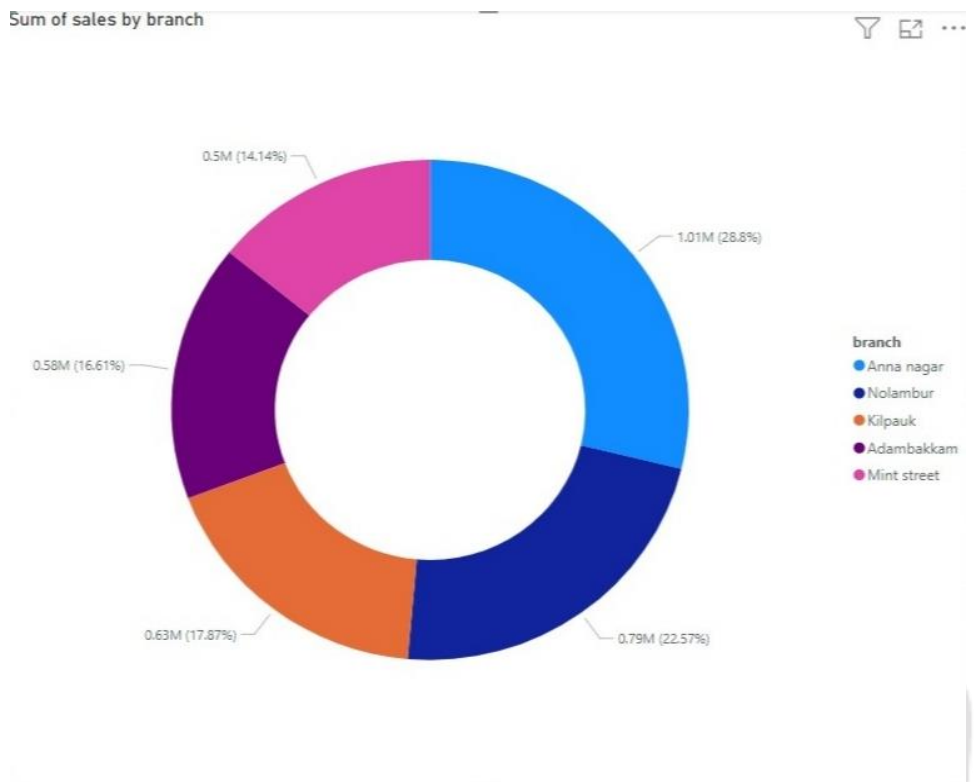


Figure No: 01 Sales of top 5 branches of Chai Waale

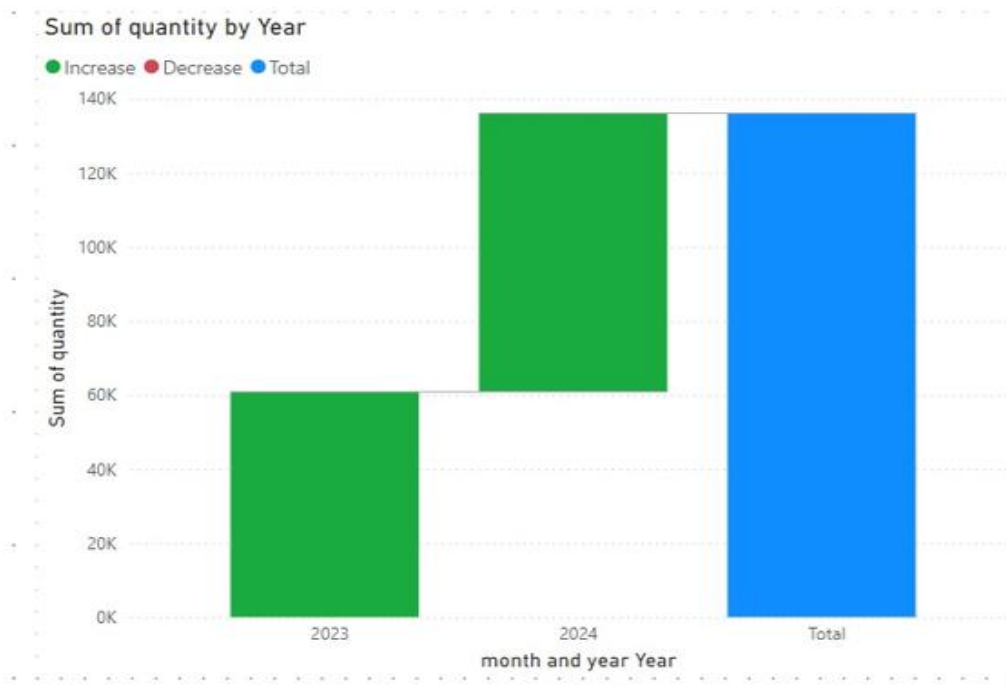


Figure No: 02 Sum of quantity by year 2023 and 2024

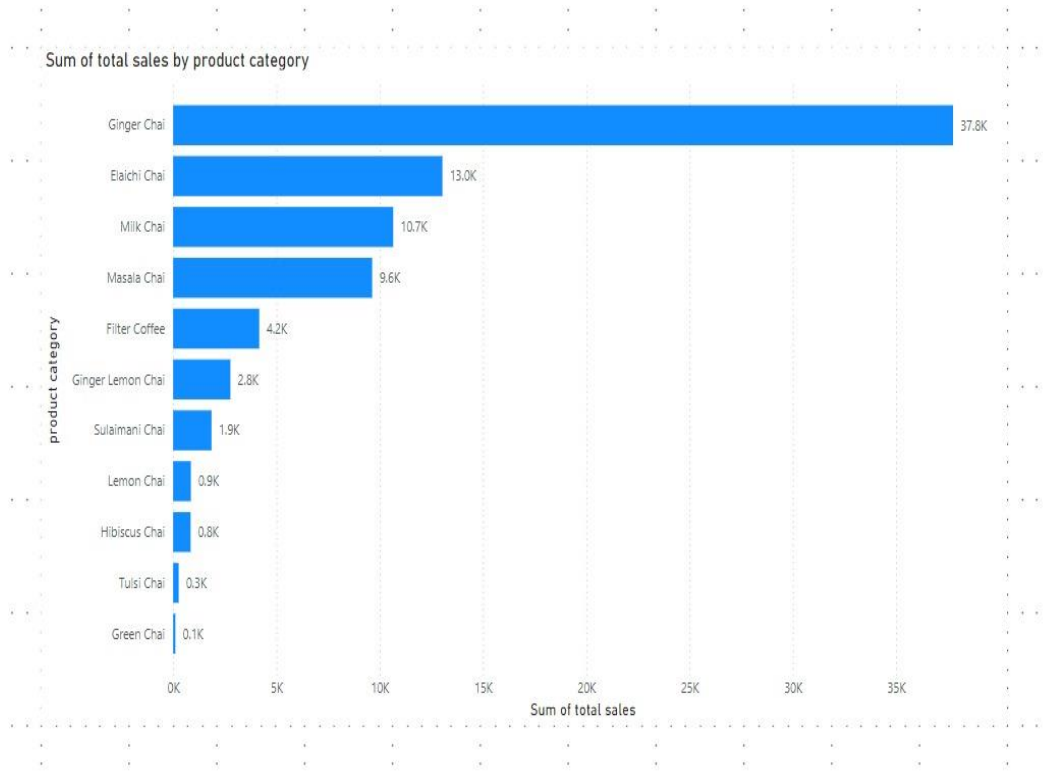


Figure No: 03 Total sales of different varieties of chai

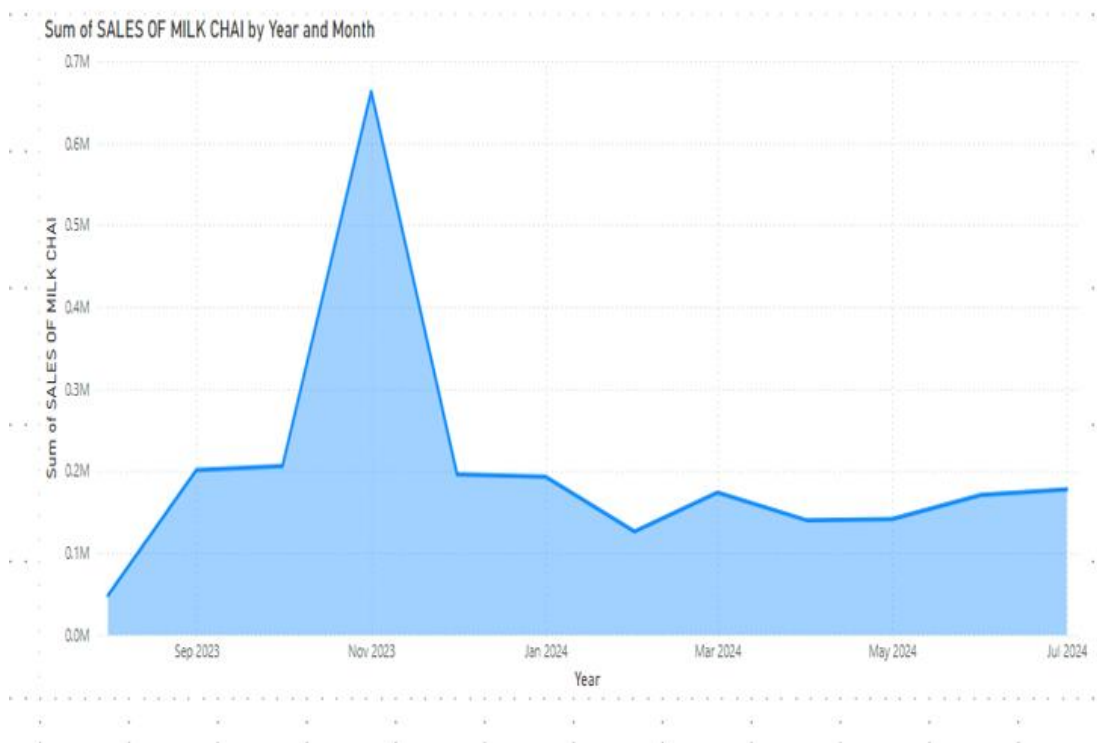


Figure No: 04 Sum of sales of Milk Chai from September 2023 to July 2024



Figure No: 05 Sales Dashboard



Figure No: 06 Competitive product analysis dashboard

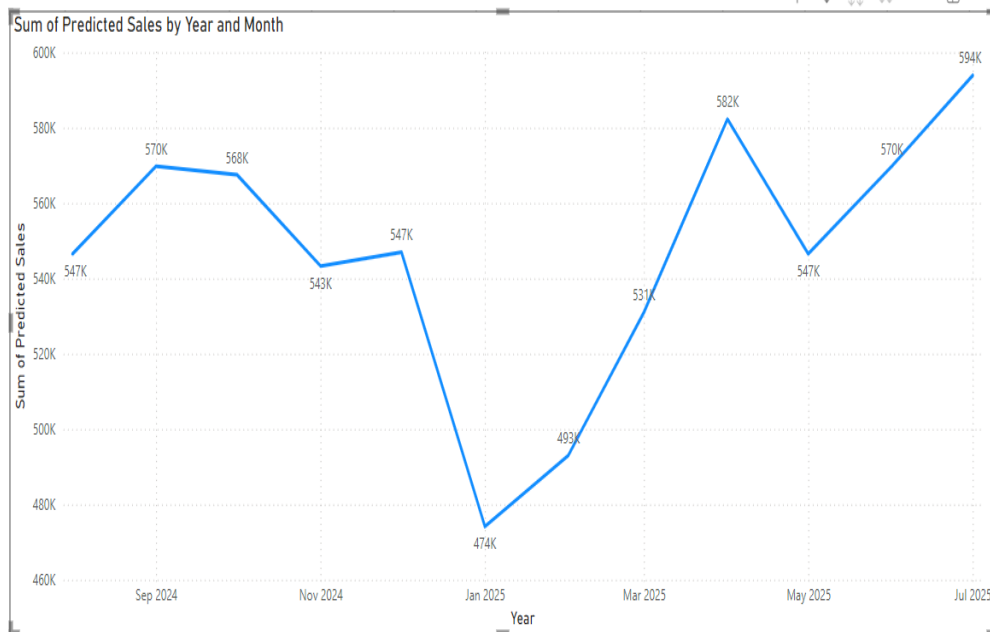


Figure No: 07 Sales Prediction from August 2024 to July 2025

### INTERPRETATION:

This sales prediction for Chai Waale shows a significant increase from August 2024 to July 2025. The company is projected to have consistent growth in sales throughout this period. The sales is 5.46 lakh rupees in August 2024, the sales are expected to increase to about 5.93 lakh rupees by July 2025, representing an overall growth of around 8.59% over these twelve months.

### SUMMARY OF FINDINGS

- The analysis shows seasonal fluctuations in sales with peak sales in months like April and July. This emphasizes that marketing strategies must be tailored according to the period of sales.
- The analysis reveals that Anna Nagar leads in sales, contributing 28.8% of the total. This indicates that prime location plays a crucial role in sales performance. While Mint Street branch contributes only 14.14% of total sales which suggests that targeted measures must be adopted to boost the sales of underperforming branch.
- The competitive product analysis dashboard shows that milk chai remains in top 5 selling product in both 2023 and 2024. New launch product such as Maggi, Momos and sandwiches have shown stable sales.
- The sales prediction shows a consistent growth of 8.59% from august 2024 to July 2025, which shows strong market demand and effective growth strategies.
- The use of interactive dashboards in power BI allows drill down to specific information which enables to make quick adjustment to strategies.
- The comparison between 2023 and 2024 reflects a significant increase in the sales volume from 60,000 units to 1,30,000 units.
- The sales of Milk chai had ups and downs from September 2023 to July 2024, which suggests that there is a need to monitor and make smart changes to keep the sales consistent.
- Traditional flavours like Ginger chai and Elachi chai are the top picks among customers while health focused chai such as Tulsi chai and green chai are least preferred by customers.

## CONCLUSION

The study on Sales prediction Using Power BI provides the sales forecasts for the next one year. This study highlights the importance of using advanced analytical tools to understand the sales potential and market challenges due to seasonal fluctuations and changes in demand by customers and identify new opportunities for growth. By using historical data and adopting rolling forecast method this study shows the sales prediction with a high degree of accuracy. This rolling forecast approach modifies itself to real time changes based on customer demand, seasonal fluctuations. As companies continue to flourish, the responsibility of company to adopt to the latest technology to make data driven decisions is also significant to stay ahead of competition in the dynamic market. The charts and dashboards can help the company to identify the trends and patterns of sales, spot the peak sales period, product performance, performance of its different branches, contribution of chai sales to the total sales, sales of different varieties of chai which improves their performance and identify the downfall to convert it as an opportunity for growth

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