

Software Requirements Specification (SRS)

For

Pricing Prediction and Visualization System using Power BI

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a detailed description of the requirements for the Pricing Prediction and Visualization System using Power BI. This document will serve as a guideline for the development, testing, and implementation of the system, ensuring that all stakeholders have a clear understanding of the system's functionalities and constraints.

1.2 Scope

The Pricing Prediction and Visualization System aims to enable businesses to analyse historical pricing data, visualize trends, and generate forecasts to support pricing decisions. This system will be developed using Power BI, leveraging its data visualization and analysis capabilities to provide actionable insights into pricing dynamics.

1.3 Definitions, Acronyms, and Abbreviations

- **SRS:** Software Requirements Specification
- **EDA:** Exploratory Data Analysis
- **CSV:** Comma-Separated Values
- **Power BI:** Business analytics service by Microsoft
- **UI:** User Interface
- **ETL:** Extract, Transform, Load

1.4 References

- Power BI Documentation and Resources: [Power BI Documentation](#)
- Power BI Guidance for the project: [Power BI guidance documentation](#)

1.5 Overview

This document is organized into several sections, each detailing different aspects of the system requirements. These sections include general description, specific requirements (both functional and non-functional), external interface requirements, and additional considerations.

2. General Description

2.1 Product Perspective

The Pricing Prediction and Visualization System is designed as an integrated solution within the Power BI environment. It is intended to be a standalone platform but will integrate seamlessly with various data sources to gather historical pricing data.

2.2 Product Functions

- Import and preprocess historical pricing data.
- Visualize historical pricing trends.
- Implement forecasting techniques to predict future prices.

- Provide interactive tools for data exploration and analysis.

2.3 User Classes and Characteristics

- **Business Analysts:** Users responsible for analysing data and generating reports. Typically have intermediate Power BI skills.
- **Data Scientists:** Users with advanced analytics and forecasting skills. They will use the system for in-depth data analysis.
- **Executives:** High-level users interested in viewing summarized reports and dashboards for strategic decision-making. Typically have basic Power BI skills.
- **IT Administrators:** Technical users responsible for managing data sources, ensuring system performance, and maintaining security protocols. Have advanced technical skills.

2.4 Operating Environment

The system will operate within the Power BI service, accessible through web browsers and mobile devices. The primary operating environment includes:

- **Web Browsers:** Latest versions of Chrome, Firefox, Edge, and Safari.

2.5 Design and Implementation Constraints

- Must comply with Power BI's data handling and visualization capabilities.
- Ensure compatibility with diverse data formats such as Excel, CSV, and databases.
- Adhere to Power BI's performance and scalability limitations.

2.6 User Documentation

User manuals, online help, and training materials will be provided to facilitate ease of use and quick adoption by various user classes.

2.7 Assumptions and Dependencies

- Users possess a basic understanding of Power BI functionalities.
- Reliable internet connectivity is available for accessing Power BI services.
- Availability of historical pricing data from relevant data sources.

3. SYSTEM - Functional Requirements

3.1 Data Import and Preparation

- **Description:** Enable client to import historical pricing data from multiple sources and preprocess it for analysis.
- **Functional Requirements:**
 - Import data from various sources including databases, Excel, and CSV files.
 - Use Power Query Editor to preprocess and transform the imported data.

- Handle missing values, data inconsistencies, and apply necessary data transformations.

3.2 Data Visualization

- **Description:** Develop interactive reports and dashboards to visualize historical pricing trends.
- **Functional Requirements:**
 - Create various visualizations such as time series plots, scatter plots, and histograms.
 - Customize visualizations using Power BI's features (colours, labels, tooltips).
 - Implement interactive elements like slicers, filters, and drill-down capabilities.

3.3 Forecasting

- **Description:** Implement forecasting capabilities to predict future prices based on historical data.
- **Functional Requirements:**
 - Use Power BI's built-in forecasting features or integrate custom forecasting models.
 - Allow users to select forecasting models and parameters directly within the reports and dashboards.
 - Display forecast results alongside historical data in the visualizations.

3.4 Exploratory Data Analysis (EDA)

- **Description:** Develop Power BI reports and features for exploratory data analysis to understand data distribution and relationships.
- **Functional Requirements:**
 - Provide tools for interactive EDA, including statistical summaries and visual exploration.
 - Enable users to explore data insights using slicers, filters, and drilldowns.
 - Include capabilities to analyse data distribution, correlations, and trends.

3.5 User Interface

- **Description:** Design a user-friendly and intuitive interface for interacting with Power BI reports and dashboards.
- **Functional Requirements:**
 - Ensure the UI is responsive and compatible with different devices and screen sizes.

- Provide clear navigation paths and user guidance throughout the interface.
- Include tooltips, help sections, and user instructions to assist users in navigating the system.

4. Non-Functional Requirements

4.1 Usability

- Ensure the system is easy to use for all user classes, with intuitive navigation and clear instructions.
- Provide training materials and tooltips to guide users.

4.2 Performance

- Optimize reports and queries for fast data processing and rendering.
- Minimize latency and response times to enhance user experience during data exploration and analysis.

4.3 Scalability

- Design the system to handle growing data volumes and user traffic without performance degradation.
- Utilize Power BI's caching mechanisms and data storage options to manage increased demand.

4.4 Security

- Implement robust security measures to protect sensitive pricing data and ensure user privacy.
- Use role-based access controls and encryption to restrict unauthorized access to data and reports.

5. External Interface Requirements

5.1 User Interfaces

- **Web Interface:** Power BI dashboards accessible via web browsers.

5.2 Hardware Interfaces

- Compatible with standard desktops, laptops, tablets, and mobile devices.
- Supported Devices: Power BI dashboards must be used in standard desktops, laptops, tablets and mobiles.

5.3 Software Interfaces

- Integrates with databases, Excel, and CSV files for data import.
- Utilizes Power BI service for data visualization and analysis.

- CSV File: We will use CSV file as our primary data to import historical pricing data into Power BI

5.4 Communication Interfaces

- Requires a stable internet connection for accessing Power BI services and performing data synchronization.

6. Other Requirements

6.1 Data Backup and Recovery

- Implement regular data backups to prevent data loss.
- Develop a data recovery plan to restore data in case of system failures.

6.2 Training

- Provide training sessions and materials for all user classes.
- Develop comprehensive user guides and online help resources.

6.3 Maintenance

- Regularly update and maintain Power BI reports and dashboards.
- Ensure compatibility with new Power BI features and updates.

This detailed SRS document outlines the comprehensive requirements for the development and implementation of the Pricing Prediction and Visualization System using Power BI. It serves as a foundational guide to ensure that all aspects of the system are well understood and effectively communicated to all stakeholders involved in the project.