

A Mini Project Report
on
UNVEILING BUSINESS INSIGHTS :SALES DATA ANALYSIS

SIDDHARTHA INSTITUTE OF TECHNOLOGY & SCIENCES
(UGC – AUTONOMOUS)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with ‘A+’ Grade.

Narapally, Korremula Road, Ghatkesar, Medchal- Malkajgiri (Dist.)-500088



(Submitted in partial fulfilment of the academic requirements of B. Tech)

In

Department Of CSE (DATA SCIENCE)

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CERTIFICATE

This is to certify that the project report entitled **UNVEILING BUSINESS INSIGHTS :SALES DATA ANALYSIS**

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In partial fulfilment for the award of the degree of Bachelor of Technology in Computer Science and Engineering, Jawaharlal Nehru Technological University Hyderabad, is a record of bonafide work carried out under my guidance and supervision. The results embodied in this project report have not been submitted to any other University or Institute for the award of any Degree or Diploma

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DECLARATION

We declare that this project report titled **UNVEILING BUSINESS INSIGHTS : SALES DATA ANALYSIS** submitted in partial fulfilment of the degree of **B. Tech in CSE(DATA SCIENCE)** is a record of original work carried out by me under the supervision of **Mrs. Radhika** and has not formed the basis for the award of any otherdegree or diploma, in this or any other Institute or University. In keeping with the ethical practice in reporting scientific information, due acknowledgments have been made wherever the findings of others have been cited.

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ACKNOWLEDGMENT

Any endeavor in the field of development is a person's intensive activity. A successful project is a fruitful culmination of efforts by many people, some directly involved and some others who have quietly encouraged and supported.

Salutation to be beloved and highly esteemed institute **SIDDHARTHA INSTITUTE OF TECHNOLOGY AND SCIENCES** for grooming us into Computer Science and Engineering graduate, We wish to thank **Principal Dr. M. Janardhan** for providing a great learning environment.

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Vision of the Department: To be a Recognized Center of Computer Science Education with values and quality research.

Mission of the Department:

MISSION	STATEMENT
DM1	Import High Quality Professional Training With An Emphasis On Basic principles Of Computer Science And Allied Engineering
DM2	Imbibe Social Awareness And Responsibility To Serve The Society.
DM3	Provide Academic Facilitates Organize Collaborated Activities To enable Overall Development Of Stakeholders

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- **PEO1:** Graduates will be able to synthesize mathematics, science, engineering fundamentals, laboratory and work – based experiences to formulate and to solve problems proficiently in Computer science and Engineering and related domains.
- **PEO2:** Graduates will be prepared to communicate effectively and work in multidisciplinary engineering projects following the ethics in their profession.
- **PEO3:** Graduates will recognize the importance of and acquire the skill of independent learning to shine as experts in the field with a sound knowledge.

TABLE OF CONTENTS

DESCRIPTION	PAGE NUMBER
CERTIFICATE	I
DECLARATION	II
ACKNOWLEDGEMENTS	III
ABSTRACT	7
CHAPTER 1: INTRODUCTION	8-9
CHAPTER 2: LITERATURE SURVEY	10-12
CHAPTER 3: PROBLEM STATEMENT	13-14
CHAPTER 4: EXISTING SYSTEM	15-16
CHAPTER 5: PROPOSED SYSTEM	17-19
CHAPTER 6: PROCESS MODEL	20-25
CHAPTER 7: SOFTWARE REQUIREMENT SPECIFICATION	26-29
CHAPTER 8: EXTERNAL INTERFACE REQUIREMENTS	30-33
CHAPTER 9: SYSTEM DESIGN	34-40
CHAPTER10 IMPLEMENTATION	41-50
CHAPTER 11: SCREENSHOTS	51-63
CHAPTER 12: CONCLUSION	64-66
CHAPTER 13: FUTURE SCOPE	67-69
CHAPTER 14: REFERENCES	70-71

LIST OF FIGURES

Figure No	Name Of the Figure	Page No
6.1	SDLC	21
6.2	Requirement Gathering	22
6.3	Analysis Stage	23
6.4	Designing Stage	23
6.5	Development Stage	24
6.6	Installation and acceptance stage	25
9.1	Use Case Diagram	35
9.2	Class Diagram	36
9.3	Sequence Diagram	37
9.4	Data Flow Diagram	38
9.5	Flow Chart Diagram	40

ABSTRACT

Title: Unveiling Business Insights :Sales Data Analysis

This pizza sales analysis project integrates Excel, Microsoft SQL Server Management Studio (SSMS), and Power BI to extract actionable insights from a comprehensive dataset. The project encompasses data collection, cleaning, and preparation in Excel, followed by storage in a SQL Server database. Utilizing SQL queries, the analysis focuses on extracting meaningful patterns and trends. Excel is employed for in-depth analysis, including pivot tables and custom formulas. The final phase involves creating a dynamic Power BI report, integrating visualizations for a comprehensive overview. Insights derived from this analysis inform strategic decisions to enhance sales, optimize inventory, and target specific customer segments.

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

Embark on a distinctive journey into the intricate realm of pizza sales dynamics, where this project orchestrates a distinctive synergy among Excel, Microsoft SQL Server, and Power BI. The mission unfolds with a meticulous data collection process, steering away from the mundane to capture nuanced customer behaviors and sales trends. Excel takes the spotlight to meticulously purify and prepare the dataset, transforming raw data into a canvas ready for exploration. SQL queries then emerge as the architects, constructing a structured narrative within the SQL Server, unveiling profound insights into the subtleties of sales dynamics. As Excel becomes the maestro, orchestrating visual symphonies through pivot tables and custom formulas, Power BI assumes the role of the grand finale—a visual masterpiece of interactive charts and graphs. This project is not merely an exploration; it's a narrative of discovery and strategic insight. Stakeholders gain not just insights but a profound understanding, steering strategic decisions with confidence. This integration is not a mere combination of tools; it's a unique expedition where each instrument harmonizes, revealing the depth and breadth of pizza sales analysis.

1.1 OBJECTIVE

The objective of this project is to unravel intricate sales patterns and customer preferences. The ultimate goal is the creation of a dynamic Power BI report, offering stakeholders a visually engaging platform for strategic decision-making. This unique integration of tools ensures a comprehensive exploration of insights, guiding the optimization of sales strategies and operational efficiency in the dynamic landscape of the pizza industry.

CHAPTER 2

LITERATURE

SURVEY

2.LITERATURE SURVEY

Analysis of sales data of a company or retailer has been becoming a widely discussed topic. The sales data can consist of many records, and filtering of sales data to find meaningful intuitions are common techniques in sales analysis. Tools like dashboards help managers and owners in visualizing aggregated data. Some tools usually show the items that are sold by different sales' points. To understand data by visualization was used as early as 1137. In all fields, there has been vast Development in visualization techniques. Examining information and data visualization help to visualize and express ideas in architecture. With the coming of computer simulation visualization pertinence has been faster. Visualization of data is used to present design data with the aid of drawings and diagrams and data is usually conceptual or special, we require scientific visualization techniques like charts and graphs, etc. Visualization should have the power to present multidimensional data and it must be synergistic and permit efficacious communication. Some researchers focus on the tools used for data analysis. They highly focus on how easy it is to use the dashboard, create connections and store data in databases and ease of sharing information . Dashboards are being widely used to visualize the sale amount by the salesperson on a bar graph with different colours. Sales by salespersons and sales of products are also visualized on the same application. The way the human brain processes information, presenting insights in charts or graphs to ascertain significant amounts of complex data is more accessible than relying on spreadsheets or reports. Analytics offer a user with an intuitive, detailed and simpler way of conveying critical concepts universally – and it's possible to experiment with different scenarios by making tiny adjustments. Recent studies discovered that the use of visualizations in data analytics could shorten business meetings by 24%. Moreover, a business intelligence strategy with visualization capabilities boasts an ROI of \$13.01 back on every dollar spent. Therefore, the analysis and visualization of data is critical to the sustained success of a business and to help the business yield the foremost possible value from this tried and tested means of analyzing and presenting vital information.

Literature review is conducted in two consecutive phases on the visual analytics research area. Initially, Bibliometric analysis is conducted on the broad topic area to identify the spread of the research region [7]. Based on the results captured from web of science tool [10], a detailed

literature review conducted to find the research gap and significance of a new method in the area of visual analytics.

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CHAPTER 3

PROBLEM STATEMENT

3.PROBLEM STATEMENT

In the ever-evolving landscape of the pizza industry, businesses grapple with the challenge of deciphering the intricate dynamics that dictate sales success. The absence of a comprehensive analytical framework leaves stakeholders in the dark, unable to discern crucial patterns in customer behaviors and sales trends. Traditional methods fall short, lacking the precision and depth required to inform strategic decisions effectively. This project addresses the pressing need for a sophisticated approach, integrating Excel, Microsoft SQL Server, and Power BI to unravel the complexities of pizza sales. The absence of such an integrated solution impedes businesses from optimizing strategies, resulting in missed opportunities for growth and efficiency in this competitive market. The problem at hand is not just a lack of data—it's a lack of nuanced insight, a gap that this project endeavors to bridge through a meticulous blend of data collection, analysis, and visualization.

CHAPTER 4

EXISTING SYSTEM

4.EXISTING SYSTEM

In the existing scenario, pizza businesses often rely on conventional methods of sales tracking and analysis, which primarily involve basic spreadsheet tools and manual data entry. Excel might be the go-to platform for storing and managing data, but the analysis is often rudimentary, limited to simple charts and graphs. SQL Server might be used for data storage, but the queries may lack the depth needed for comprehensive insights. Visualization, if attempted, is usually confined to static reports or basic charts. The lack of an integrated and automated system hinders the ability to extract meaningful insights from the rich data that pizza businesses generate daily.

key features

Data Handling:

Reliance on basic spreadsheet tools for data storage and management.

Manual data entry is a common practice.

Analysis Tools

- Limited analysis capabilities within Excel, often restricted to simple charts and graphs
- SQL Server may be used for data storage, but queries lack depth and sophistication.

Visualization:

- Visualization efforts are rudimentary, often confined to static reports or basic charts.
- Lack of integrated and automated systems hinders comprehensive data interpretation.

Insights Extraction:

- Difficulty in extracting nuanced insights from the vast amount of data generated daily by pizza businesses.
- Conventional methods fall short in providing a holistic understanding of customer behaviors and sales trends.

CHAPTER 5

PROPOSED SYSTEM

5.PROPOSED SYSTEM

The proposed system introduces a transformative approach, integrating Excel, Microsoft SQL Server, and Power BI into a seamless and sophisticated pizza sales analysis framework. Data collection is streamlined, moving beyond manual entry to automated processes that capture nuanced customer behaviors and sales trends. Excel assumes a more dynamic role, employing advanced functions and pivot tables for in-depth analysis, while SQL queries within the SQL Server unveil deeper insights into sales dynamics. The grand finale lies in Power BI, where a dynamic and interactive report is crafted, offering stakeholders a visually compelling platform for strategic decision-making. This proposed system not only enhances the efficiency of data management but also elevates the analytical capabilities of the entire process, providing businesses with a holistic and data-driven approach to navigating the complex world of pizza sales.

Key Features

Automated Data Collection:

- Implementation of automated processes for data collection to capture nuanced customer behaviors and sales trends efficiently.
- Streamlined data entry procedures for enhanced accuracy and timeliness.

Advanced Excel Analysis:

- Excel assumes a more dynamic role, leveraging advanced functions and pivot tables for in-depth data analysis.
- Enhanced capabilities for uncovering intricate patterns in sales data.

Sophisticated SQL Queries:

- Utilization of sophisticated SQL queries within the SQL Server for a deeper and more insightful exploration of sales dynamics.
- Comprehensive data extraction to provide a robust foundation for analysis.

Dynamic Power BI Reporting:

- Integration of Power BI for the creation of dynamic and interactive reports.

- Visualizations go beyond basic charts, offering stakeholders a compelling platform for strategic decision-making.

Holistic Approach:

- The proposed system provides a holistic and integrated approach to data management and analysis.
- Elevates analytical capabilities, allowing businesses to navigate the complex landscape of pizza sales with informed decisions.

CHAPTER 6

PROCESS MODEL

6.PROCESS MODEL

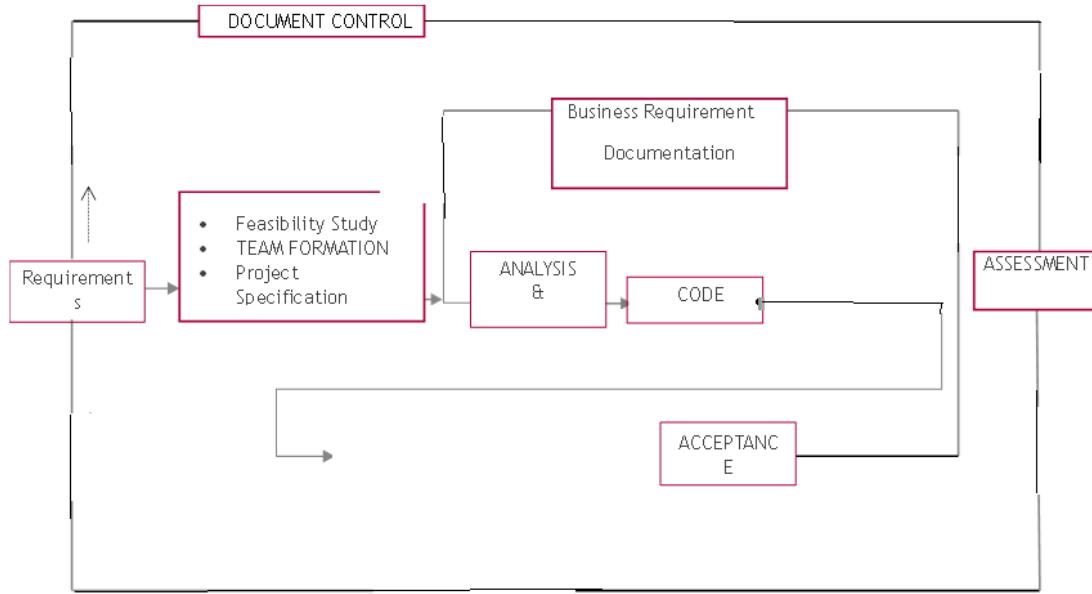


Fig 6.1 (SDLC)

SDLC is nothing but Software Development Life Cycle. It is a standard which is used by software industry to develop good software.

Stages in SDLC

- Requirement Gathering
- Analysis
- Designing
- Coding
- Testing
- Maintenance

Requirements Gathering stage

In this initial stage, the project team interacts with stakeholders, including potential users, to understand their requirements and expectations for the Sales Analysis . This involves gathering information about the desired features, user interface preferences, and data handling.

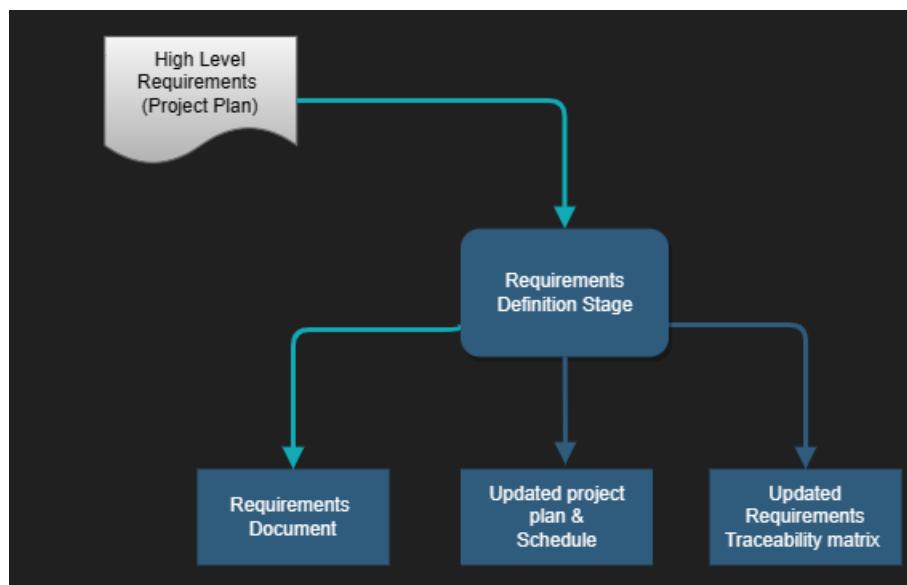


Fig 6.2 Requirement gathering

Analysis Stage:

During the analysis phase, the project team delves deeper into the requirements collected. They create detailed functional specifications, outline system behavior, and identify potential challenges or limitations. This phase serves as a blueprint for the entire project.

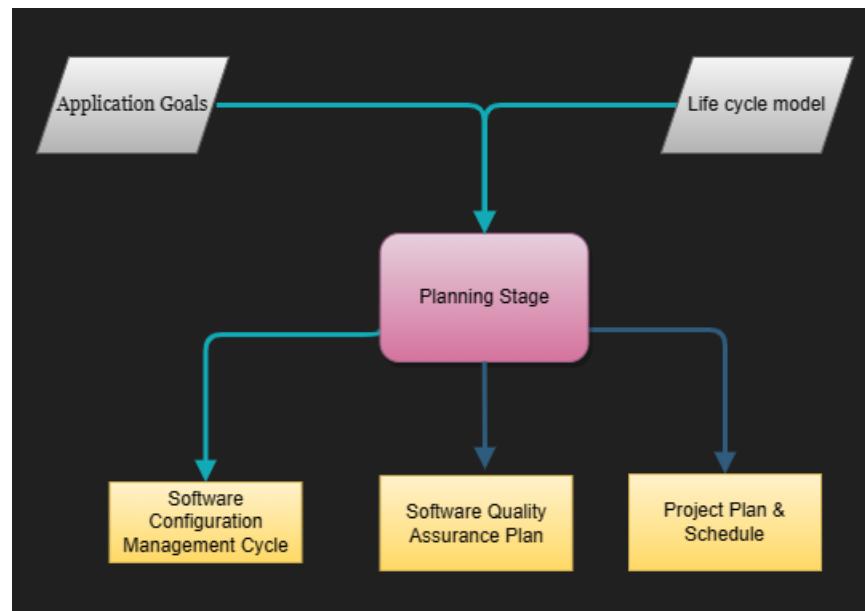


Fig 6.3 Analysis stage

Designing Stage:

In the design stage, the system's architecture and user interface are planned. This includes creating wireframes, defining the database structure, and determining how user interactions will be facilitated. Design decisions are crucial for ensuring the system's usability and scalability.

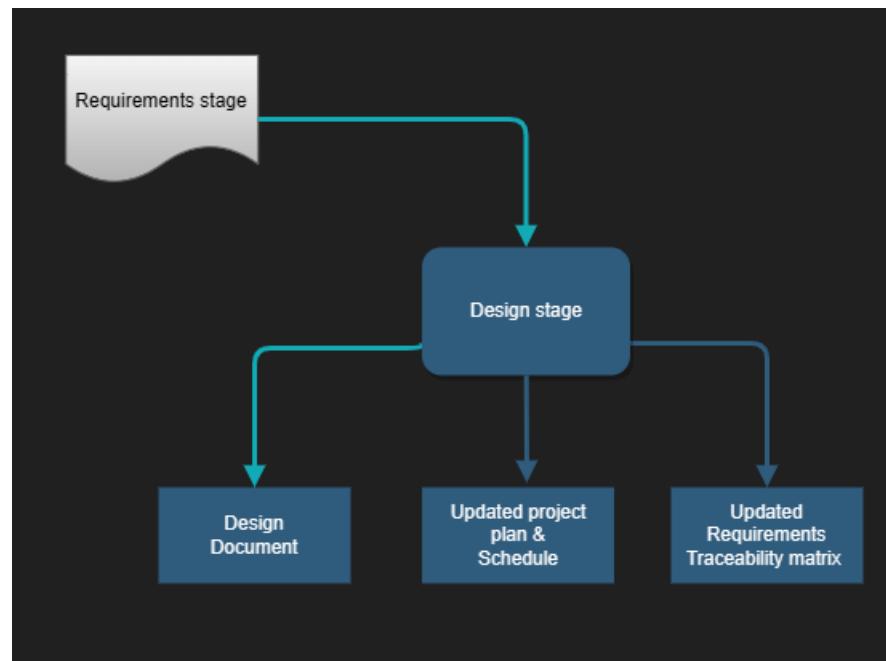


Fig 6.4 Designing stage

Development Stage:

The development stage takes as its primary input the design elements described in the approved design document. For each design element, a set of one or more software artefacts will be produced

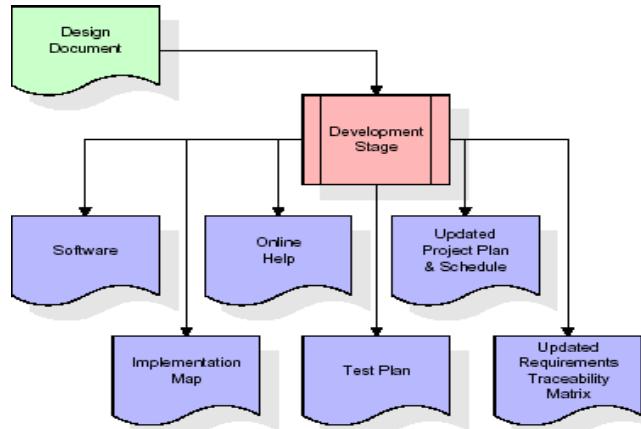


Fig 6.5 Development stage

Integration & Test Stage:

During the integration and test stage, the software artefacts, online help, and test data are migrated from the development environment to a separate test environment. At this point, all test cases are run to verify the correctness and completeness of the software. Successful execution of the test suite confirms a robust and complete migration capability. During this stage, reference data is finalized for production use and production users are identified and linked to their appropriate roles. The final reference data (or links to reference data source files) and production user list are compiled into the Production Initiation Plan.

Installation and Acceptance Stage:

During the installation and acceptance stage, the software artefacts, online help, and initial production data are loaded onto the production server. At this point, all test cases are run to verify the correctness and completeness of the software. Successful execution of the test suite is a prerequisite to acceptance of the software by the customer

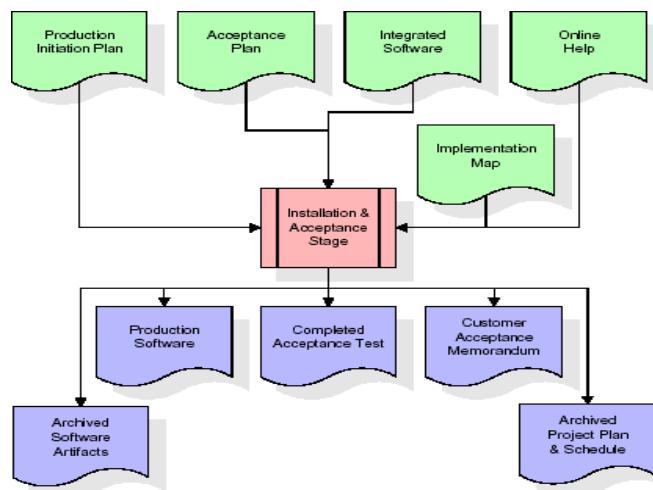


Fig 6.6 Installation and Acceptance Stage

Maintenance

Once the application is deployed, the maintenance phase begins. This involves ongoing support, bug fixes, and updates to address changing requirements or technology updates. Regular maintenance ensures the system remains functional and up-to-date.

Throughout these stages, project management activities such as planning, scheduling, and resource allocation are also essential to ensure the successful development and deployment of the Sales Analysis . Communication with stakeholders is maintained throughout the SDLC to ensure that the final product aligns with user expectations and needs.

CHAPTER 7

SOFTWARE REQUIREMENT SPECIFICATION

7. SOFTWARE REQUIREMENT SPECIFICATION

Purpose

The purpose of this document is to provide a detailed overview of the requirements for the development of a Pizza Sales Analysis System. The system aims to integrate Excel, Microsoft SQL Server, and Power BI to offer a comprehensive solution for data collection, analysis, and visualization in the pizza industry.

Scope

The system will encompass data collection, data cleaning and preparation, SQL-based analysis, Excel-based in-depth analysis, and the creation of dynamic reports using Power BI.

Document Conventions

FR: Functional Requirement

NFR: Non-functional Requirement

Functional Requirements

Data Collection

FR-DC-01: Automated Data Collection

The system shall support automated data collection from various sources, including online orders and walk-ins.

FR-DC-02: Real-time Data Updates

Data updates shall occur in real-time to ensure the system reflects the most current information.

Data Cleaning and Preparation

FR-DCP-01: Data Cleansing

The system shall facilitate data cleansing processes, including handling missing values and removing duplicates.

FR-DCP-02: Data Transformation

Excel shall be utilized for transforming data into a suitable format for analysis.

SQL Analysis

FR-SQL-01: SQL Query Support

The system shall allow the execution of SQL queries for extracting relevant information from the SQL Server database.

FR-SQL-02: Sales Trends Analysis

SQL queries shall be designed to analyze sales trends and patterns.

Excel Analysis

FR-EXCEL-01: Pivot Table Integration

Excel shall incorporate pivot tables for summarizing and analyzing data.

FR-EXCEL-02: Custom Formulas

The system shall support the use of custom formulas in Excel for advanced analysis.

Power BI Reporting

FR-PBI-01: Power BI Integration

The system shall integrate with Power BI for creating dynamic and interactive reports.

FR-PBI-02: Visualizations

Power BI reports shall include various visualizations, such as charts and graphs, to represent key findings.

Non-functional Requirements

Performance

NFR-PERF-01: Response Time

The system shall respond to user queries within 3 seconds to ensure a seamless user experience.

Usability

NFR-USE-01: User-Friendly Interface

The user interface of the system shall be intuitive and user-friendly, requiring minimal training for users.

Reliability

NFR-REL-01: System Availability

The system shall be available 99.9% of the time, with scheduled maintenance communicated in advance.

Security

NFR-SEC-01: Data Encryption

All data transmitted between system components shall be encrypted to ensure security.

Scalability

NFR-SCAL-01: Scalability

The system architecture shall be scalable to accommodate future increases in data volume and user traffic.

Compatibility

NFR-COMP-01: Browser Compatibility

The system shall be compatible with major web browsers, including Chrome, Firefox, and Safari.

CHAPTER 8

EXTERNAL INTERFACE REQUIREMENTS

8. EXTERNAL INTERFACE REQUIREMENTS

1. User Interfaces:

Dashboard Interface:

The system should provide an intuitive dashboard within Power BI for users to access key visualizations and reports.

The interface should be user-friendly, allowing stakeholders to interact with charts and graphs effortlessly.

Excel Integration:

Ensure compatibility with the latest versions of Microsoft Excel for advanced data analysis and manipulation.

Support bidirectional data exchange between the system and Excel for seamless data integration.

2. Hardware Interfaces:

Compatibility:

The system should be compatible with standard computing hardware such as laptops, desktops, and tablets commonly used in business environments.

Ensure compatibility with different screen sizes and resolutions.

Peripheral Devices:

Allow the integration of peripheral devices, such as printers for generating hard copies of reports or additional input devices for data entry.

3. Software Interfaces:

Microsoft SQL Server:

Establish a robust connection with Microsoft SQL Server for efficient data storage and retrieval.

Ensure compatibility with SQL Server versions currently in use.

Excel Integration:

Facilitate data exchange between the system and Excel through common data formats such as CSV or Excel-compatible files.

4. Communication Interfaces:

API Integration:

Provide Application Programming Interfaces (APIs) for potential integration with third-party applications or services.

Support RESTful APIs to enable seamless communication.

Email Notifications:

Integrate an email notification system to alert stakeholders about system updates, scheduled maintenance, or critical insights.

5. Security Interfaces:

Authentication Protocols:

Implement secure authentication protocols to ensure that only authorized personnel can access sensitive data.

Support multi-factor authentication for enhanced security.

Data Encryption:

Employ encryption protocols for data transmitted between the system components, ensuring the security of sensitive information.

6. External Database Interfaces:

External Database Connections:

If applicable, establish connections with external databases or data sources for supplementary information.

Ensure compatibility with common database systems.

7. Reporting Interfaces:

Printable Reports:

Enable the generation of printable reports for stakeholders who prefer hard copies.

Ensure the reports maintain clarity and readability when printed.

Export Options:

Provide export options within Power BI for stakeholders to download reports in various formats (e.g., PDF, Excel) for offline use.

8. Web Interfaces:

Browser Compatibility:

The system's web interfaces should be compatible with major web browsers, including Google Chrome, Mozilla Firefox, and Microsoft Edge.

Responsive Design:

Ensure responsive design principles for web interfaces to provide a consistent user experience across different devices.

9. Legacy System Integration:

Compatibility with Legacy Systems:

If applicable, ensure compatibility with any legacy systems in use within the organization.

Develop integration mechanisms to bridge the gap between the new system and existing infrastructure.

10. Regulatory Interfaces:

Compliance with Data Protection Laws:

Ensure the system adheres to relevant data protection laws and regulations.

Implement features that facilitate compliance with privacy and security standards.

These external interface requirements aim to establish a robust and flexible system that can seamlessly interact with users, hardware, software, and external databases, fostering a cohesive and efficient analytical environment for pizza sales analysis.

CHAPTER 9

SYSTEM DESIGN

9.SYSTEM DESIGN

System Design refers to the process of defining the architecture, components, modules, interfaces, and data for a software system. It involves making critical decisions on how the software will meet its functional and non-functional requirements.

1.UML (Unified Modeling Language) Diagrams

UML (Unified Modeling Language) Diagrams are visual representations used to model software systems. They include various types of diagrams to depict different aspects of the system's structure and behavior:

1. Use Case Diagram:

- **Purpose:** To illustrate the interactions between users (actors) and the system.
- **Components:** Use cases (functionalities), actors (users), and relationships between them.
- **Usage:** Use case diagrams show how users interact with the system, identifying key functionalities like user registration, data upload, analysis, and result export.

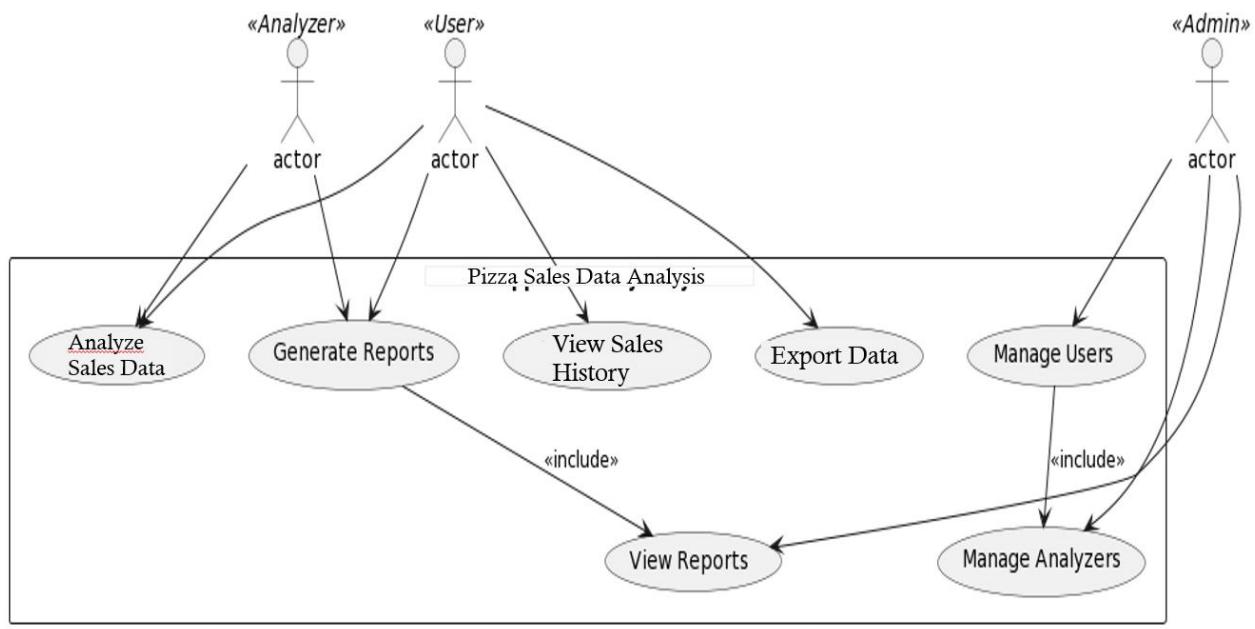


Fig 9.1 Use Case Diagram

2. Class Diagram:

- **Purpose:** To describe the structure of the software system, including classes, their attributes, methods, and relationships.
- **Components:** Classes, attributes, methods, associations, and inheritance relationships.
- **Usage:** Class diagrams provide an overview of the system's object-oriented design, representing entities like users, chat data, analysis components, and more.

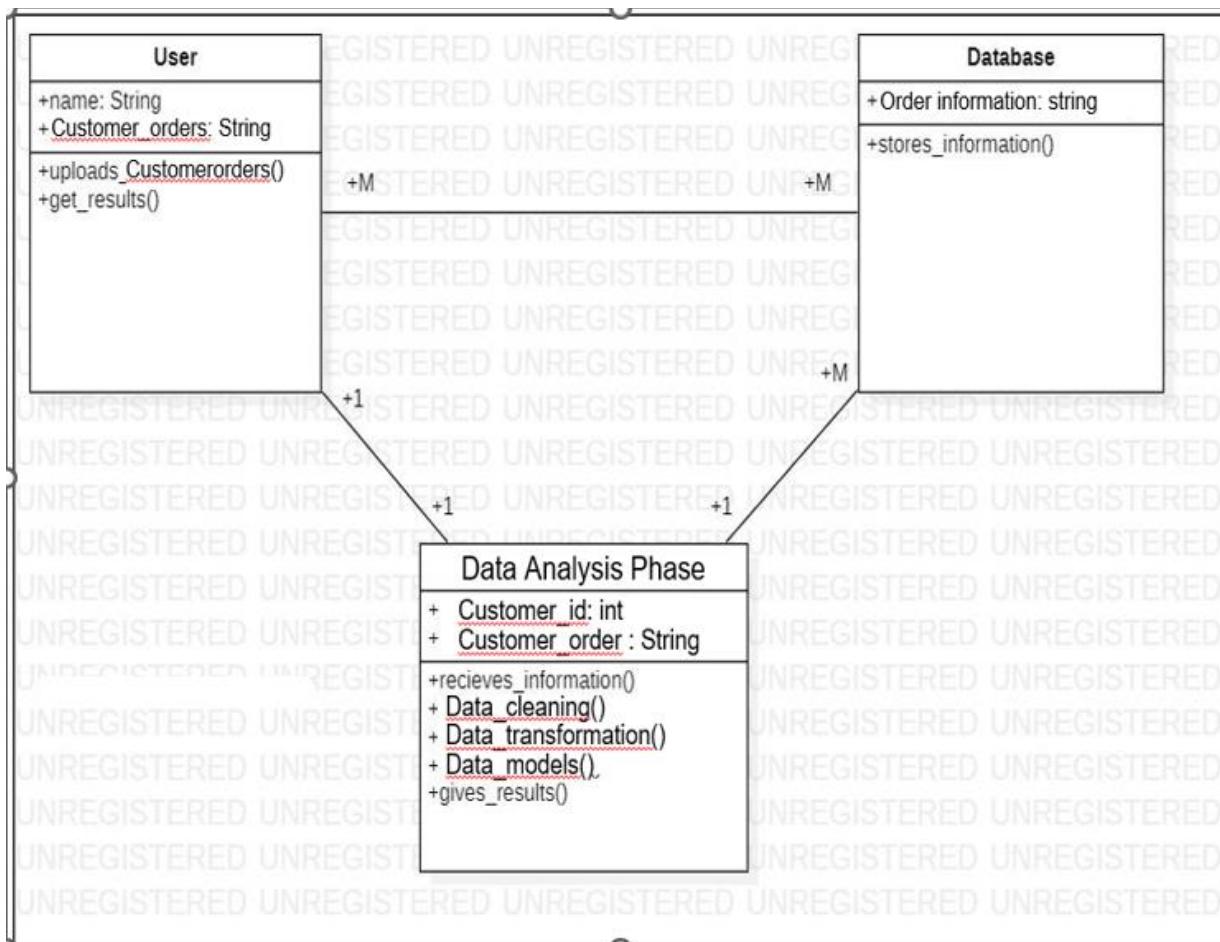


Fig 9.2 Class Diagram

3.Sequence Diagram:

- **Purpose:** To depict the interactions and message exchanges between objects (actors) in the system over time.
- **Components:** Lifelines (objects), messages, activations, and the order of message flow.
- **Usage:** Sequence diagrams illustrate how the system components interact during processes like user registration and data analysis, showing the chronological order of actions.

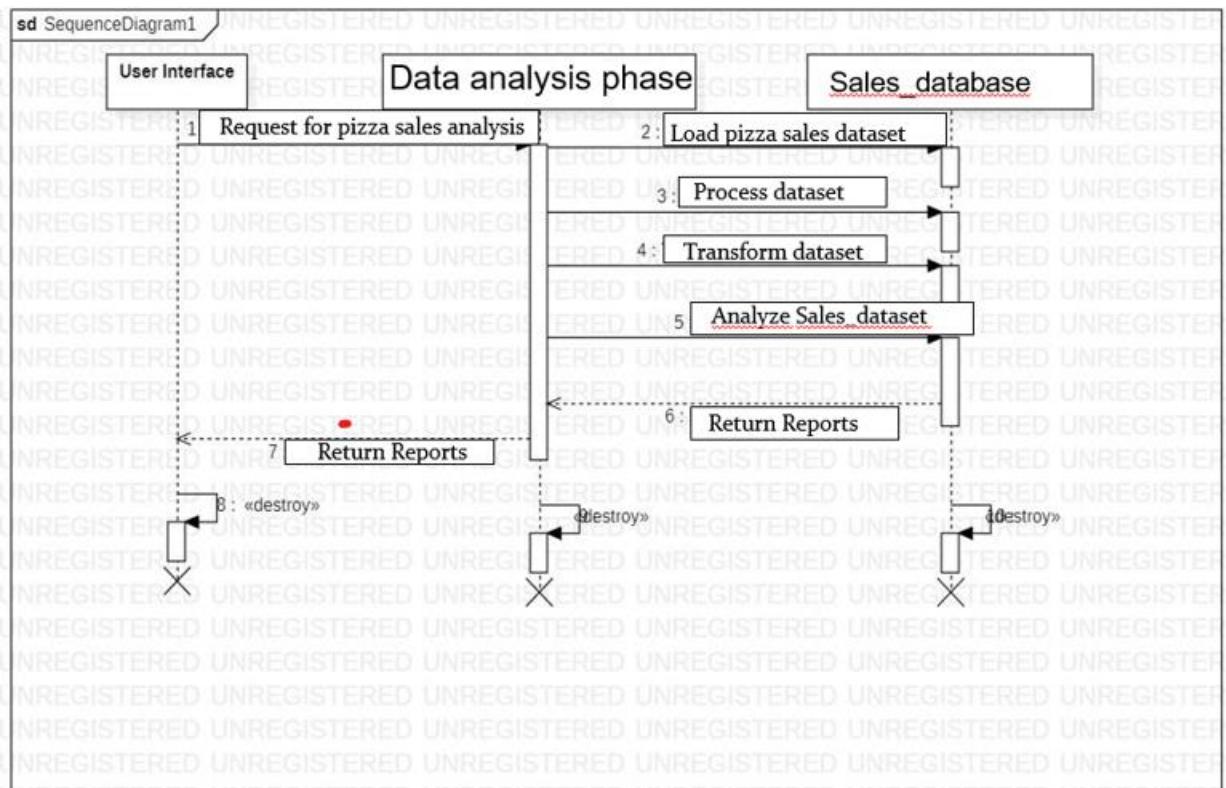


Fig :9.3 Sequence Diagram

4. Data Flow Diagram (DFD):

Data Flow Diagram (DFD) is a graphical representation of how data flows within a system. It consists of processes, data stores, data flows, and external entities. DFDs help visualize the flow of data between components and how data is processed.

Purpose: The DFD serves to visualize the flow of data between various components or processes within the system, showing how data moves, is transformed, and interacts with different parts of the software.

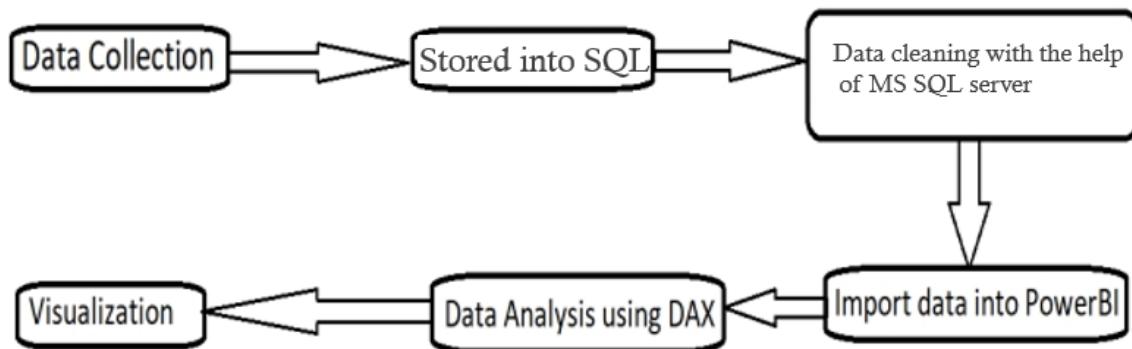


Fig :9.4 Data Flow

Components:

Processes: Represent specific actions or operations performed on data within the system. In this project, processes might include data parsing, sentiment analysis, and visualization generation.

Data Stores: Indicate where data is stored within the system. This can include databases or temporary storage locations.

Data Flows: Arrows that represent the movement of data between processes, data stores, and external entities. They show the direction of data and what type of data is being exchanged.

Usage: DFDs are valuable for understanding the data flow and processing within the "WhatsApp Chat Analyzer." They help in identifying how data is handled, transformed, and

eventually presented to users for analysis and visualization. Additionally, DFDs aid in communication between project stakeholders and serve as a foundation for system design and development.

5. Flowchart

Flowchart is a visual representation of a process or algorithm, often using symbols and arrows to illustrate the steps, decisions, and flow of control within the process.

Purpose: Flowcharts are designed to visualize the step-by-step sequence of actions or operations within the software system. They provide a clear and easy-to-understand way of representing the logic and flow of the application's functionalities.

Components:

Start/End Symbols: These symbols represent the beginning and end points of the flowchart, typically depicted as rounded rectangles.

Process Symbols: Rectangles or other shapes are used to denote specific actions or operations within the system. For example, a process symbol can represent the analysis of chat data.

Decision Symbols: Diamonds indicate points in the flow where a decision or branching occurs. Depending on the condition or outcome, the flow may take different paths.

Arrows/Flowlines: Arrows connect the symbols and indicate the direction of flow from one process or decision to the next. They show the logical sequence of operations.

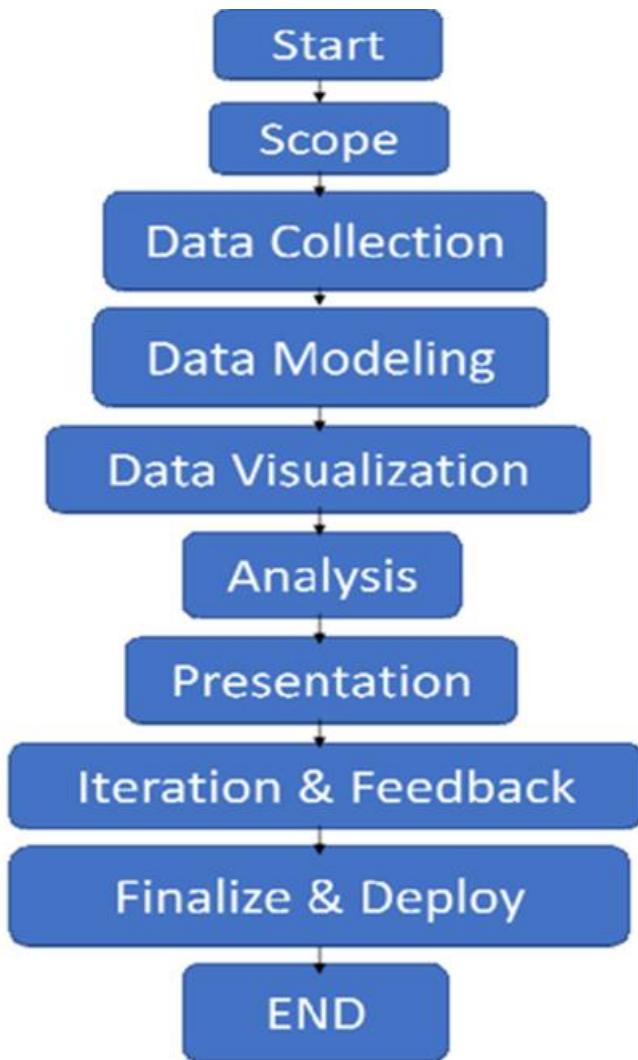


Fig : 9.5 Flow chart

Usage: Flowcharts in this project could be used to illustrate various processes, such as user registration, data analysis, or result export. For instance, a flowchart might detail the steps involved in uploading chat data, parsing it, performing sentiment analysis, generating visualizations, and allowing users to export the results.

Flowcharts serve as valuable tools for planning, documentation, and communication among project stakeholders. They provide a visual roadmap of how the "WhatsApp Chat Analyzer" processes and manages data, making it easier to understand and implement the system's functionalities.

CHAPTER 10

IMPLEMENTATION

10.IMPLEMENTATION

SQL Server Management Studio (SSMS) is an integrated environment developed by Microsoft for managing, configuring, administering, and developing all components of Microsoft SQL Server. It provides a graphical user interface (GUI) for interacting with SQL Server databases and is a powerful tool for database administrators, developers, and other SQL Server professionals.

Here are some key features and capabilities of SQL Server Management Studio:

Database Management: SSMS allows you to manage databases by creating, modifying, and deleting databases. You can also manage database objects such as tables, views, stored procedures, and more.

Query Editor: SSMS includes a powerful SQL script editor with syntax highlighting, code folding, and IntelliSense support. You can write and execute T-SQL queries, scripts, and stored procedures directly within the editor.

Object Explorer: This is a tree-like hierarchical navigation pane that provides an organized view of the SQL Server instance and its components. You can browse and manage databases, tables, views, indexes, stored procedures, and other objects.

Security Features: SSMS provides tools for managing security, including user accounts, roles, and permissions. You can control access to databases and their objects through a graphical interface.

Query Execution and Optimization: SSMS helps you analyze and optimize the performance of your queries. You can view query execution plans, index usage statistics, and other performance-related information.

Import and Export Data: SSMS includes wizards for importing and exporting data to and from SQL Server databases. This is useful for tasks such as migrating data between servers or backing up and restoring databases.

Integration with Source Control: SSMS integrates with version control systems like Git, allowing you to manage and track changes to your database scripts.

Reporting and Analysis: You can generate reports and perform basic analysis using SSMS. This includes features such as SQL Server Reporting Services (SSRS) integration and the ability to view and manage SQL Server Analysis Services (SSAS) databases.

Registered Servers: SSMS allows you to register and organize multiple SQL Server instances for easy access and management.

Extensibility: SSMS supports the use of add-ins and extensions, allowing you to customize and extend its functionality.

SQL Server Management Studio is an essential tool for anyone working with Microsoft SQL Server databases. It provides a comprehensive set of tools for managing and developing databases, making it easier to perform various administrative and development tasks.

Power BI is a business analytics service by Microsoft that provides interactive visualizations and business intelligence capabilities with an interface simple enough for end users to create their own reports and dashboards. It is part of the Microsoft Power Platform, which also includes Power Apps and Power Automate.

Here are key features and components of Power BI:

Data Connectivity: Power BI can connect to a wide variety of data sources, both on-premises and in the cloud. It supports popular databases, data warehouses, and online services such as Excel, SharePoint, Azure SQL Database, SQL Server Analysis Services (SSAS), and many more.

Data Transformation and Modeling: Power BI provides a Power Query Editor that allows users to transform and shape their data before loading it into the data model. The Power BI data model supports relationships, calculated columns, and measures, providing a robust foundation for analysis.

Visualization: Users can create compelling visualizations using a wide range of built-in chart types, tables, matrices, and custom visuals from the Power BI marketplace. Visualization elements are interactive, enabling users to explore and analyze data dynamically.

Reports and Dashboards:

Power BI reports are interactive and can contain multiple visualizations and pages. Dashboards are collections of visuals and reports that provide a consolidated view of key metrics. Users can pin individual visuals to dashboards for a unified view.

Natural Language Querying: Power BI supports natural language queries, allowing users to ask questions about their data using plain language. The Q&A feature interprets questions and generates visualizations based on the data.

Power BI Service: Power BI reports and dashboards can be published to the Power BI service, a cloud-based platform that allows users to share and collaborate on reports. The service provides additional features such as scheduled data refresh, sharing and embedding options, and integration with other Microsoft services.

Power BI Desktop: Power BI Desktop is a free desktop application for designing and building Power BI reports and dashboards. It provides a robust environment for creating data models, designing visuals, and authoring reports before publishing to the Power BI service.

Power BI Embedded: Power BI Embedded allows developers to embed Power BI reports and dashboards into custom applications, websites, or portals. This enables organizations to integrate analytics directly into their business applications.

Power BI Premium: Power BI Premium is a capacity-based licensing model that provides dedicated resources for better performance, larger data volumes, and additional features. It is suitable for organizations with more extensive analytics needs.

Power BI is widely used across industries for data analysis, reporting, and decision-making, offering a user-friendly and powerful solution for both business users and data professionals.

SAMPLE CODE

SQL QUERIES KPI

1.Total Revenue:

The sum of the total price of all pizza orders.

```
SELECT SUM(total_price)  
FROM total_price;
```

Results	
	Messages
1	Total_Revenue 817860.05083847

2.Average Order Value:

The average amount spent per order, calculated by dividing the total revenue by the total number of orders

```
SELECT (SUM(total_price) / COUNT(DISTINCT order_id)) AS Avg_Order_Value  
FROM pizza_sales;
```

Avg_Order_Value	
1	38.3072623343546

3.Total Pizzas Sold :

The Sum of quantities of all pizza sold .

```
SELECT SUM(quantity) AS Total_Pizza_Sold  
FROM pizza_sales;
```

Total_Pizza_Sold	
1	49574

4.Total Orders:

The Total Number of orders placed.

```
SELECT COUNT(DISTINCT order_id) AS Total_Orders  
FROM pizza_sales;
```

	Total_Orders
1	21350

5. Average Pizzas Per Order:

The Average number of pizzas sold per order ,is calculated by dividing the total number of pizzas sold by the total number of orders .

```
SELECT CAST(CAST(SUM(quantity) AS DECIMAL(10,2)) /  
CAST(COUNT(DISTINCT order_id) AS DECIMAL(10,2)) AS DECIMAL(10,2))  
AS Avg_Pizzas_Per_Order  
FROM pizza_sales;
```

	Avg_Pizzas_Per_Order
1	2.32

Daily Trends for Others

Create a bar chart that displays the daily trend of total orders over a specific period.

This chart will help us identify any patterns of fluctuations in order volumes daily.

```
SELECT  
DATENAME(DW, order_date) AS Order_Day, COUNT(DISTINCT order_id) AS Total_Orders  
FROM pizza_sales  
GROUP BY DATENAME(DW, order_date);
```

	Order_Day	Total_Orders
1	Saturday	3158
2	Wednesday	3024
3	Monday	2794
4	Sunday	2624
5	Friday	3538
6	Thursday	3239
7	Tuesday	2973

Hourly Trend for Total Orders:

Create a line chart illustrating the daily hourly trend of total orders. This chart will allow us to identify peak hours or periods of high-order activity.

```
SELECT DATEPART (HOUR, order_time) as Order_Hours, COUNT(DISTINCT order_id) as
Total_Orders
from pizza_sales
GROUP BY DATEPART(HOUR, order_time)
ORDER BY DATEPART(HOUR, order_time);
```

	Order_Hours	Total_Orders
8	16	1920
9	17	2336
10	18	2399
11	19	2009
12	20	1642
13	21	1198
14	22	663
15	23	28

Percentage of Sales by Pizza Category:

Create a pie chart showing sales distribution across different pizza categories. This chart will provide insight into the popularity of various pizza categories and their contribution to overall sales.

```

SELECT pizza_category, CAST(SUM(total_price) AS DECIMAL(10,2)) AS Total_Revenue,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price)
from pizza_sales) AS DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_category;

```

	pizza_category	Total_Revenue	PCT
1	Classic	220053.10	26.91
2	Chicken	195919.50	23.96
3	Veggie	193690.45	23.68
4	Supreme	208197.00	25.46

Percentage of Sales Pizza Size:

Generate a pie chart that represents the percentage of sales attributed to different pizza sizes. This chart will help us understand customer preferences for pizza sizes and their impact on sales.

```

SELECT pizza_size, CAST(SUM(total_price) AS DECIMAL(10,2)) AS Total_Revenue,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales) AS
DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_size
ORDER BY pizza_size

```

	pizza_size	Total_Revenue	PCT
1	L	375318.70	45.89
2	M	249382.25	30.49
3	S	178076.50	21.77
4	XL	14076.00	1.72
5	XXL	1006.60	0.12

Total Pizzas Sold by Pizza Category:

Create a funnel chart that presents the total number of pizzas sold for each pizza category. This chart will allow us to compare the sales performance of different pizza categories.

```

SELECT pizza_category, SUM(quantity) AS Total_Quantity_Sold
FROM pizza_sales

```

```

WHERE MONTH(order_date) = 2
GROUP BY pizza_category
ORDER BY Total_Quantity_Sold DESC;

```

	pizza_category	Total_Quantity_Sold
1	Classic	1178
2	Supreme	964
3	Veggie	944
4	Chicken	875

Top 5 Best Sellers by total Pizzas Sold:

Create a bar chart highlighting the top 5 best-selling pizzas based on the total number sold. This chart will help us identify the most popular pizza options.

```

SELECT Top 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold DESC;

```

	pizza_name	Total_Pizza_Sold
1	The Classic Deluxe Pizza	2453
2	The Barbecue Chicken Pizza	2432
3	The Hawaiian Pizza	2422
4	The Pepperoni Pizza	2418
5	The Thai Chicken Pizza	2371

Bottom 5 Worst Sellers by Total Pizzas Sold:

Create a bar chart showcasing the bottom 5 worst-selling pizzas based on the total number of pizzas sold. This chart will enable us to identify underperforming or less popular pizza options.

```

SELECT TOP 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold ASC;

```

	pizza_name	Total_Pizza_Sold
1	The Brie Carre Pizza	490
2	The Mediterranean Pizza	934
3	The Calabrese Pizza	937
4	The Spinach Supreme ...	950
5	The Soppressata Pizza	961

POWER BI QUERIES

1.Total Revenue

Total Revenue = SUM(pizza_sales[total_price])

2.Total Orders

Total Orders = DISTINCTCOUNT(pizza_sales[order_id])

3.Average Order Values

Avg Order Value = [Total Revenue]/[Total Orders]

4.Total Pizzas Sold

Total Pizza Sold = SUM(pizza_sales[quantity])

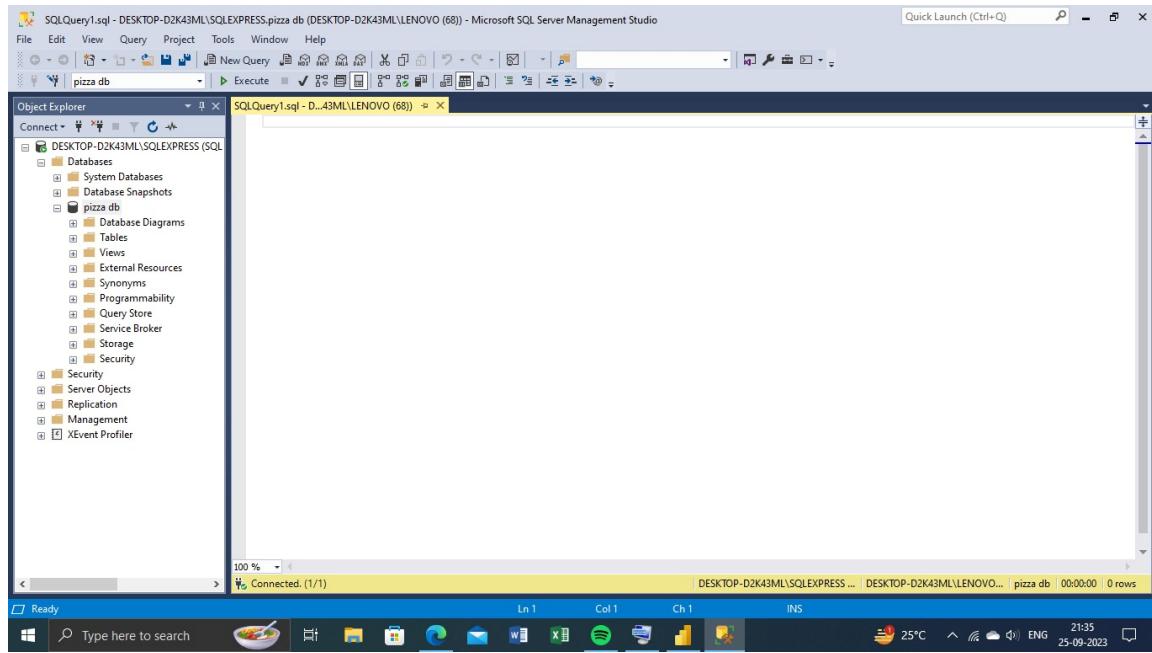
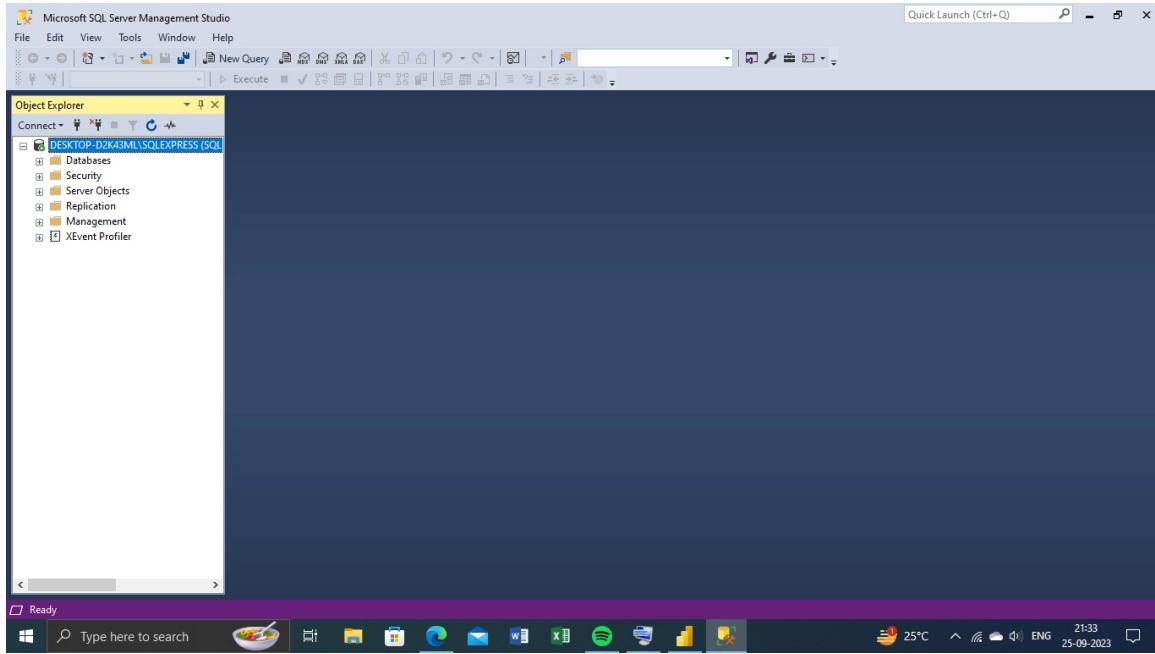
5.Average pizzas Per Order

Avg Pizzas Per Order = [Total Pizza Sold]/[Total Orders]

CHAPTER 12

SCREENSHOTS

12. SCREENSHOTS



SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (68)) - Microsoft SQL Server Management Studio

```
select * from pizza_sales;
```

Object Explorer

Results Messages

pizza_id	order_id	pizza_name_id	quantity	order_date	order_time	unit_price	total_price	pizza_size	pizza_category	pizza_ingredients	pizza_parr	
806	806	351	hawaiian_m	1	2015-01-06	17:37:29.0000000	13.25	13.25	M	Classic	Sliced Ham, Pineapple, Mozzarella Cheese	The Hawaiian
807	807	352	big_meat_s	1	2015-01-06	17:45:48.0000000	12	12	S	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage	The Big 4
808	808	352	ital_cpdo_l	1	2015-01-06	17:45:48.0000000	20.5	20.5	L	Classic	Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, ...	The Italian
809	809	353	bbq_ckn_l	1	2015-01-06	17:59:48.0000000	20.75	20.75	L	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomato, ...	The Barbecue
810	810	353	cali_ckn_l	1	2015-01-06	17:59:48.0000000	20.75	20.75	L	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Pepper, ...	The California
811	811	353	prsc_angla_s	1	2015-01-06	17:59:48.0000000	12.5	12.5	S	Supreme	Prosciutto di San Daniele, Arugula, Mozzarella Cheese	The Prosciutto
812	812	354	green_garde...	1	2015-01-06	18:01:44.0000000	12	12	S	Veggie	Spinach, Mushrooms, Tomatoes, Green Olives, Feta Cheese, ...	The Green
813	813	354	veggie_veg_l	1	2015-01-06	18:01:44.0000000	20.25	20.25	L	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Peppers, ...	The Veggie
814	814	355	ckn_alfredo_m	1	2015-01-06	18:14:45.0000000	16.75	16.75	M	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago ...	The Alfredo
815	815	355	ital_surp_m	1	2015-01-06	18:14:45.0000000	15.5	15.5	M	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, ...	The Italian Supreme

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (68)) - Microsoft SQL Server Management Studio

```
SELECT SUM(total_price) AS Total_Revenue FROM pizza_sales;
```

Object Explorer

Results Messages

Total_Revenue	
1	817860.05083847

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS:pizza db (DESKTOP-D2K43ML\LENOVO (68)) - Microsoft SQL Server Management Studio

```
SELECT (SUM(total_price) / COUNT(DISTINCT order_id)) AS Avg_order_Value FROM pizza_sales
```

Object Explorer

File Edit View Project Tools Window Help

Quick Launch (Ctrl+Q)

Results Messages

Avg_order_Value

1	38.3072623343546
---	------------------

Query executed successfully.

DESKTOP-D2K43ML\SQLEXPRESS ... DESKTOP-D2K43ML\LENOVO... pizza db 00:00:00 1 rows

Ready Type here to search

Ln 1 Col 89 Ch 89 INS

25°C ENG 21:41 25-09-2023

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS:pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
select*from pizza_sales
SELECT SUM(quantity) AS Total_pizza_sold FROM pizza_sales
```

Object Explorer

File Edit View Project Tools Window Help

Quick Launch (Ctrl+Q)

Results Messages

Total_pizza_sold

1	49574
---	-------

Query executed successfully.

DESKTOP-D2K43ML\SQLEXPRESS ... DESKTOP-D2K43ML\LENOVO... pizza db 00:00:02 48,621 rows

Ready Type here to search

Ln 3 Col 1 Ch 1 INS

30°C Haze ENG 12:28 27-09-2023

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
select*from pizza_sales
SELECT COUNT(DISTINCT order_id) AS Total_Orders FROM pizza_sales
```

	pizza_id	order_id	pizza_name_id	quantity	order_date	order_time	unit_price	total_price	pizza_size	pizza_category	pizza_ingredients	pizza_j
1	1	1	hawaiian_m	1	2015-01-01	11:38:36.0000000	13.25	13.25	M	Classic	Sliced Ham, Pineapple, Mozzarella Cheese	The H
2	2	2	classic_dlx_m	1	2015-01-01	11:57:40.0000000	16	16	M	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Ba...	The C
3	3	2	five_cheese_l	1	2015-01-01	11:57:40.0000000	18.5	18.5	L	Veggie	Mozzarella Cheese, Provolone Cheese, Smoked Goud...	The Fi
4	4	2	ital_supr_l	1	2015-01-01	11:57:40.0000000	20.75	20.75	L	Supreme	Calabrese Salami, Capicolla, Tomatoes, Red Onions, ...	The It.
5	5	2	mexicana_m	1	2015-01-01	11:57:40.0000000	16	16	M	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onio...	The M
6	6	2	thai_ckn_l	1	2015-01-01	11:57:40.0000000	20.75	20.75	L	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sw...	The T
7	7	3	ital_supr_m	1	2015-01-01	12:12:28.0000000	16.5	16.5	M	Supreme	Calabrese Salami, Capicolla, Tomatoes, Red Onions, ...	The It.
8	8	3	prsc_argla_l	1	2015-01-01	12:12:28.0000000	20.75	20.75	L	Supreme	Prosciutto di San Daniele, Arugula, Mozzarella Cheese	The P

Total_Orders
1 2130

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
select*from pizza_sales
SELECT CAST(CAST(SUM(quantity) AS DECIMAL(10,2)) /
CAST(COUNT(DISTINCT order_id) AS DECIMAL(10,2)) AS DECIMAL(10,2))
AS Avg_Pizzas_per_order
FROM pizza_sales
```

	pizza_id	order_id	pizza_name_id	quantity	order_date	order_time	unit_price	total_price	pizza_size	pizza_category	pizza_ingredients	pizza_j
1	1	1	hawaiian_m	1	2015-01-01	11:38:36.0000000	13.25	13.25	M	Classic	Sliced Ham, Pineapple, Mozzarella Cheese	The H
2	2	2	classic_dlx_m	1	2015-01-01	11:57:40.0000000	16	16	M	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Ba...	The C
3	3	2	five_cheese_l	1	2015-01-01	11:57:40.0000000	18.5	18.5	L	Veggie	Mozzarella Cheese, Provolone Cheese, Smoked Goud...	The Fi
4	4	2	ital_supr_l	1	2015-01-01	11:57:40.0000000	20.75	20.75	L	Supreme	Calabrese Salami, Capicolla, Tomatoes, Red Onions, ...	The It.
5	5	2	mexicana_m	1	2015-01-01	11:57:40.0000000	16	16	M	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onio...	The M
6	6	2	thai_ckn_l	1	2015-01-01	11:57:40.0000000	20.75	20.75	L	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sw...	The T
7	7	3	ital_supr_m	1	2015-01-01	12:12:28.0000000	16.5	16.5	M	Supreme	Calabrese Salami, Capicolla, Tomatoes, Red Onions, ...	The It.
8	8	3	prsc_argla_l	1	2015-01-01	12:12:28.0000000	20.75	20.75	L	Supreme	Prosciutto di San Daniele, Arugula, Mozzarella Cheese	The P

Avg_Pizzas_per_order
1 2.32

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
SELECT DATENAME(DW, order_date) AS order_day, COUNT(DISTINCT order_id) AS total_orders
FROM pizza_sales
GROUP BY DATENAME(DW, order_date)
```

order_day	total_orders
Saturday	3158
Wednesday	3024
Monday	2794
Sunday	2624
Friday	3538
Thursday	3239
Tuesday	2973

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
select DATENAME(MONTH, order_date) as Month_Name, COUNT(DISTINCT order_id) as Total_Orders
from pizza_sales
GROUP BY DATENAME(MONTH, order_date)
ORDER BY Total_Orders DESC
```

Month_Name	Total_Orders
July	1935
May	1853
January	1845
August	1841
March	1840
April	1799
November	1792
June	1773
February	1685
December	1680
September	1661

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
SELECT pizza_category, CAST(SUM(total_price) AS DECIMAL(10,2)) as total_revenue,
       CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales) AS DECIMAL(10,2)) AS PCT
  FROM pizza_sales
 GROUP BY pizza_category
```

pizza_category	total_revenue	PCT
Classic	220053.10	26.91
Chicken	195919.50	23.96
Vegie	193690.45	23.68
Supreme	208197.00	25.46

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
SELECT pizza_size, CAST(SUM(total_price) AS DECIMAL(10,2)) as total_revenue,
       CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales) AS DECIMAL(10,2)) AS PCT
  FROM pizza_sales
 GROUP BY pizza_size
 ORDER BY pizza_size
```

pizza_size	total_revenue	PCT
L	375318.70	45.89
M	249382.25	30.49
S	178076.50	21.77
XL	14076.00	1.72
XXL	1006.60	0.12

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```

SELECT pizza_size, CAST(SUM(total_price) AS DECIMAL(10,2)) as total_revenue,
       CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from pizza_sales WHERE DATEPART (quarter,order_date)=1) AS DECIMAL(10,2) ) PCT
FROM pizza_sales
WHERE DATEPART (quarter,order_date)=1
GROUP BY pizza_size
ORDER BY pizza_size

```

Results

pizza_size	total_revenue	PCT
L	95229.65	46.37
M	61159.00	29.78
S	45384.25	22.10
XL	3289.50	1.60
XXL	287.60	0.14

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```

SELECT pizza_category, SUM(quantity) as Total_Quantity_Sold
FROM pizza_sales
WHERE MONTH(order_date) = 2
GROUP BY pizza_category
ORDER BY Total_Quantity_Sold DESC

```

Results

pizza_category	Total_Quantity_Sold
Classic	1178
Supreme	964
Veggie	944
Chicken	875

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
SELECT Top 5 pizza_name, SUM(total_price) AS Total_Revenue
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Revenue DESC
```

Results

pizza_name	Total_Revenue
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5
The Classic Deluxe Pizza	38180.5
The Spicy Italian Pizza	34831.25

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

```
SELECT Top 5 pizza_name, SUM(total_price) AS Total_Revenue
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Revenue ASC
```

Results

pizza_name	Total_Revenue
The Brie Cane Pizza	11588.4998130798
The Green Garden Pizza	13955.75
The Spinach Supreme Pizza	15277.75
The Mediterranean Pizza	15360.5
The Spinach Pesto Pizza	15596

Query executed successfully.

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect to... New Query Execute Save All Find Replace Open Table Design View Properties Task List

SQLQuery1.sql - DESKTOP-D2K43ML\LENOVO (55)*

```
SELECT Top 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold DESC
```

Results Messages

pizza_name	Total_Pizza_Sold
1 The Classic Deluxe Pizza	2453
2 The Barbecue Chicken Pizza	2432
3 The Hawaiian Pizza	2422
4 The Pepperoni Pizza	2418
5 The Thai Chicken Pizza	2371

Query executed successfully.

DESKTOP-D2K43ML\SQLEXPRESS ... | DESKTOP-D2K43ML\LENOVO... pizza db 00:00:00 5 rows

Ready Type here to search

Ln 4 Col 31 Ch 31 INS

DJI -1.14% 13:33 27-09-2023

SQLQuery1.sql - DESKTOP-D2K43ML\SQLEXPRESS.pizza db (DESKTOP-D2K43ML\LENOVO (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect to... New Query Execute Save All Find Replace Open Table Design View Properties Task List

SQLQuery1.sql - DESKTOP-D2K43ML\LENOVO (55)*

```
SELECT TOP 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold ASC
```

Results Messages

pizza_name	Total_Pizza_Sold
1 The Brie Cheese Pizza	490
2 The Mediterranean Pizza	934
3 The Calabrese Pizza	937
4 The Spinach Supreme Pizza	950
5 The Soppressata Pizza	961

Query executed successfully.

DESKTOP-D2K43ML\SQLEXPRESS ... | DESKTOP-D2K43ML\LENOVO... pizza db 00:00:00 5 rows

Ready Type here to search

Ln 5 Col 1 Ch 1 INS

31°C Haze 13:34 27-09-2023

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left lists the database 'pizza db'. The central pane displays a query window with the following T-SQL code:

```
SELECT Top 5 pizza_name, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders DESC
```

The Results tab shows the execution output:

	pizza_name	Total_Orders
1	The Classic Deluxe Pizza	2329
2	The Hawaiian Pizza	2280
3	The Pepperoni Pizza	2278
4	The Barbecue Chicken Pizza	2273
5	The Thai Chicken Pizza	2225

At the bottom, a message indicates: "Query executed successfully." The status bar at the bottom right shows the date and time as 27-09-2023 13:34.

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure for 'pizza db'. The central pane shows a query window with the following T-SQL code:

```
SELECT Top 5 pizza_name, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders ASC
```

The results grid below the query window displays the top 5 pizzas ordered by their total number of distinct orders:

	pizza_name	Total_Orders
1	The Brie Cane Pizza	480
2	The Mediterranean Pizza	912
3	The Spinach Supreme Pizza	918
4	The Calabrese Pizza	918
5	The Chicken Pepto Pizza	938

At the bottom of the screen, a status bar indicates "Query executed successfully." The taskbar at the very bottom shows the date and time as "27-09-2023 13:34".

PROJECT (PIZZA SALES REPORT) - Power BI Desktop

File Home Help Table tools Column tools

Cut Copy Paste Get data from OneLake data hub SQL Server data Recent sources Refresh Transform data Manage relationships New Quick measure New table Calculations Manage roles View as Sensitivity Publish

1 Order Day = UPPER(LEFT(pizza_sales[order_date],3))

Use the Power Query editor to connect, prepare, and transform data.

	order_time	unit_price	total_price	pizza_category	pizza_ingredients	pizza_name	Day Name	Order Day
2015	11:40:50	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	12:29:11	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	12:40:01	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	14:30:19	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	12:22:48	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	19:06:34	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	19:26:24	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	14:14:40	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	15:55:24	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	15:25:17	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	20:08:54	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	21:11:38	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	11:25:25	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	12:36:42	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	22:46:02	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	13:20:41	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	17:53:26	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	13:43:11	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	16:49:57	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	17:15:17	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	18:27:27	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI
2015	20:08:34	20.75	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI

Table: pizza_sales (48,620 rows) Column: Order Day (7 distinct values)

Clipboard Data

Search pizza_sales Avg Order Value Avg pizzas per Order Day Name Order Day order_id order_time pizza_category pizza_id pizza_name pizza_name_id quantity Total Orders Total pizzas sold Total Revenue total_price unit_price

Update available (click to download)

Type here to search 25°C Haze 20:38 ENG 28-09-2023

PROJECT (PIZZA SALES REPORT) - Power BI Desktop

File Home Help Table tools Column tools

Name Order Month Format Text Summarization Don't summarize Data category Uncategorized Sort by column Sort Data groups Groups Manage relationships Relationships New column Calculations

Structure Formatting Properties

1 Order Month = UPPER(LEFT(pizza_sales[Month Name],3))

	pizza_ingredients	pizza_name	Day Name	Order Day	Day Number	Custom	Month Name	Month Number	Order Month
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	January	1	JAN	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	
Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	The Thai Chicken Pizza	Friday	FRI	6	6	February	2	FEB	

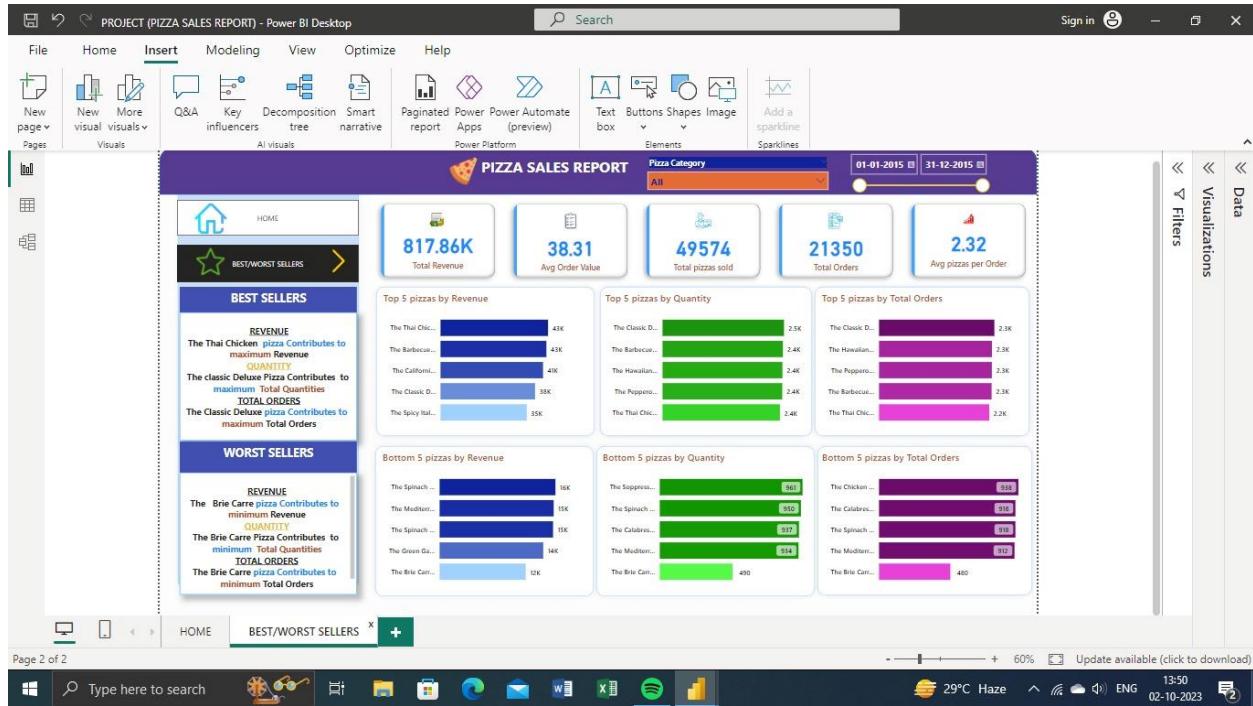
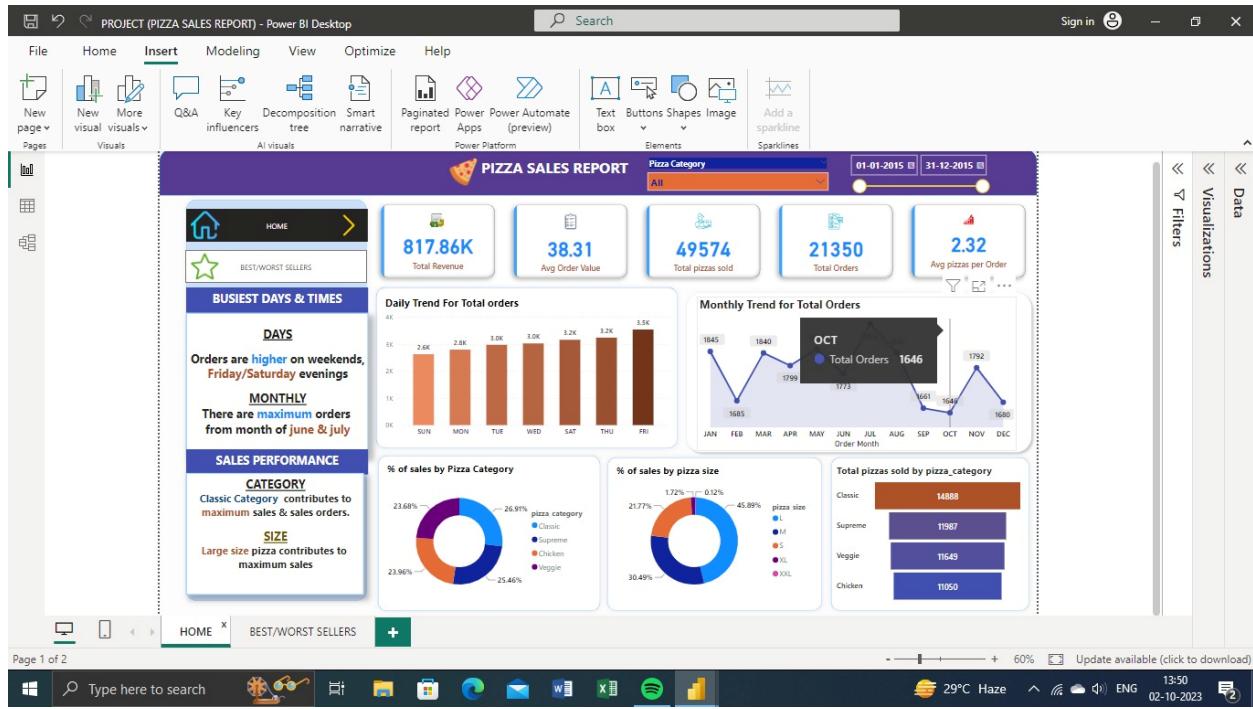
Table: pizza_sales (48,620 rows) Column: Order Month (12 distinct values)

Clipboard Data

Search pizza_sales Avg Order Value Avg pizzas per Order Custom Day Name Month Name Month Number Order Month order_id order_time pizza_category pizza_id pizza_name pizza_name_id quantity

Update available (click to download)

Type here to search 28°C Mostly cloudy 10:56 ENG 29-09-2023



CHAPTER 13

CONCLUSION

13. CONCLUSION

The Pizza Sales Analysis Project stands as a testament to the transformative power of data integration and analytics in the dynamic landscape of the pizza industry. By seamlessly blending the capabilities of Excel, Microsoft SQL Server, and Power BI, the project has unlocked nuanced insights, empowering stakeholders with a deeper understanding of customer behaviors and sales trends. This journey has not only illuminated the intricacies of pizza sales dynamics but has also elevated decision-making strategies for businesses in the competitive market.

Key Achievements:

- 1. Comprehensive Integration:** Successfully integrated Excel, SQL Server, and Power BI to create a unified and comprehensive platform for end-to-end data management and analysis.
- 2. Strategic Insights:** The project has provided stakeholders with strategic insights, enabling them to make data-driven decisions for refining sales strategies and optimizing operational efficiency.
- 3. Real-time Dynamics:** Automated data collection and real-time updates have ensured that the system reflects the most current information, offering a dynamic and responsive analytical environment.
- 4. User-Friendly Experience:** The user-friendly interface of the system enhances usability, promoting widespread adoption and ensuring accessibility for stakeholders at various levels.

Key Components:

- 1. Automated Data Collection:** Implemented efficient processes for automated data collection from diverse sources, facilitating a comprehensive dataset.
- 2. Advanced Analysis with SQL and Excel:** Leveraged sophisticated SQL queries and advanced Excel functions for in-depth analysis, uncovering hidden patterns and trends.
- 3. Dynamic Power BI Reporting:** Integrated Power BI for the creation of dynamic and interactive reports, offering a visually compelling representation of critical findings.

As this project concludes, it marks not just a technological achievement but a strategic milestone for businesses seeking to thrive in the ever-evolving pizza market. The insights gleaned and the tools implemented pave the way for continued innovation and success in navigating the complexities of pizza sales.

CHAPTER 14

FUTURE SCOPE

14.FUTURE SCOPE

The Pizza Sales Analysis System, while currently a robust solution, holds immense potential for future enhancements, ensuring its adaptability to evolving industry needs and technological advancements.

1. Predictive Analytics:

Objective: Implement predictive analytics to forecast future sales trends based on historical data and external factors.

Benefits: Empower stakeholders with proactive decision-making capabilities, allowing for strategic planning and resource optimization.

2. Machine Learning Integration:

Objective: Integrate machine learning algorithms to analyze and predict customer preferences, optimizing inventory management.

Benefits: Enhance the system's analytical capabilities, providing insights into evolving customer behaviors and preferences.

3. Mobile Application Development:

Objective: Develop a mobile application for the Pizza Sales Analysis System.

Benefits: Extend accessibility, enabling stakeholders to access real-time insights on-the-go, fostering flexibility and responsiveness.

4. Enhanced Security Features:

Objective: Implement advanced security features, including multi-factor authentication and enhanced data encryption.

Benefits: Fortify the system against evolving cyber threats, ensuring the confidentiality and integrity of sensitive pizza sales data.

5. Integration with External Data Sources:

Objective: Enable integration with external data sources, such as weather or economic indicators.

Benefits: Provide a more comprehensive analysis by considering external factors that may influence pizza sales trends.

6. User Customization and Personalization:

Objective: Introduce features that allow users to customize and personalize their dashboards and reports.

Benefits: Enhance user experience and engagement, allowing stakeholders to focus on the specific metrics and insights relevant to their roles.

7. Continuous User Training and Support:

Objective: Establish ongoing training programs and user support mechanisms.

Benefits: Ensure that users stay abreast of system updates, new features, and best practices, maximizing the system's value to the organization.

The future scope of the Pizza Sales Analysis System revolves around continuous improvement, innovation, and adaptation to emerging technologies. These enhancements aim to elevate the system beyond its current capabilities, ensuring its sustained relevance and effectiveness in the ever-changing landscape of the pizza industry.

CHAPTER 15

REFERENCES

15. REFERENCES

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