MAJOR PROJECT (ES-452 , ES-454)

SYNOPSIS

ON

Blinkit Sales and Growth Dashboard using Power BI

Submitted for partial fulfillment of award of the degree of

Bachelor of Technology

In

Computer Science & Engineering

Submitted by

Hitesh bardia – 07418002721

Under the Guidance of

Dr Ankit Gambhir

Associate Professor (CSE)

Affiliated to GGSIP University, New Delhi
Approved by AICTE & Council of Architecture

Department of Computer Science & Engineering

DELHI TECHNICAL CAMPUS, GREATER NOIDA

(Affiliated Guru Gobind Singh Indraprastha University, New Delhi)

Session 2024-2025 (EVEN SEM)

Contents

1. Introduction

Blinkit is a fast-growing online grocery delivery platform that operates in a highly competitive market. To stay ahead, it must continually analyse its sales performance, customer behaviour, and business growth. This project aims to create an interactive **Sales and Growth Dashboard using Power BI** to convert raw data into meaningful insights. The dashboard will help visualize key metrics like sales trends, top products, and regional demand, supporting better decision-making and strategic planning.

2. Problem Statement

Blinkit handles large volumes of sales and customer data daily, but raw data alone does not provide clear insights. Without a centralized and interactive system to track performance metrics, it becomes difficult for stakeholders to identify trends, make informed decisions, or optimize operations. There is a need for a visual and analytical dashboard that can simplify complex data and support real-time decision-making.

3. Objectives

- To collect and organize Blinkit's sales and customer data for analysis.
- To build interactive visuals that highlight key business indicators.
- To track sales performance over time and across regions.
- To identify top-selling products and customer behavior patterns.
- To assist decision-makers in recognizing business trends and opportunities for growth.

4. Feasibility Study

4.1 Technical Feasibility: Power BI provides robust features for data visualization and analysis, making the tool suitable for this project.

4.2 Operational Feasibility: The dashboard design ensures ease of use for non-technical business stakeholders.

4.3 Economic Feasibility: Power BI's free version enables cost-effective development and testing.

5. Need of Significance

The development of a sales and growth dashboard for Blinkit is crucial for improving data-driven decision-making. By visualizing real-time sales trends and customer insights, the dashboard helps stakeholders identify key business opportunities, monitor performance efficiently, and optimize strategies. This tool is essential for adapting to market changes, enhancing operational efficiency, and driving long-term growth.

6. Intended User

- Business Analysts
- Marketing and Sales Teams
- Executives and Managers

7. Abbreviations and Acronyms

BI – Business Intelligence

KPI – Key Performance Indicator

DAX – Data Analysis Expressions

ERD – Entity-Relationship Diagram

DFD – Data Flow Diagram

SQL – Structured Query Language

8. Literature Review

The role of business intelligence (BI) tools like Power BI in enhancing decision-making has been widely recognized in the field of data analytics. Several studies highlight the importance of data visualization for tracking key performance indicators (KPIs) and improving operational efficiency. Research by *Smith et al. (2019)* demonstrated that interactive dashboards allow businesses to gain valuable insights into their performance, resulting in more effective strategies. Additionally, *Johnson (2020)* emphasized the role of BI tools in the e-commerce sector, particularly in managing large datasets and identifying growth opportunities through predictive analytics.

9. Proposed Methodology (in brief)

The project follows a structured approach to develop the Blinkit Sales and Growth Dashboard using Power BI. The methodology includes data collection, data cleaning, and analysis, followed by the design and development of interactive dashboards. The process is divided into the following steps:

1. **Data Collection:** Collecting Blinkit's sales data from internal sources (Kaggle).
2. **Data Cleaning:** Preprocessing and cleaning data to remove inconsistencies and ensure accuracy.
3. **Data Analysis:** Analysing sales trends, customer behaviour, and performance metrics using Power BI.
4. **Dashboard Design:** Creating interactive visualizations for key metrics like sales performance, top products, and customer segmentation.
5. **Testing and Deployment:** Testing the dashboard for accuracy and usability before deploying it for business use.

9.1 Functional Requirements

- **Data Import:** Import sales data from multiple sources (Excel, CSV).
- **Data Filtering:** Filter data by parameters like date, region, and product.
- **Visualization:** Display interactive charts and graphs for key metrics.
- **Real-Time Updates:** Ensure the dashboard updates with the latest data.
- **Data Export:** Allow users to export dashboard views and data.

9.1.1 Modules

1. **Data Collection Module:** Imports and processes raw data from various sources**.**
2. **Data Analysis Module:** Analyses sales and customer data to generate meaningful insights.
3. **Visualization Module:** Generates interactive charts, graphs, and tables for data representation.
4. **Export Module:** Allows users to export the dashboard and underlying data**.**

9.2 Non-Functional Requirements

- **Scalability**
- **Portability**
- **Maintainability**
- **Security**
- **Reliability**
- **Usability**

9.2.1 Usability

The platform is designed with an intuitive and responsive UI using Bootstrap and JavaScript to ensure ease of use for all user roles. Even first-time users can navigate and participate in debates seamlessly.

9.2.2 Availability

The system ensures high uptime through reliable hosting platforms such as Render or PythonAnywhere. This guarantees user can access the platform anytime with minimal downtime.

9.2.3 Efficiency

Efficient use of server resources is achieved through Flask's lightweight architecture and optimized data handling. The platform maintains performance even with multiple users interacting in real time.

9.2.4 Accuracy

The AI-powered fact-checking system uses trusted APIs (e.g., Gemini/OpenAI) to deliver accurate and context-aware information. This ensures participants base their arguments on credible facts.

9.2.5 Performance

The platform uses asynchronous requests (AJAX/Fetch) and lightweight backend processes to reduce latency. Debate actions like timing, submissions, and fact checks are executed with minimal delay.

9.2.6 Reliability

The system is built with error handling, fallback mechanisms, and data persistence to recover from unexpected issues. This ensures debates continue smoothly without data loss or crashes.

9.2.7 Maintainability

The modular Flask codebase and use of industry-standard practices allow easy debugging, testing, and future upgrades. Developers can update components without disrupting the entire system.

9.2.8 Security

User authentication and input validation ensure secure access and protect data from unauthorized use.

9.3. Hardware Requirements

- **Processor:** Intel Core i5 or equivalent
- **RAM:** 8 GB
- **Storage:** 500 GB HDD or SSD
- **Display:** 1920x1080 resolution
- **Network:** Stable internet connection

9.4 Software Requirements

- **Operating System:** Windows 10 / Linux (Ubuntu) / macOS.
- **Database:** SQLite (bundled with Python).
- **Editor:** Visual Studio Code / Cursor.
- **Browser:** Google Chrome / Firefox (for testing and use).
- **Version Control:** Git.

- **Deployment (optional):** Heroku / PythonAnywhere / Render.

9.4.1 Front End

- Power BI: Used for building interactive visualizations and dashboards.
- Excel: For data preparation and import into Power BI.
- JavaScript: For any required web-based functionality.

9.4.2 Back End

- Power BI Service: For cloud storage and sharing dashboards.
- SQL Server: For storing large datasets and supporting queries.
- Python: For data cleaning and transformation if necessary.

10. Diagrams

10.1 Class Diagram

 Represents the structure of classes like Analyzer, order_id, Outlet size , and their relationships.

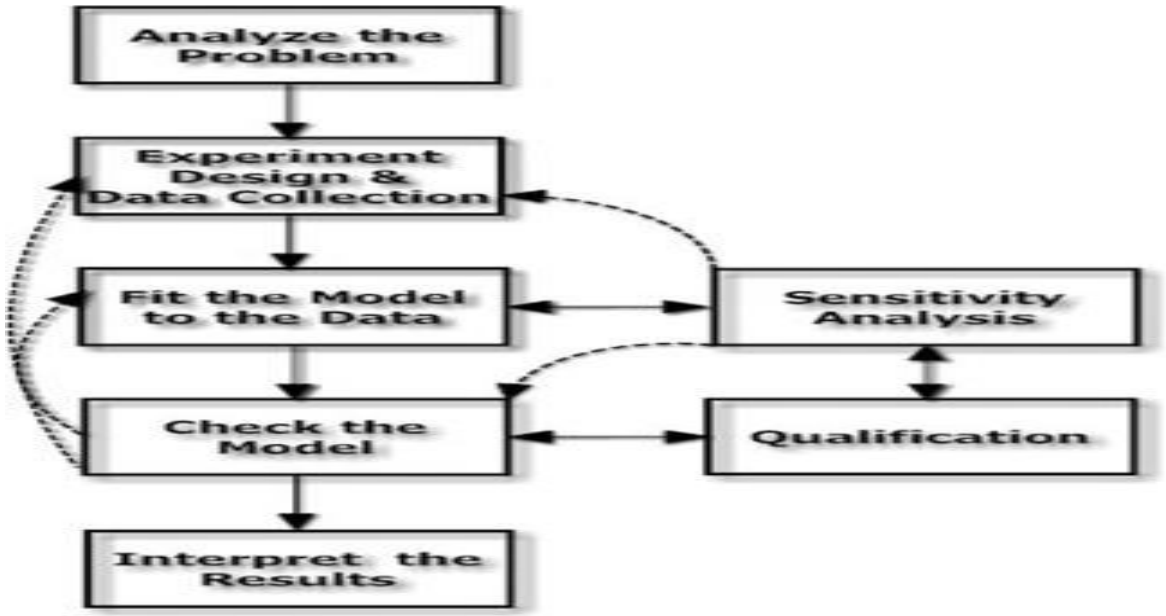

Figure 1 Class Diagram

10.2 Use Case Diagram

Depicts how various users, such as Sales Managers, Business Analysts, and Regional Heads, interact with dashboard functionalities including login access, applying filters, exploring sales trends, and analysing customer or product performance.

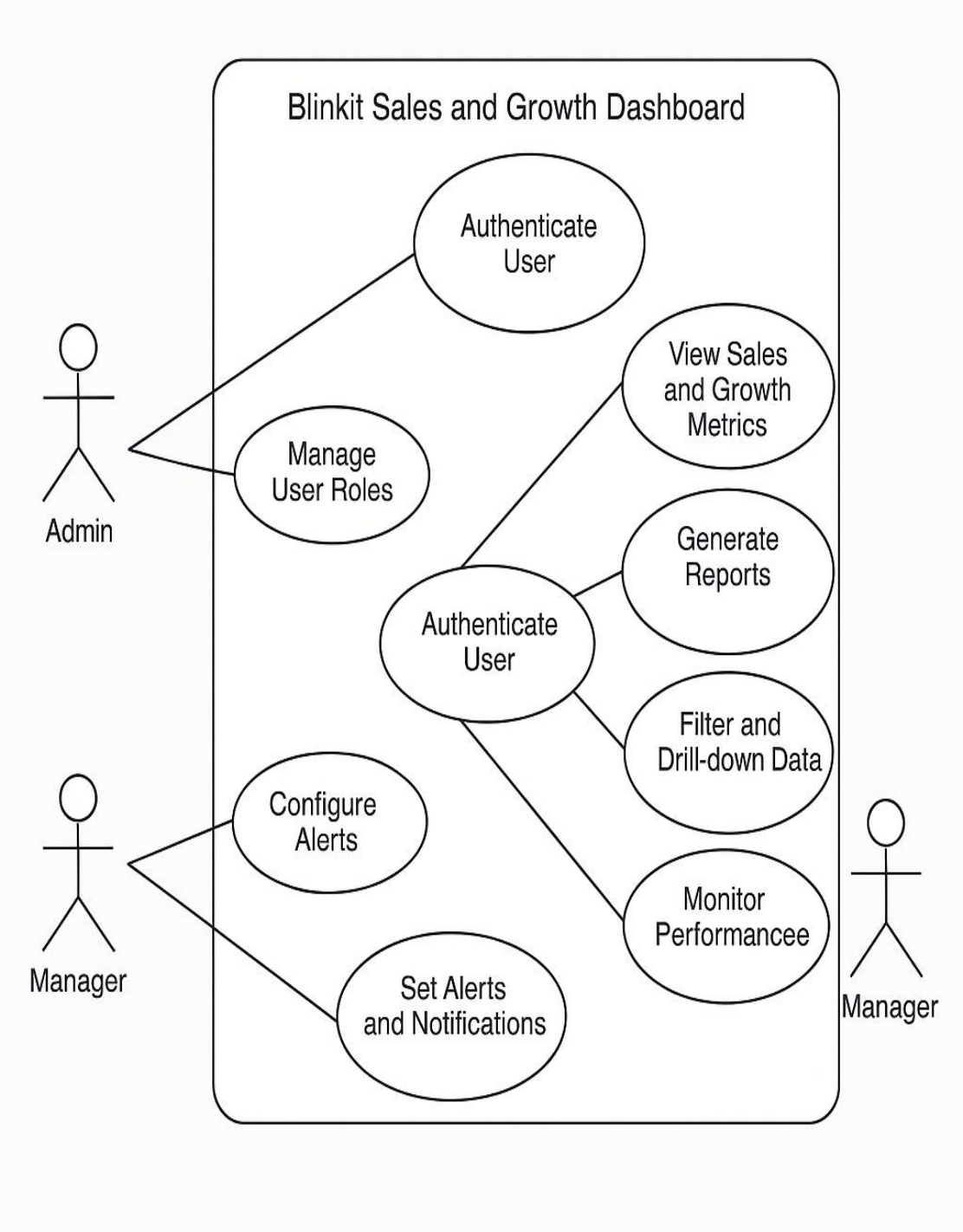

Figure 2 Use case Diagram (User Authentication)

10.3 Data Flow Diagram (DFD)

- Level 0: Shows how users interact with the system to analyze Blinkit sales and growth data.
- Level 1: Breaks down system functions like login, data upload, cleaning, analysis, and dashboard visualization.
- Level 2: Details internal steps within key functions such as sales grouping, rating distribution, and outlet analysis.
- Level 3: Depicts micro-level tasks like handling missing data, standardizing product fields, and applying filters.

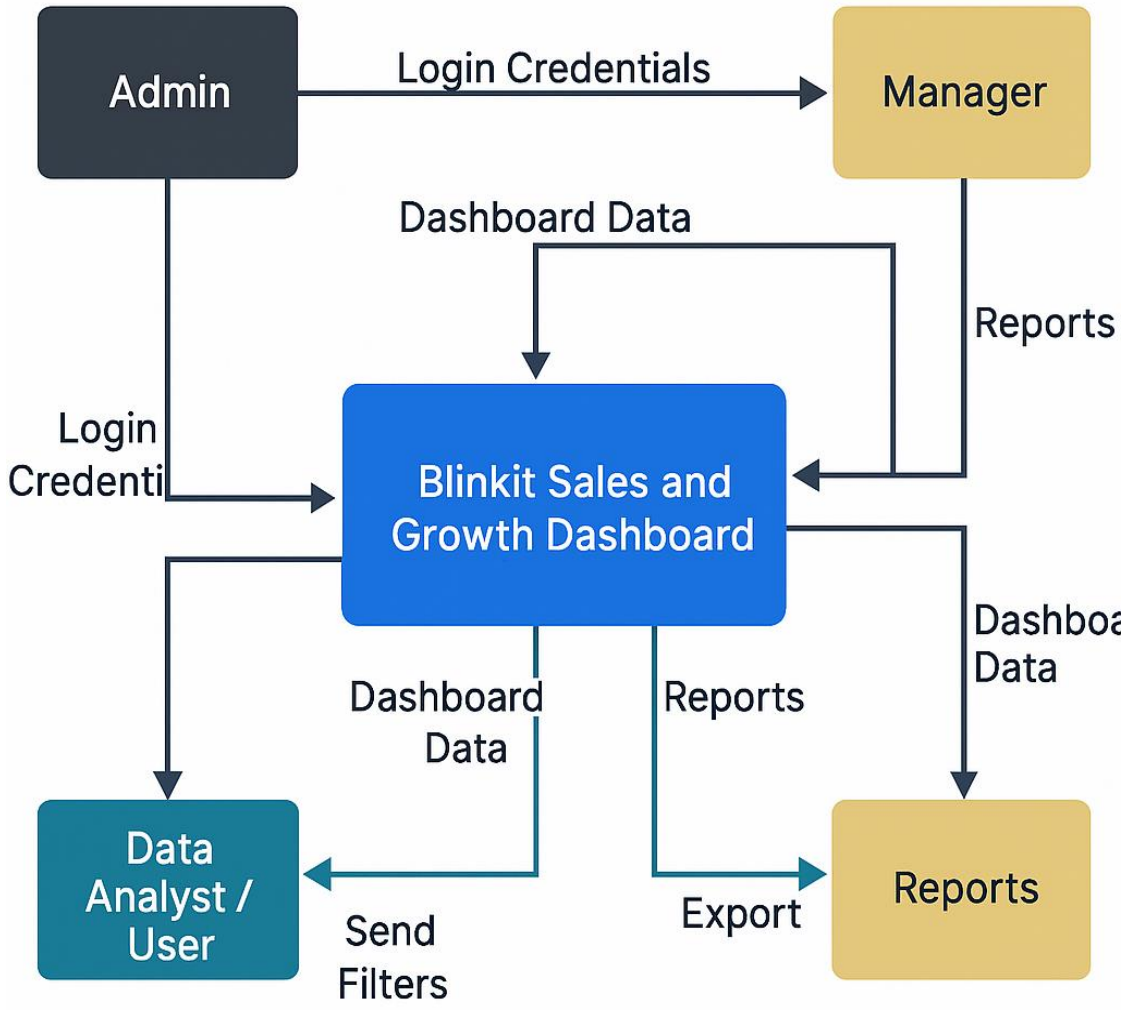

Figure 5 DFD

10.4 Entity-Relationship (E-R) Diagram

- Illustrates the relationships between entities like Product, orders, Sales, customers.

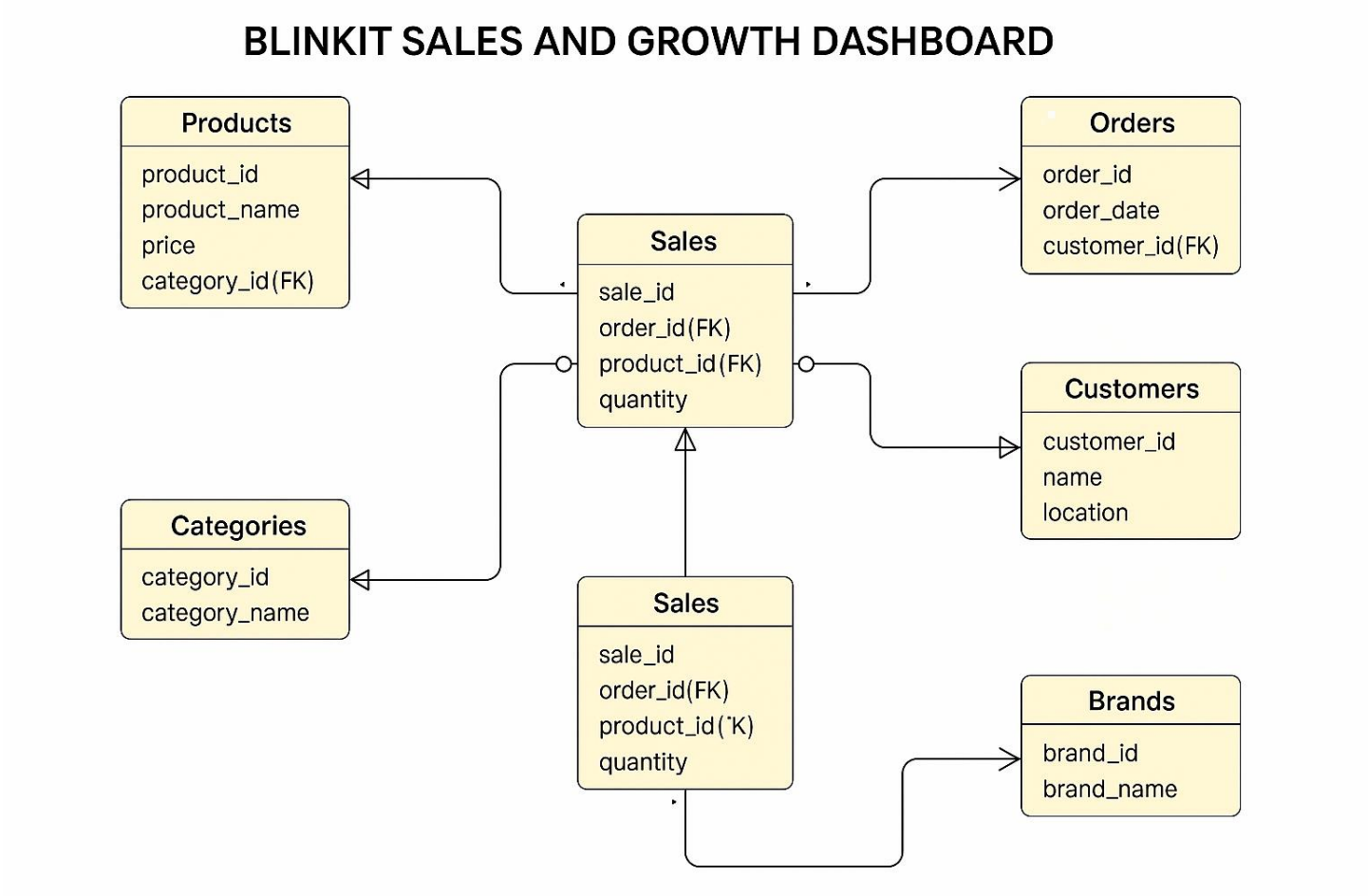

Figure 8 Entity Relationship Diagram

10.6 Gantt Chart

Includes planned vs. actual timeline for phases like:

1. Requirement Analysis
2. Design
3. Development
4. Testing
5. Deployment
6. Final Presentation

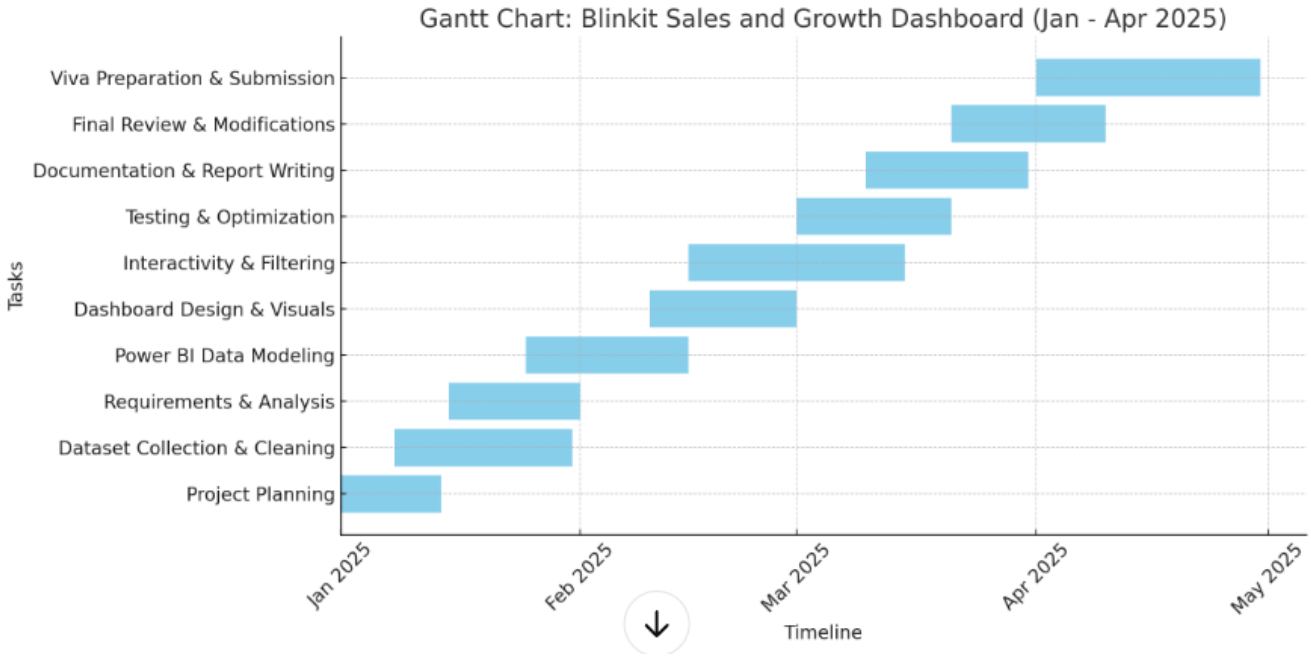

Figure 9 Gantt Chart

11. References

[1] Microsoft. (2024). *Power BI Documentation*. Retrieved from https://learn.microsoft.com/en-us/power-bi/

[2] Kaggle. (2024). *Grocery Sales Dataset*. Retrieved from https://www.kaggle.com/

[3] McKinsey & Company. (2021). *Strategies for Success in the Evolving Grocery Market: Navigating Omnichannel Retail*. Available at: https://www.mckinsey.com

[4] Kimball, R., & Ross, M. (2013). *Dimensional Data Modeling: Practical Techniques for Building Business Intelligence Systems* (3rd Edition). John Wiley & Sons.

[5] Few, S. (2012). *Effective Data Presentation: Crafting Clear and Insightful Charts and Tables* (2nd Edition). Analytics Press.

[6] Tableau Software. (2023). *Data Visualization Best Practices*. Retrieved from https://www.tableau.com/learn/articles/data-visualization

[7] IBM. (2022). *Data Cleaning Techniques in Data Science*. Retrieved from https://www.ibm.com/cloud/learn/data-cleaning

[8] Microsoft SQL Server Team. (2024). *SQL Server Documentation*. Retrieved from https://learn.microsoft.com/en-us/sql/sql-server/

[9] OpenAI. (2023). *Using AI for Business Intelligence and Analytics*. Retrieved from https://openai.com/research

[10] Harvard Business Review. (2020). *How Data Visualization Affects Decision Making*. Retrieved from https://hbr.org/

[11] Stack Overflow. (2024). *Power BI and DAX Troubleshooting Threads*. Retrieved from https://stackoverflow.com/

[12] DataCamp. (2023). *Power BI Dashboard Projects and Tutorials*. Retrieved from https://www.datacamp.com/

[13] Power BI Community. (2024). *User Forums and Technical Discussions*. Retrieved from https://community.powerbi.com/

[14] SQLShack. (2024). *Best Practices for SQL in Business Intelligence*. Retrieved from https://www.sqlshack.com/